4TH MEETING OF THE HYDROGRAPHIC SERVICES AND STANDARDS COMMITTEE (HSSC4)
Taunton, United Kingdom, 25-28 September 2012

FINAL MINUTES

Notes: *1) The paragraph numbering is the same as in the agenda (Annex D), although the order of taking the items was not exactly followed.*
2) A list of acronyms used in this report is provided at Annex A.
3) A list of actions agreed at HSSC4 is provided at Annex E.
4) All documents referred to in these minutes are available from the HSSC page of the IHO website (http://www.iho.int/mtg_docs/com_wg/HSSC/HSSC4/HSSC4Docs.htm).

1. OPENING AND ADMINISTRATIVE ARRANGEMENTS

Docs:	*HSSC4-01A rev4*	*List of Documents (IHB)*
	HSSC4-01B rev9	*List of Participants (IHB)*
	HSSC4-01C	*HSSC - List of Contacts (IHB)*
	HSSC4-01D	*Terms of Reference for HSSC and related Working Groups (IHB)*

IHB Director Gilles BESSERO opened the meeting and welcomed the participants. He reported that he had taken over as the Director responsible for overseeing the technical activities of the IHO and noted that it was heartening to see such excellent participation at the meeting. He expressed his gratitude to the UKHO for their hosting the meeting and invited RAdm. Nick LAMBERT (UK) to provide the opening address.

N. LAMBERT welcomed the participants to Taunton and noted that there are many important challenges facing HSSC and its Working Groups (WG). He expressed some concerns about the pace of development of some of the WG and the present state of overlapping standards. He noted a need to expedite the pace of standard development in order to solve these issues. He also noted that it was very encouraging to see such good participation by industry partners and their commitment to furthering the development of standards was greatly valued. He acknowledged the effort put in by the UKHO team in preparing such a large meeting.

G. BESSERO thanked the UKHO and referred to the letter from the IHB dated 30 June 2012 which had announced that this meeting would be chaired by Mathias JONAS, the Vice-Chair of HSSC, following the retirement of Captain Vaughan NAIL, the former Chair of HSSC. On behalf of all IHO Member States he acknowledged Captain NAIL's most valuable work as Chairman of the HSSC over the last five years and the support of the UKHO for making him available for the position. He wished Captain NAIL fair winds and fair seas in his retirement.

Noting that less than a third of the IHO membership was represented he invited Member States (MS) to take a more active part in the technical programme of the IHO and consider nominating candidates for Chair or Vice-Chair of HSSC and its WG. He expressed the need to better balance the work plans against the resources available to accomplish the intended work noticing that a situation where most of the work relied on the good will and extreme dedication of few people was by definition fragile. This was of particular concern as the development of new standards and services, such as the S-100 series, was attracting expectations from stakeholders and other organizations.

He reminded participants that the HSSC was a high level Committee and should not duplicate nor redo the work of its WG. Therefore, it should not get involved in lengthy technical discussions when considering a proposal submitted by one of its working groups. Reservations, if any, on the proposals submitted should be raised before or at the meeting so that HSSC could take an informed decision

whether or not the proposal was mature enough to be submitted to MS with HSSC endorsement. The seven weeks deadline for the submission of proposals was meant to provide sufficient time for due diligences by the Committee members!

Reminding participants that the rules of procedure for the Committee and its WG called for election of Chairs and Vice-Chairs at their first meeting after each ordinary session of the International Hydrographic Conference, he invited HSSC and the three WG which had not yet met since April 2012 to elect their Chair and Vice-Chair and invited ABLOS to elect a new Vice-Chair in accordance with its specific rules of procedure.

He asked for any additional nominations for candidates for HSSC Chair and noting that there were none he declared the nominations for HSSC Chair closed. He reminded participants that additional nominations for HSSC Vice-Chair would be accepted until the election of the Chair was completed, as indicated in document HSSC4-11A.

Mathias JONAS also thanked the former HSSC Chair Vaughan NAIL for the excellent state that he had left the Committee in, and indicated that he would do his best to continue his good work.

IHB introduced the list of documents (HSSC4-01A rev4).

Outcome:
- The Committee noted the documents introduced.

2. APPROVAL OF AGENDA

Doc: HSSC4-02A rev6 *Agenda and Timetable (IHB)*

The agenda was agreed with minor changes in the sequence of a few items.

Outcome:
- The Committee agreed the agenda.
- The Committee decided that item 5.3 would be addressed immediately after 5.1, that HSSC4-05.1I would be considered under item 5.3, that HSSC4-05.1K would be considered together with HSSC4-05.1E, and that 7.2 would be the first item addressed on the afternoon of 27 September.

3. MATTERS ARISING FROM MINUTES OF 3RD HSSC MEETING

3.1 Minutes and Actions from HSSC3

Docs: HSSC4-03A *Minutes of HSSC3 (IHB)*
HSSC4-03B rev1 *Status of Actions List from HSSC3 (IHB)*

3.A Minutes of the 3rd HSSC Meeting (HSSC4-03A)

IHB reported that the minutes had already been agreed (CL 15/2012 refers) and were included in the list of documents for information only.

3.B List of Actions from the 3rd HSSC Meeting and Status (HSSC4-03B rev1)

IHB reported the status of HSSC3 actions as follows:

Action 1 - Length of Coastline - Done, subject to the consideration of documents HSSC4-03C and 03D.
Action 2 - S-102 - Done (CL 41/2012 refers).
Action 3 - S-102 at IHC18 - Done.

Action 4 - S-64 - Done (CL 55/2012 refers).
Action 5 - S-64 - In progress (see item 5.1).
Action 6 - S-58 - In progress (see item 5.1).
Action 7 - S-58 - In progress (see item 5.1).
Action 8 - S-100 maintenance - Done.
Action 9 - S-101 Impact study - In progress.
Action 10 - S-52 Presentation Library - Done. A new work item had been included in the DIPWG work plan.
Action 11 - Chart definition - Done.
Action 12 - Quality elements for S-100 - no information had been received by the DQWG chair.
Action 13 - Survey on data quality - Done.
Action 14 - MSDI - In progress.
Action 15 - Res 6/1932 - Done - The revised resolution was adopted by MS (CL 20/2012 refers).
Action 16 - S-32 Definitions - Done (CL 76/2012 refers). A new paper on this topic (HSSC4-05.9B) had been submitted for consideration.
Action 17 - S-32 business rules - Done (CL 76/2012 refers).
Action 18 - S-32 App1 IEC TC80 - Done. IEC had announced that they had no objection to the publication of the document.
Action 19 - S-65 & S-52 App1 - Done (CL 52/2012 refers).
Action 20 - T&P ENC Updates - Expected to be done in 2013.
Action 21 - Revision of IEC 61174 - Done but it had been overtaken by events, as reported in document HSSC4-INF5.
Action 22 - Length of coastline - Standby - related to action 1 expected to be completed in 2012.
Action 23 - Res. 2/2007 - Done (CL 84/2012 refers).

Outcome:
- The Committee noted the Minutes of HSSC3 (HSSC4-03A).
- The Committee noted the list of actions, reviewed HSSC4-03B, renewed action HSSC3/20, and agreed that all the other actions were completed or covered by an agenda item.

- **Action HSSC4/01: IHB** to survey Member States again in 2013 regarding their progress in implementing the recently approved Guidelines for Encoding T&P ENC Updates and to communicate the results to MS (former action HSSC3/20).

3.2 Definition and Length of Coastline

Docs:	*HSSC4-03C rev1*	*Status Report of the Correspondence Group on Definition and Length of Coastline (France)*
	HSSC4-03C rev2	*Status Report of the Correspondence Group on Definition and Length of Coastline (France)*
	HSSC4-03D	*Comments on the Report to HSSC4 by the Correspondence Group on Definition and Length of Coastline (UK)*

France presented the report of the Correspondence Group (HSSC4-03C rev1). UK summarized its comments tabled in document HSSC4-03D. Taking into account the additional concerns expressed by Canada, Turkey and USA, the Chair noted the lack of support for adopting the method proposed by the Correspondence Group as an IHO Resolution and for publishing a table of lengths of coastline on the IHO web site. He invited France to lead a small group to revise the text of the proposal and report back later in the meeting.
Based on the output reported by France (HSSC4-03C rev2), the Committee agreed that:
- the IHO proposes “a” method, not “the” method;
- a metadata set should describe this individual method of calculation;

- other usage bands and largest scales could be used if they were more suited for comparison purposes;
- the method developed by the Correspondence Group should be published in the International Hydrographic Review.
It was agreed that the correspondence group was to be disbanded after the publication of its report.

Outcome:
- The Committee noted the revised report (HSSC4-03C rev2).
- The Committee tasked the Correspondence Group to complete its work by publishing a paper in the International Hydrographic Review describing a method of calculation of the length of coastline, based on ENCs. The paper should provide a download link allowing access to the application and test data.
- The Committee did not support the draft IHO Resolution initially proposed by the Correspondence Group.
- The Committee decided to disband the Correspondence Group on Definition and Length of Coastline, after publication of its conclusions in the International Hydrographic Review.

- **Action HSSC4/02: Correspondence Group on Definition and Length of Coastline** to submit a paper describing a method of calculation of the length of coastline, based on ENCs, to the International Hydrographic Review editor before the end of January 2013.

4. HSSC ADMINISTRATION

4.1 Implementation of Programme Performance Indicators

Doc: HSSC4-04.1A *Programme Performance Indicators for HSSC (IHB)*

IHB introduced document HSSC4-04.1A.
Canada, Germany, UK, USA and IC-ENC offered comments on the proposed working level performance indicators (WPIs) developed by HSSC2.

Outcome:
- The Committee noted the paper (HSSC4-04.1A).
- The Committee decided to implement the Working level Performance Indicators (WPIs) agreed by HSSC2 with the following adjustments:
1. Indicator no 1 will be the number of S-100 based product specifications approved.
2. The data collection point for indicator no 5 is transferred to the WEND WG.

- Action HSSC4/03: Contributions for the 2012 period to be provided by **HSSC WG Chairs** (Performance Indicators no 2 and 3) and **WEND WG Chair** (Performance Indicator no 5) by 31 January 2013.

- Action HSSC4/04: IHB to include the HSSC Working level Performance Indicators (WPIs) in the IHO monitoring report for 2012.

- **Action HSSC4/05: HSSC5** to revisit the usefulness of the Working level Performance Indicators (WPIs) adopted by HSSC4.

4.2 Increasing technical capacity at the IHB

Doc: HSSC4-04.2A *Assessing the adequacy of the IHO Technical Capacity (IHB)*

IHB introduced document HSSC4-04.2A.

UK concurred that the technical capacity of the IHB was a very important issue and offered to contribute to the review. UK was of the opinion that, in a very fast moving technical environment, additional staff of such expertise would be required at the IHB.
The Chair noted the importance of an IHO-wide approach encompassing both the technical capacity of the IHB and the additional resources required to implement the IHO technical program.
WG Chairs were invited to comment on their initial assessment of the critical areas when presenting their report and the Committee reviewed the results at the end of the meeting.

Outcome:
- The Committee noted the paper (HSSC4-04.2A).
- The Committee identified the following critical elements from the WG reports and acknowledged the associated potential mitigation measures discussed under the relevant agenda items:

- Portrayal component of S-100
  - Cover travel costs of a proper sequencing of meetings to complete the S-100 portrayal model in time for endorsement at HSSC5 (see action HSSC4/22).
- Expert advice to non IHO stakeholders developing S-100 based product specifications
  - MS / WG based and/or IHB based (see action HSSC4/25).
- HDWG membership / chairmanship
  - Impact study for HSSC5 (IHB) (see action HSSC4/34).

4.3 Annual National Technology Updates

Docs: *HSSC4-04.3A* *Annual National Technology Updates (USA (NOAA))*
HSSC4-INF3 *US National Report on Technical Matters (USA (NOAA)*

USA introduced document HSSC4-04.3A and presented document HSSC4-INF3 to illustrate the type of report on new technical developments that might be of interest to HSSC.
Netherlands welcomed the proposal but noted the risk to overburden the agenda. Canada and Australia supported this view.

Outcome:
- The Committee noted the two papers (HSSC4-04.3A and HSSC4-INF3).
- The Committee encouraged Member States to present significant development as information papers to HSSC with the option to provide lunch break presentations if appropriate.

- Action HSSC4/06: Secretary to change the title of HSSC agenda item 10 to "review of new developments and other information papers" and move it to after item 7 of the agenda of future HSSC meetings.

5. REPORTS BY HSSC WORKING GROUPS

5.1 Transfer Standard Maintenance and Application Development (TSMAD)

5.1.1 TSMAD Report

Docs: *HSSC4-05.1A rev1* *Report and Recommendations of TSMAD (TSMAD Chair)*
Draft Ed. 3.1.0 of S-57 Appendix B.1 Annex A "Use of the Object Catalogue"

TSMAD Chair presented the report and recommendations of his WG.
HSSC Chair noted the significant importance of TSMAD work, considering the expectations raised by the S-100 project. He stressed that it was essential for the IHO as a whole to make sure that the project be completed successfully and noted that past S-57 developments gave confidence. He then invited comments on each topics presented by TSMAD Chair.

The following discussion led to confirming that the new draft Edition 2 of S-100 was due to be submitted to HSSC5 for approval.
Saudi Arabia noted that the 5th EIHC was an appropriate milestone for the approval of S-101.
Netherland reported that S-102 was referenced in the INSPIRE and NATO standards. Saudi Arabia reported that they were using S-102 for rendering hydrographic surveys.
France reported on the S-101 impact study noting from the first responses some difficulties in grasping the issues and limited enthusiasm for the new standard. They stressed the need to encourage stakeholders who have not responded to the questionnaire yet to do so as soon as possible.
Canada expressed the need to develop a road map with the key milestones leading to the implementation of S-100 in order to guide planning and resource allocation.

Outcome:
- The Committee noted the report (HSSC4-05.1A), endorsed the continued activity of TSMAD, and approved its work plan with an additional work item to produce a roadmap (using mind map), taking into account the S-101 impact study and showing key tasks that have to be completed in order to implement S-100, and indicating interaction between the tasks and the implications for stakeholders.
- The Committee endorsed the draft edition 3.1.0 of S-57 Appendix B1 Annex A *Use of the Object Catalogue for ENC* (UOC) and invited the IHB to circulate the document to Member States for approval.

- **Action HSSC4/07: TSMAD Chair** to include in the TSMAD work plan an additional work item to produce a roadmap (using mind map), taking into account the S-101 impact study and showing key tasks that have to be completed in order to implement S-100, and indicating interaction between the tasks and the implications for stakeholders.

- **ActionHSSC4/08: IHB** to circulate the draft edition 3.1.0 of S-57 Appendix B1 Annex A *Use of the Object Catalogue for ENC* (UOC) to Member States for approval.

5.1.2 New edition of S-99

Docs: *HSSC4-05.1B* *Proposed Revision to S-99 (TSMAD Chair)*
Draft e1.0.0 of S-99 "Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry"

TSMAD Chair noted that as a result of feedback provided by users of S-99, it was proposed to make some minor changes to the document to make it clearer.

Outcome:
- The Committee noted the paper (HSSC4-05.1B).
- The Committee endorsed the draft edition 1.1.0 of S-99 *Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry*, and invited the IHB to circulate the document to Member States for approval.

- **ActionHSSC4/09: IHB** to circulate the draft edition 1.1.0 of S-99 *Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry* to Member States for approval.

Post-meeting note: *the revised S-100 GI Registry interface reflecting the changes to S-99 will be uploaded when MS approval for the new version of S-99 has been gained.*

5.1.3 Product Specification for Ocean Forecasts

Doc: HSSC4-05.1C rev1 *Development of an S-100 Based Product Specification for Ocean Forecasts (USA (NOAA))*

USA provided a brief overview of the proposal to develop of an S-100 based product specification for meteorological forecasts that can be used in conjunction with an S-101 ENC. Their view was that such a new product would encourage the changeover from an S-57 based ECDIS to an S-100 based ECDIS.
UK noted that some experience had been gained with assisting IALA and proposed that TSMAD consider the development of a cook book that could be used as a guide to help other organizations developing product specifications.
Canada supported the proposal, noting that this was a logical addition to the provision of navigational information that will add value to the S-100 based systems. They recommended developing a joint strategy on multidisciplinary products with IMO, IOC and WMO. Concern was expressed by Canada, Netherlands and HSSC Chair about the additional workload on TSMAD resources. USA noted that it was expected to have little impact on TSMAD resources and requested that the TSMAD Chair should notify the USA if this was not the case. TSMAD Chair noted that TSMAD did not have the resources to develop such specifications but that providing technical support was not too onerous. HSSC Chair noted that such a development was related with the implementation of the e-navigation strategy. He recommended that TSMAD limit its role to "enabler" rather than "producer". He identified the need to review the level and positioning of the expertise required at the IHO level.

Outcome:
- The Committee noted the paper (HSSC4-05.1C).
- The Committee acknowledged the work being done by the US National Weather Service on behalf of the Expert Team on Maritime Safety Services (ETMSS) of the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM), and approved the provision under TSMAD Work Item A.10 of expert advice on the creation of an S-100 based Product Specification for Ocean Forecasts.

- **Action HSSC4/10: IHB** to approach the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) to elaborate a joint strategy to develop S-100 based multi-disciplinary products in the context of the implementation of the e-navigation strategy.

5.1.4 Identifiers for S-100 based product specifications

Doc: HSSC4-05.1D Proposal to formalize the identifiers for S-100 based product specifications (UK)

UK reported that currently the S-XXX identifier had been used for IHO product specifications (PS) but there was now a need to formalize PS identifiers as the wider community uses S-100.

IEHG noted the risk to run out of numbers and proposed using the first letter character to identify the owners of the number range, which would allow assigning the same number 101 to ENC PS (S-101) and inland ENC PS (?-101). Australia noted that this could be confusing to the mariner, and needed further consideration. France recommended aligning with the ISO classification standard. TSMAD Chair proposed that the S-100 to S-199 range be reserved for IHO PS and that non-IHO PS identifiers be assigned by the registry manager on a first come first served basis from S-200 onwards.

Outcome:
- The Committee noted the paper (HSSC4-05.1D).

- Action HSSC4/11: TSMAD to develop, with IHB support and in consultation with the relevant stakeholders, a nomenclature for S-100 based product specifications as part of the GI registry management, and revise S-100, taking into account the following guidance:

- S-100 to S-199 should be reserved for IHO product specifications;
- Non IHO product specifications identifiers should be assigned by the registry manager on a first come first served basis from S-200 onwards.

5.1.5 Product Specification for Magnetic Variation

Docs: *HSSC4-05.1E* *Proposal to add a Magnetic Variation information Product Specification to the TSMAD work program (TSMAD)*
HSSC4-05.1K *Magnetic Variation Product Specification - Comments on HSSC4-05.1E (USA (NOAA))*

UK noted that in order to reduce the burden of updating magnetic variation on S-101 ENCs, TSMAD had discussed including magnetic variation as a separate data layer. He reported that, as the magnetic model was produced every five years, it would make sense that magnetic variation be handled as a separate product rather than embedded in the ENC. This would provide the mariner with a consistent dataset based on the World Magnetic Model and eliminate the need for HOs to manage this data on a product by product basis.
Australia noted that magnetic variation information was a requirement under SOLAS and therefore there was a need to answer the question "Who will make the magnetic variation product?" USA noted that it had submitted a paper (HSSC4-05.1K) that posed a number of questions which should be answered if this proposal was to be accepted. Finland supported the comments and questions raised by USA. IC-ENC noted that this proposal had been submitted because of the inconsistent way that magnetic variation information was presently encoded in ENCs. Canada noted that having a single approved set of information for magnetic data had merit, but was not convinced that having it as a separate product was appropriate. CIRM noted that the split between ENC and additional layers would need to be addressed in the S-100 environment.
HSSC Chair concluded that the proposal was not supported and invited the Committee to consider if further work was required to harmonize encoding rules. TSMAD Chair reported that an encoding bulletin had already been produced to address complaints about the encoding of magnetic variation.

Outcome:
- The Committee noted the two papers (HSSC4-05.1E and HSSC4-05.1K).
- The Committee did not endorse the proposal to add a work item on the development of an S-10X product specification for magnetic variation information to the TSMAD work plan.

- **Action HSSC4/12: IHB** to invite Member States to implement Encoding Bulletin 44 dealing with magnetic variations.

5.1.6 Product Specification for Surface Currents

Doc: *HSSC4-05.1F* *New Work Item Proposal for the establishment of a Surface Current Product Specification (S-10y) - to be used as a stand-alone product or fully integrated within other S-100 based products (Canada)*

Canada outlined the proposal for an S-100 compliant product specification for surface currents for navigation data. The product was intended to be used as an auxiliary data layer for use with an S-101 ENC. Surface currents would be represented as a gridded coverage with value representing the orientation and intensity (direction and speed of the current) at each vertex point of a grid coverage.
Saudi Arabia supported Canada's initiative, considering that surface currents were an important requirement for safe navigation. USA noted that this was an interesting proposal but had some

questions that would need to be considered. Canada agreed that a more detailed study would be required, with the assistance of TSMAD, if HSSC would support the proposal. USA proposed the formation of a separate working group to address the issue. Noting further comments from Australia, France, Netherlands and Thailand, HSSC Chair invited Canada and USA to prepare draft terms of reference (ToR) and report back to the Committee.
Following some minor edits the ToR developed by the breakout group were approved by the HSSC.

Outcome:
- The Committee noted the paper (HSSC4-05.1F).
- The Committee established a working group for developing a surface current product specification, with terms of reference as in Annex F.

- **Action HSSC4/13: IHB** to invite Member States to consider participating in the working group on surface current product specifications and inform Canada not later than end of 2012.

5.1.7 S-101 Test Plan Funding

Doc: HSSC4-05.1G S-101 Test Plan Funding (TSMAD Chair)

TSMAD Chair noted that while TSMAD had the technical expertise to draft an initial S-101 test plan, it did not have the expertise to draft formal test cases required to conduct S-101 test bed projects, noting that test cases required both positive and negative tests. He recommended that this activity be funded with an IHO contract of $30 000. If this was approved by HSSC, a statement of requirements would be drawn up during the next TSMAD meeting in January 2013.
IHB indicated that if HSSC would endorse this proposal – and subject to a suitable statement of requirements – it would progress the contract.

Outcome:
- The Committee noted the paper (HSSC4-05.1G).
- The Committee endorsed the principle to fund the development of S-101 test plan from the IHO budget and invited the IHB to contract out this activity, based on a statement of requirements to be provided by TSMAD.

- **Action HSSC4/14: TSMAD** to draft a statement of requirements for the development of S-101 test plan and submit it to the IHB for tendering.

- **Action HSSC4/15: IHB** to prepare and award a contract for the development of S-101 test plan within the allocated IHO budget.

5.1.8 AIS Aids to Navigation and ENCs

Doc: HSSC4-05.1H rev1 AIS aids to navigation and ENC (TSMAD Chair)

TSMAD Chair reported that as an interim solution, until such time as S-57 can be amended or S-100 based ENCs introduced, if HOs decide to include virtual AtoNs and other AIS AtoNs in ENCs, then they should be encoded using the New Object (NEWOBJ) feature defined in S-57.

Noting that Australia, Denmark and NL, among others, were deploying virtual AtoNs and that display rules had already been agreed for paper charts, the Committee endorsed the proposal, whether or not the deployment of virtual AtoNs was justified or endorsed by IMO.
In response to CIRM querying about the synchronization of updates to ENC and paper charts, it was indicated that the issue was the same for both real and virtual objects.

Outcome:
- The Committee noted the paper (HSSC4-05.1H).
- The Committee agreed that the New Object (NEWOBJ) feature defined in S-57 should be used to encode virtual AIS Aids to Navigation in ENCs. The Committee further instructed TSMAD to develop an Encoding Bulletin that describes how to encode virtual AIS Aids to Navigation in ENCs.

- **Action HSSC4/16: TSMAD** to develop an Encoding Bulletin that describes how to encode virtual AIS Aids to Navigation using the New Object (NEWOBJ) feature.

5.1.9 Planning for the development of S-100 and S-101

Doc: HSSC4-05.1I Comments on the TSMAD and DIPWG Working Group reports (Finland)

See Section 5.3.3.

5.1.10 Revision of S-57

Doc: HSSC4-05.1J Proposed Revision to S-57 (UK)

TSMAD Chair reported that there were two issues to be considered: the position and contents of S-58 and the use of the ENC tests in ECDIS. As a consequence of S-57 being frozen, the UOC had also been frozen. This led to the invention of encoding bulletins and S-58 was moved out of S-57. HSSC had instructed TSMAD to restructure S-58, however the IHO did not enforce the validation of ENC, and ENC could be produced that would cause problems in an ECDIS. Furthermore there were inconsistencies between validation tools. S-58 was not referenced by any of the existing regulatory standards, and it was proposed that it should be brought back under S-57. Moreover HOs were reticent to "stamp" their ENCs against S-58 because it would require re-checking the ENCs whenever S-58 was updated. There were some additional concerns associated with ECDIS using all of the S-58 validation checks which were causing a long list of errors and warnings and this was undermining the user experience.
TSMAD Chair advocated a compromise through restructuring the document in order to group errors into critical errors (will cause a problem) and minor errors (HO to check). In the S-100 perspective, TSMAD was investigating whether the IHO could issue a machine readable ENC test tool plug in.
RTCA invited HSSC to address the "grand-father clause" ensuring that checks be aligned with the appropriate version of the validation tools associated with the ECDIS software version. CIRM noted the risk of confusion if changes to S-57 would occur when starting the transition to S-100.
IHB noted that the WEND principles included the implementation of an adequate ENC quality management system and therefore the issue was not whether ENC validation checks were lodged in S-57 or in a separate publication. The real question was whether the IHO framework (recommendatory versus regulatory) was still adequate in the digital world. IC-ENC mentioned the current reflections within the RENC Harmonization Sub-Group of the WEND WG (RSHG) about the concept of central control point.

Outcome:
- The Committee noted the paper (HSSC4-05.1J).
- The Committee decided to reconsider the issue at the next meeting, based on further investigation by the TSMAD Chair and further comments from Committee members.

5.2 Data Protection Scheme (DPSWG)

Doc: HSSC4-05.2A Report and Recommendations of DPSWG (DPSWG Chair)

DPSWG Chair presented the report and recommendations of his WG.

He noted that, while there was good adoption of S-63 1.1, there were still a lot of legacy systems that were not using edition 1.1 yet. There were also issues with getting data servers to move to edition 1.1. This was proving difficult for the larger data servers who still supported a lot of older legacy systems. DPSWG Chair suggested stating formally that from 1st Jan 2014, Ed. 1.0 could no longer be used except for legacy systems.
DPSWG Chair reported a lack of interest from MS and OEM to develop a new protection scheme associated with S-100. The initial work was being carried out via an online discussion group and a move to drafting stage was now required, which would depend on increased participation in the WG.

Outcome:
- The Committee noted the report (HSSC4-05.2A), endorsed the continued activity of DPSWG, and approved its work plan.

- **Action HSSC4/17: IHB** to invite Member States to nominate experts and candidate office bearers to participate in the work of the DPSWG.

- **Action HSSC4/18: IHB**, as scheme administrator, to inform all S-63 accredited OEMs and Data Servers that using S-63 Edition 1.0 beyond 1 January 2014, will result in the termination of their protection scheme agreement in accordance with clause 8.1.2 of the agreement.

5.3 Digital Information Portrayal (DIPWG)

5.3.1 DIPWG Report

Doc: HSSC4-05.3A Report and Recommendations of DIPWG (DIPWG Chair)

DIPWG Chair presented the report and recommendations of his WG.
Concerning the portrayal model, he indicated that DIPWG was considering several different XML based approaches and that the full development could take until summer 2013. A small group was working on simplifying the conditional symbology procedures which would make the implementation of S-52 easier. The intention was to conduct a users' survey on the proposed new symbology. As regard Ed. 3.5 of the S-52 Presentation Library (PresLib), the plan was to complete the draft by the end of 2013 for approval in 2014.
HSSC Chair stressed that portrayal was the IHO "shop window" and as such was an essential component of the IHO Work Programme. He invited comments on each topics presented by DIPWG Chair.
UK suggested that the production of the new PresLib edition should be the highest priority. DIPWG Chair invited further contributions and UK volunteered to provide all the feedback and information gained from ECDIS anomalies analysis. If there was an issue that would need immediate action, DIPWG would issue a portrayal bulletin. The intent was to have a draft PresLib Ed. 3.5 ready for discussion at the next TSMAD meeting in January 2013, and then reviewed at the joint TSMAD-DIPWG meeting in May 2013 for endorsement at HSSC5. TSMAD Chair noted that unless the document was completed by the next HSSC meeting, it would not be possible to complete the new version of S-64, as this was dependent on S-52. HSSC Chair informed the meeting that the title of the relevant item of DIPWG work plan (A.5) needed to be changed. This was endorsed.
In response to a question from HSSC Chair on the difficulties encountered in developing the S-100 portrayal model, DIPWG Chair indicated that progress was largely dependent on industry partners and that travel funding could be an issue. IHB offered to consider possible assistance on request from DIPWG Chair.
CIRM encouraged on-going efforts to take advantage of other meetings such as the Stakeholders' Forum and the ECDIS software anomalies workshop and mentioned the need to clarify the objectives in order to reach the appropriate experts.

Outcome:
- The Committee noted the report (HSSC4-05.3A), endorsed the continued activity of DIPWG and approved its work plan, including the change to title for work item A.5.

- **Action HSSC4/19: DIPWG Chair** to amend the title of work item A.5 in the DIPWG work plan, to read: "Develop new Presentation Library Version 3.5 and coordinate with TSMAD for appropriate changes to S-64".

- **Action HSSC4/20: DIPWG Chair** to send a note to OEMs to clarify the objectives of a side meeting on portrayal modelling issues, to be held in conjunction with the ECDIS anomalies workshop (London, UK, 15-16 October 2012).

- **Action HSSC4/21: UK** (Mr Jonathan PRITCHARD) to provide the DIPWG Chair with all the feedback and information gained from ECDIS anomalies analysis, concerning portrayal and Presentation Library issues. If there is an issue that needs immediate action, **DIPWG** to issue a portrayal bulletin.

- **Action HSSC4/22: DIPWG Chair** to liaise with the IHB to agree how best to expedite the work of DIPWG (especially the S-100 portrayal model work) by facilitating the attendance of key persons to focus group meetings.

5.3.2 Contract support on portrayal-related matters

Doc: HSSC4-05.3B rev1 *Proposal for an Expenditure from the IHO Presentation Library Fund for Contract Support to Correct Hydrographic Portrayal Register Data (DIPWG Chair)*

DIPWG Chair reported that contract support was needed for update S-52 digital files for PL ed. 3.5 (about € 9 500), corrections to the Hydrographic Portrayal Register (€ 13 400), creation of an S-100 Portrayal Catalogue Builder (€45 to € 65 000).
Canada supported the proposal and noted that the work plan should identify the resources (funds and human resources) required to progress the different tasks. It would not be possible to use funds if provision was not made for this in the IHO budget. IHB reported that the new DC was working on making provision for funding contract support from the IHO budget in accordance with the IHO Work Programme.
HSSC Chair enquired if other alternatives (in-kind HO contribution) had been considered. DIPWG Chair was of the opinion that the work would not be a priority. TSMAD Chair noted that the difficulty would be to find a competent person.
USA noted that as time was a very important factor it would be more efficient to contract out the activity than to let one HO bear the cost of developing an internal expertise. They recommended endorsing the proposal of DIPWG.

Outcome: -
- The Committee noted the paper (HSSC4-05.3B).
- The Committee endorsed the use of the Presentation Library fund and/or other available resources to support the following tasks:
  a. correction of errors in the hydrographic portrayal register;
  b. updating the digital presentation files; and
  c. creation of an S-100 portrayal catalogue builder.

- **Action HSSC4/23: DIPWG** to draft a statement of requirements for each of the following tasks and submit them to the IHB for tendering.

a. correction of errors in the hydrographic portrayal register;
b. updating the digital presentation files; and
c. creation of an S-100 portrayal catalogue builder.

- **Action HSSC4/24:IHB** to prepare and award a contract for the following tasks, in using the PL fund and/or other available resources:

a. correction of errors in the Hydrographic portrayal register;
b. updating the digital presentation files;
c. creation of an S-100 portrayal catalogue builder.

5.3.3 Planning for the development of S-100 and S-101

Doc: HSSC4-05.1I Comments on the TSMAD and DIPWG Working Group reports (Finland)

Finland reported that after studying papers HSSC4-05.1A and HSSC4-05.3A, there was some confusion regarding the planning of S-101. It was planned to be completed by Jan 2013, but there were some concerns that this might not be achieved. Furthermore the papers did not specify when the portrayal specification (on which S-101 was dependent), would be completed. Finland had received queries on the development of machine readable chart alarms and indicators and required a clarification on whether this was a work item for TSMAD or DIPWG.
Noting that the development of S-100 and related standards were an important strategic issue for the IHO, Finland would like to see a "roadmap" document illustrating the development of S-101 and associated portrayal work, with realistic time schedules based on challenges to be met and risk analysis.
UK informed the Committee on the development of a "call up" tables for alarms and indicators. A sub-group had been formed to submit a proposal to TSMAD and DIPWG for inclusion into the work on the Presentation Library.
HSSC Chair invited TSMAD and DIPWG Chairs to set up an "S-100 master plan" as a stand-alone document that could be shown to other stakeholders.

Outcome:
- The Committee noted the paper (HSSC4-05.1I) and confirmed the objective to finalize the work on portrayal specification in time for allowing the submission of draft S-101 to HSSC5.

- **Action HSSC4/25: TSMAD and DIPWG Chairs** to produce, by the end of January 2013, a "master plan" document for the development of S-100 and S-101, in accordance with the life cycle diagram included in resolution 2/2007, incorporating sequencing with DQWG and DPSWG, and scheming the implications for stakeholders.

5.4 Standardization of Nautical Publications (SNPWG)

Doc: HSSC4-05.4A Report and Recommendations of SNPWG (SNPWG Chair)

The acting SNPWG Chair presented the report and recommendations of his WG.
He noted that the next steps were to define the process for the creation of digital nautical publication products, extend the nautical publications data model and look at producing a product specification for radio signal information.
HSSC Chair questioned if HSSC still supported the need for Electronic Nautical Publications (NP). From the comments offered by Australia, Canada, Denmark, Sweden, UK, USA, and CIRM the continuation of the working group was generally supported, with a requirement to focus on meeting SOLAS carriage requirements. The need to serve the mariners independently of the ECDIS, to synchronize NP developments with the implementation of S-100 and to avoid having too many products that were not compatible was acknowledged. An incremental approach was

recommended, noting that it took many years from the beginning of S-57 development to the production of the first ENC and that not all HOs will be in a position to produce NP3 publications.

The Committee decided not to assign S-103 to the MPA product specification and invited SNWPG to continue using the generic identifier S-10X. IHB noted that the range 101-199 might be insufficient for IHO PS if the intention was to develop a stand-alone product specification for each NP theme.

The Committee reviewed and agreed revised key elements of the SNPWG work plan in order to reflect the outcome of the preceding discussion.

Outcome:
- The Committee noted the report (HSSC4-05.4A), endorsed the continued activity of SNPWG and approved its work plan.
- The Committee confirmed the objective to provide nautical publications in electronic format.
- The Committee acknowledged that the current SNPWG Chair, Mr David ACLAND (UK), has stepped down and that, in accordance with clause 5.e of SNPWG terms of reference, the Vice Chair, Mr Jens SCHRÖDER-FÜRSTENBERG, shall act as Chair until the next meeting of SNPWG, when an election of the Chair and Vice Chair will take place.
- The Committee decided not to assign a product specification number to the draft product specification for Marine Protected Areas (MPA), for the time being.

- **Action HSSC4/26: SNPWG** to prepare a master plan for developing electronic nautical publications, with priority assigned to defining data models and product contents in order to coordinate the scheduling of deliverables with the implementation of S-101.

- **Action HSSC4/27: SNPWG** to provide an estimate of the number of potential product specifications related with nautical publications.

5.5 Chart Specifications and Paper Charts (CSPCWG)

Doc: HSSC4-05.5A Report and Recommendations of CSPCWG (CSPCWG Chair)

CSPCWG Chair presented the report and the recommendations of his WG.
He reported that CSPCWG continued to get good support from MS.
Canada speaking on behalf of the WEND WG offered the assistance of the WG to progress the production of guidelines for ENC schemes (item B.3 of CSPCWG work plan). CSPCWG Chair questioned whether this work item should remain on the CSPCWG list of tasks. TSMAD Chair asked what effect the guidelines would have on MS which have already produced schemes for their ENCs. Canada noted that this activity would provide an opportunity to capture best practices for ENC scheming and might also show how gaps in coverage can be resolved. IHB recommended to continue coordinating INT and ENC schemes guidelines as integral part of the "chart standardization" dimension of CSPCWG and referred to the IHO annual report which showed that a number of ENC schemes are yet to be adopted.
USA thanked CSPCWG for the help that they had provided in producing the US INT1 / ENC symbols publication, which was due to be made available in 2013.
Australia noted that there was no single place in the INT1 document where all guidance on data quality indicators could be found. It was agreed that the grouping of such guidance would be discussed at the next CSPCWG meeting.

Outcome:
- The Committee noted the report (HSSC4-05.5A), endorsed the continued activity of CSPCWG and approved its work plan.

- The Committee approved the revision in the terms of reference, as proposed by CSPCWG Chair.
- The Committee confirmed the development of guidelines for the preparation and maintenance of ENC schemes as a CSPCWG work item, and welcomed the assistance of the WEND Working Group.

- **Action HSSC4/28: IHB** to amend Clause 2 of the CSPCWG terms of reference, to read (changes underlined): "This WG is a subsidiary of the Hydrographic Services and Standards Committee (HSSC). Its work is subject to HSSC approval. In respect of the current cycle of revision of S-4 and in the interests of procedural efficiency, the WG has authority to reach decisions on the maintenance and updating of this document ~~for which it is responsible~~ and to seek direct endorsement of its proposals by IHO Member States via the IHB. This does not include matters that may have a strategic or financial implication for Member States or other interested stakeholders."

5.6 Data Quality (DQWG)

5.6.1 DQWG Report

Doc: HSSC4-05.6A Report and Recommendations of DQWG (DQWG Chair)

DQWG Chair presented the report and the recommendations of DQWG.
He reported that the mapping of S-57 data quality attributes to the proposed S-100 attributes had been completed, and the University of Southern Mississippi (USM) had undertaken a study of potential methods for portraying data quality elements in ECDIS.
HSSC Chair enquired if DQWG was dependent on the work of other WG. CSPCWG Chair reported that their WG had been closely associated with DQWG and noted that they were happy with the outcomes so far. TSMAD Chair also noted that DQWG work was in conformance with TSMAD work too.
Canada enquired if the work being undertaken would be focused on bathymetry only. DQWG Chair responded that the group priority would be bathymetry (CATZOC) but other types of data would be considered as well. Sweden noted that quality should be included in the S-101 "master plan" to be developed (action HSSC4/25 refers).

Outcome:
- The Committee noted the report (HSSC4-05.6A), endorsed the continued activity of DQWG and approved its work plan.

5.6.2 Mobile areas and areas affected by extreme events

Doc: HSSC4-05.6B Clarifications for "Use of Object Catalogue" (S-57 App. B.1, Annex A), section 2.2.3 (DQWG Chair)

DQWG Chair proposed that TSMAD be tasked to modify the "Use of the Object Catalogue for ENC" (UOC) to take into account the two issues associated with mobile seabed and extreme events such as tsunami.
Australia reported that it might be unwise to implement CATZOC C in mobile seafloor areas as it could restrict shipping unduly. Brazil noted that CATZOC C was used in areas where there was mobile bottom in the Amazon. Netherlands also expressed reservations about this proposal. Australia further noted that CATZOC was not meant to be a measure of survey quality but was intended to provide a quality indicator for the mariner: general sea bed variability would be just one parameter to consider.
USA concurred that the purpose of CATZOC was to provide an indication that the mariner should be able to understand – where he could go, and where he should not go. In view of the lack of consensus about the proposal, USA recommended that it should not be accepted and the DQWG should be requested to reconsider the proposal.

TSMAD Chair recommended that mobile areas should be referred back to DQWG – but that the proposal concerning extreme events should be forwarded to TSMAD for applying the changes to the UOC.
Taking the comments into account, DQWG Chair recommended that the publication "Use of the Object Catalogue for ENC" (UOC) be modified to include the proposals in section 8 of HSSC4-05.6B.

Outcome:
- The committee noted the paper (HSSC4-05.6B).
- The Committee did not endorse the proposal in section 6 of HSSC4-05.6B to artificially degrade to 4 (Zone of Confidence C) the CATZOC value for mobile seafloors.
- The Committee endorsed the proposal in section 8 of HSSC4-05.6B to artificially degrade to 5 (Zone of Confidence D) the CATZOC value for areas affected by extreme events.

- **Action HSSC4/29: TSMAD** to apply to S-57 Appendix B.1 Annex A (Use of the Object Catalogue for ENC), the changes identified in section 8 of HSSC4-05.6B and dealing with reflecting the impact of extreme events through CATZOC.

5.6.3 Training on the quality aspects of the practical use of ENCs

Doc: HSSC4-05.6C *IMO Model ECDIS Course - Development of additional information for Maritime Colleges (DQWG Chair)*

The DQWG recommended that the IHO set up a new Working Group to develop a document which would provide greater detail, not only on data quality aspects, but on all the IHO relevant parts of the IMO model ECDIS course. Such a document should be distributed as an IHO Publication and ultimately be made available via the IHO web site. The new Working Group would be invited to coordinate with DQWG.
TSMAD Chair noted that the issue was not limited to training: communication channels with the users were not at the speed nor depth required. Australia supported face to face training sessions on mariners' issues noting that simply producing informative literature was too limiting because it was not possible to adapt to changes quickly enough.
The Committee did not support the setting up of a new Working Group. It did however request DQWG to review the adequacy of existing HOs' publications and invited IHB to investigate how to interface with the IMO Sub-Committee on Standards of Training and Watchkeeping (STW) for improving training.

Outcome:
- The Committee noted the paper (HSSC4-05.6C).
- The Committee did not support the setting up of a working group, as proposed by DQWG.

- **Action HSSC4/30: DQWG** to review, in liaison with training institutions, the adequacy of existing HOs' publications on the quality aspects of the practical use of ENCs.

- **Action HSSC4/31: IHB** to investigate how to interface with STW for improving training on the quality aspects of the practical use of ENCs.

5.7 Marine Spatial Data Infrastructure (MSDIWG)

5.7.1 MSDIWG Report

Doc: HSSC4-05.7A *Report and Recommendations of MSDIWG (MSDIWG Chair)*

MSDIWG Chair thanked his predecessor, Maureen Kenny - USA, for the excellent work that she had done. He presented the report and recommendations of the WG.

He presented the draft work programme which had been distributed to the WG members. It had been developed within a five-year time horizon, for review and adjustment at the next WG meeting. HSSC Chair recommended addressing issues from an IHO perspective. Saudi Arabia referred to MSDI activities within RHCs from which best practices could be derived.

Outcome:
- The Committee noted the report (HSSC4-05.7A), endorsed the continued activity of MSDIWG and approved its work plan subject to adjustment at the next WG meeting.

5.7.2 UN Committee of Experts on Global Geospatial Information Management

Doc: HSSC4-INF2 IHO Participation in the UN Committee of Experts on Global Geospatial Information Management (IHB)

IHB presented the report noting that the participation of the IHB had ensured that the maritime dimension had been included in the initiative. In response to a query of the MSDIWG Chair, IHB indicated that no specific input from the WG was required at this stage.

Outcome:
- The Committee noted the paper (HSSC4-INF2).

5.7.3 Outcome of the 4th IRCC Meeting

Doc: HSSC4-INF4 Outcome of the 4th IRCC Meeting (IRCC Chair)

The new IRCC Chair reported on the 4th IRCC meeting which had been held in Singapore and offered general observations equally relevant to HSSC about the need to improve inter-sessional participation and to celebrate achievements. She presented the views of IRCC on its contribution to MSDI development, notably through RHCs and capacity building initiatives, and the recommendation to HSSC to develop an "introduction to MSDI" training course
MSDIWG Chair noted that many of the MSDI related topics had been taken into consideration in the WG draft work plan and agreed to consider the IRCC recommendation at the next WG meeting. He questioned whether MS would be interested in MSDI training. Saudi Arabia noted that it might be worthwhile to conduct training through the RHCs.

Outcome:
- The Committee noted the paper (HSSC4-INF4).

- **Action HSSC4/32: MSDIWG** to consider, within its work plan, the development of content for an "introduction to MSDI" training course.

5.8 Tidal and Water Level (TWLWG)

Docs: HSSC4-05.8A Report and Recommendations of TWLWG (TWLWG Chair)
HSSC4-05.8B Comments on the TWLWG Report (Finland)

TWLWG Chair presented the report and recommendation of the WG via telephone. He informed the committee that the review of Resolution 3/1919 was deferred following comments from Brazil and Finland.
Netherlands questioned the specific requirements for long term tidal records in the context of sea level changes. TWLWG Chair indicated that the WG had looked at improving the geographical spread of a global inventory of tidal information metadata rather than at observation specifications. Finland welcomed the report and further discussion on Resolution 3/1919 and confirmed its offer to host

the next WG meeting. Canada expressed concerns about potential duplication with IOC and IOC-WMO/GLOSS activities and recommended the participation of GLOSS in the WG.
Australia and Saudi Arabia noted the lack of clear priorities and outputs in the WG work plan. TSMAD Chair referred to expectations about real time bathymetry and noted the need to address the associated standardization. CIRM confirmed that the development of standard for transmitting real time tidal information was of great importance for industry.
The Committee agreed to give priority to addressing the dynamic applications of tides in ECDIS.

Outcome:
- The Committee noted the report (HSSC4-05.8A) and the paper (HSSC4-05.8B), endorsed the continued activity of TWLWG and approved its work plan, with priority on tidal matters relevant to the dynamic application of tides in ECDIS.
- The Committee noted that the draft Resolution 3/1919 as amended would be reconsidered by TWLWG before seeking endorsement of HSSC.

- **Action HSSC4/33: TWLWG** to report at HSSC5 on the coordination of its work plan with the relevant activities conducted under the auspices of other organizations, such as IOC.

5.9 Hydrographic Dictionary (HDWG)

Docs: *HSSC4-05.9A* *Report and Recommendations of HDWG (IHB)*
HSSC4-05.9B *S-32: Definitions of Altitude, Elevation and Height (CSPCWG Chair)*

IHB introduced the report of HDWG in the absence of the Chair. Definitions endorsed by HSSC3 were circulated to Member States via IHO CL 11/2012 and adopted as announced in IHO CL 76/2012. Some of the amendments had generated considerable discussion and required further consideration. Two new proposals from UKHO for revised definitions had been included in the draft WP as tasks B11 (seafloor) and B12 (bathymetry).
There was a need for greater Member State involvement in the vital work of HDWG and an urgent need for the appointment of a new Chair. The input of representatives of Member States whose first language was not English was particularly encouraged, in order to ensure that the dictionary best serve the interests of all.
Canada proposed that the Chairs of the HSSC other WGs should be members of HDWG. TSMAD Chair noted that the S-100 registry contained definitions that were referenced to the dictionary. CSPCWG Chair noted that the WG played an important role as an arbitrator of disputes.
HSSC tasked the WG to carry out a review of the approved definitions of Altitude, Elevation and Height taking into account the comments contained in HSSC4-05.9B.

Outcome:
- The Committee noted the report (HSSC4-05.9A) and the paper (HSSC4-05.9B), endorsed the continued activity of HDWG and approved its work plan.

- **Action HSSC4/34: IHB** to invite Member States to provide experts to HDWG and report, in liaison with HDWG, to HSSC5 on the options for continuing the maintenance of the Hydrographic Dictionary (S-32).

- **Action HSSC4/35: HDWG** to review the approved definitions of Altitude, Elevation and Height, in light of HSSC4-05.9B.

6. INTER-ORGANIZATIONAL BODIES

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

Doc: HSSC4-06.1A Status Report on ABLOS activities (IHB)

IHB introduced the report of ABLOS in the absence of the Chair and informed HSSC that Professor Sunil Bisnath - Canada, would assume the position of Chair of ABLOS following the closure of the 7th ABLOS Conference in October 2012.

Outcome:
- The Committee noted the report (HSSC4-06.1A), endorsed the continued activity of ABLOS and approved its work plan, subject to its revision at the next ABLOS business meeting (October 2012).

7. DECISIONS OF OTHER BODIES AFFECTING HSSC

7.1 IMO

Docs: HSSC4-07.1A Report on IMO activities affecting HSSC (IHB)
HSSC4-07.1B Progress Report on Results from the IHO ECDIS Data Presentation and Performance Check (IHB)

IHB introduced papers HSSC4-07.1A and 07.1B summarizing the recent discussions, decisions and activities under the aegis of IMO that were relevant to the work of HSSC. Progress on addressing ECDIS software anomalies would be reviewed at a workshop to be held at IMO 15-16 October 2012.

Outcome:
- The Committee noted the reports (HSSC4-07.1A and HSSC4-07.1B) and welcomed the continued monitoring of ECDIS software issues by IHB in liaison with IMO.

7.2 IEC

Doc: HSSC4-INF5 Revision of IEC 61174 – Status (IEC)

IEC TC80 Chair reported that the IEC was originally going to issue an amendment to IEC 61174 Ed. 3 in 2012, emphasizing that the latest version of IHO S-64 should be used in all associated testing. In 2012 however, it had become evident that this was not going to be possible. The plan now was to issue an IEC Publically Available Specification (PAS) which would avoid time consuming and costly disruption to the ECDIS type approval process. In parallel, TC80 was formalizing the start of a major revision of IEC 61174. IEC 61174 Ed. 4 was expected to be published in early 2015. He called for the appointment of IHO experts through national committees and noted that S-101 should be available … now, to be taken into consideration. He indicated that the next revision of IEC 61174 would be planned around 2020 and advised to investigate the impact of the introduction of S-101 on IMO ECDIS Performance Standards noting that any proposed changes would need to be supported by a significant test plan. As regard the revision of S-64, TSMAD Chair noted that it was not possible to provide a firm completion date for S-64 yet, but reported that it should be ready for HSSC5. Best guess would be the end of 2013 if HSSC5 would endorse the draft and MS approve it thereafter.

Outcome:
- The Committee noted the paper (HSSC4-INF5) and welcomed the continued collaboration between IEC and IHO.

7.3 Inland ENC Harmonization Group (IEHG)

Doc: HSSC4-07.3A *Status Report on Inland ENC Development and Standardization (IEHG co-Chair)*

IEHG co-Chair introduced the report on IEHG activities noting that the 10th meeting of IEHG would be hosted in Iquitos, Peru from 14-16 November 2012 by the Hydrographic Service of the Peruvian Navy. Representatives from Europe, North and South America and Asia were expected. Key topics for discussion would include updates on IENC activities in the various regions, review/acceptance of change requests, discussion of IENC quality standards, status of IHO S-100, S-99 and S-101 development, and IEHG participation in S-100 Registry.
It was confirmed that IEHG would continue to follow the development of the Portrayal Register and intended to establish an Inland ENC Portrayal domain once the final specifications were established.

Outcome:
- The Committee noted the report (HSSC4-07.3A) and welcomed the continued collaboration between IEHG and IHO.

7.4 CIRM

Doc: HSSC4-INF6 *CIRM Activities affecting HSSC (CIRM)*

CIRM report stressed that besides internal collaboration CIRM was supporting the work of competent organizations like IHO, IMO, IALA, IEC and others.
CIRM highlighted its involvement in promoting the e-Navigation architecture and its work in different groups to support the standards needed to enable safe and efficient navigation, with a main focus in IEC TC80, as well as its continuous support of the development of ECDIS and as such its participation in activities on ECDIS Anomalies.

Outcome:
- The Committee noted the paper (HSSC4-INF6) and welcomed the continued collaboration between CIRM and IHO.

7.5 IALA

Doc: HSSC4-07.5A *Liaison Note to the IHO - Development of Recommendations and Guidelines on e-Navigation Portrayal (IALA)*

IALA reported that the IALA e-NAV Committee was working to develop Recommendations and Guidelines related to the "harmonized" presentation/display of e-Navigation information with a focus of IALA on the shore side.
HSSC Chair noted that – although all organizations had been following the e-navigation movement – a common and full understanding of what the full scope of e-navigation was did not seem to emerge. He was convinced that the e-navigation work would start affecting the work of HSSC at some time in the near future.
Although the cooperation was working well between IALA and IHO, it was agreed that the coordination of the activities should be improved to avoid concurrent events.

Outcome:
- The Committee noted the paper (HSSC4-07.5A) and welcomed the continued collaboration between IALA and IHO.

8. LIAISON WITH EXTERNAL STAKEHOLDERS

8.1 IHO Stakeholders' Forum – Outcomes and matters arising

IHB gave a presentation on the outcomes of the IHO Stakeholders' Forum that had taken place on 26 and 27 Sept. It was noted that the number of non-IHO participants had decreased from 90 at the 4th Stakeholders' Forum to 50 this time. In comparison, there were about 330 points of contact in the IHO List of External Stakeholders. The general feeling was positive while regretting that the number of presentations had not left much time for discussion. The outcomes of the presentations were reflected in the responses to the poll on "What the IHO should be doing but is not". IHB commented the summary attached as Annex G. It was noted that some of the responses showed a misconception of what the IHO was about.
It appeared from the ensuing discussion that the continuation of the Forum was supported subject to reconsidering the structure of the event. Views were expressed in favour of a two-three days event with a format based on round tables and breakaway groups addressing pre-defined items. Others identified the need to improve the attractiveness of the announcement and to connect with a broader spectrum of stakeholders. It was also suggested to seek ways to improve the interaction with active mariners.

Outcome:
- The Committee acknowledged the input from the poll on "What the IHO should be doing and is not", as summarised in Annex G, for further consideration by the IHO.

- **Action HSSC4/36: IHB** to report to the Forum participants its views on the issues raised in the poll.

- **Action HSSC4/37: IHB** to reconsider the format for future Stakeholders' Forum events, to improve interest and interaction with stakeholders.

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

Doc: HSSC4-09A Draft HSSC Work Plan (IHB)

IHB introduced the draft HSSC Work Plan and proposed to produce a draft revision 1 taking into account the outcomes of the meeting, circulate it to WG Chairs for comments, and, after revision, circulate the consolidated draft to HSSC members with the minutes of the meeting.
TSMAD Chair suggested that the Committee should start looking at the implications of S-100 from the regulatory perspective (impact on IMO Performance Standards). Canada suggested that a paper analysing the implication of e-navigation for IHO should be presented at the next meeting. The Committee decided to add an item on e-navigation in the draft agenda of HSSC5 and invited contributions.

Outcome:
- The Committee noted the draft HSSC work plan (HSSC4-09A), to be revised by the IHB in liaison with the working group chairs, for distribution with the meeting minutes.
- The Committee agreed to add an item on e-navigation in the agenda for HSSC5 and invited contributions on the implication of e-navigation for individual HOs and for the IHO.
- The Committee reviewed and agreed the list of actions arising from HSSC5, as in Annex E.

- **Action HSSC4/38: IHB**, in liaison with the working group chairs, to revise the draft HSSC work plan (HSSC4-09A) for distribution with the meeting minutes.

- **Action HSSC4/39: IHB**, in liaison with HSSC chair, to develop an outline of the regulatory process associated with the implementation of S-100 based products and services.

- **Action HSSC4/40: Secretary** to add an item on e-navigation in the draft agenda of HSSC5.

10. REVIEW OF OTHER INFORMATION PAPERS

Doc: HSSC4-INF1 Status Report on IHO Publications on Standards and Specifications (IHB)

IHB reviewed the status of IHO Publications on Standards and Specifications.
Finland noted that S-65 and S-66 were not standards and recommended that they should become guidelines. IHB explained that according to IHO Resolution 3/1957 as amended, the letter S is used for "Publications that refer to standards and specifications, including guidelines". Following IHO CL 60/2012, MS had agreed that S-65 and S-66 were included in the list of IHO technical standards subject to Resolution 2/2007 as amended.

Outcome:
- The Committee noted the paper (HSSC4-INF1).

11. ELECTION OF CHAIR AND VICE CHAIR

Docs: HSSC4-11A HSSC Elections (IHB)
HSSC4-11B List of Candidates (IHB)

IHB reminded the Committee that there was a single nomination for Chair and thanked Germany for making Mathias JONAS available for the position. The Committee was invited to vote by a show of hands. The nomination was approved by acclamation.
IHB asked for any additional nomination for Vice-Chair. There was none. Noting that there was only one nomination, Mike PRINCE, for which the Committee was grateful to Australia, IHB invited the Committee to vote by a show of hands. The nomination was approved by acclamation.

Outcome*:*
- The current chair, Dr Mathias JONAS (Germany), was elected HSSC Chair by acclamation.
- Mr Mike PRINCE (Australia) was elected HSSC Vice-Chair by acclamation.

12. DATE & LOCATION OF 2013 MEETING, AND DATE OF 2014 MEETING

HSSC Chair proposed to plan HSSC5 and HSSC6 in early November 2013 and 2014 respectively. The dates 4 to 8 November 2013 were agreed for HSSC5. Noting that no venue had been proposed for HSSC5, it was agreed that IHB Monaco would be the reserve venue unless an alternative was proposed by a Member State. The Committee noted offers from Chile and Turkey for hosting HSSC6.

Outcome:
- The Committee agreed to hold HSSC5 from 4 to 8 November 2013 – venue to be Monaco unless an alternative venue is proposed by a Member State before 1st February 2013.

- **Action HSSC4/41: Member States** to consider hosting HSSC5 and inform the IHB of possible venues before 1st February 2013.

Post-meeting note: following HSSC4, China offered to host HSSC5 in Shanghai, from 4-8 November 2013, which was gratefully accepted.

13. CLOSURE OF THE MEETING

The Chair warmly thanked the UKHO for the excellent arrangements for the meeting. He also thanked all participants and observers for their valuable contribution to the meeting. He welcomed the very constructive atmosphere of the meeting and wished the participants a safe return journey. The meeting closed at 17:00 on 28 September 2012.

GLOSSARY OF ACRONYMS, TERMS and ABBREVIATIONS

ABLOS	Advisory Board on Law of the Sea
AIS	Automatic Identification System
AtoN	Aid to Navigation
CATZOC	Category of Zones of Confidence attribute (IHO/S-57)
CIRM	Comité International Radio-Maritime
CL	Circular Letter
CSPCWG	Chart Standardization and Paper Chart Working Group
DIPWG	Digital Information Portrayal Working Group
DPSWG	Data Protection Scheme Working Group
DQWG	Data Quality Working Group
ECDIS	Electronic Chart Display and Information System
EIHC	Extraordinary International Hydrographic Conference
e-NAV	e-Navigation
ENC	Electronic Navigational Chart
ETMSS	Expert Team on Maritime Safety Services
GI	Geospatial Information
GLOSS	Global Sea Level Observing System
HDWG	Hydrographic Dictionary Working Group
HO	Hydrographic Office
HSSC	Hydrographic Services and Standards Committee
IAG	International Association of Geodesy
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IC-ENC	International Centre for ENCs
IEC	International Electrotechnical Commission
IEHG	Inland ENC Harmonization Group
IHB	International Hydrographic Bureau
IHC	International Hydrographic Conference
IHO	International Hydrographic Organization
IMO	International Maritime Organization
INT 1	Symbols, Abbreviations and Terms used on Charts
IOC	Intergovernmental Oceanographic Commission
IRCC	Inter-Regional Coordination Committee
JCOMM	Joint Technical Commission for Oceanography and Marine Meteorology
MPA	Marine Protected Area
MS	Member State
MSDI	Marine Spatial Data Infrastructure
MSDIWG	Marine Spatial Data Infrastructure Working Group
NEWOBJ	New Object (IHO/S-57 feature)
NGIO	Non-Governmental International Organization
NOAA	National Oceanic and Atmospheric Administration
NP	Nautical Publication
NP1	Paper Nautical Publication
NP2	Digital Nautical Publication based upon existing paper publication
NP3	Digital Nautical Publication fully compatible with ECDIS
PAS	Publically Available Specification (IEC)

OEM	Original Equipment Manufacturer
PresLib / PL	IHO Presentation Library for ECDIS
PS	Product Specification
RENC	Regional ENC Coordinating Centre
RHSG	RENC Harmonization Sub-Group
RHC	Regional Hydrographic Commission
S-4	Chart Specifications of the IHO and Regulations for International (INT) Charts
S-32	Hydrographic Dictionary
S-52	Specifications for Chart Content and Display Aspects of ECDIS
S-57	IHO Transfer Standard for Digital Hydrographic Data
S-58	Recommended ENC Validation Checks
S-63	IHO Data Protection Scheme
S-64	IHO Test Data Sets for ECDIS
S-65	ENC Production Guidance
S-66	Facts about Electronic Charts and Carriage Requirements
S-99	IHO Geospatial Information Registry - Structure, Organization and Management
S-100	Universal Hydrographic Data Model
S-101	Future ENC Product Specification, based on S-100
S-102	Bathymetric Surface Product Specification
SHOM	Service Hydrographique et Océanographique de la Marine (France)
SNPWG	Standardization of Nautical Publications Working Group
STW	Sub-Committee on Standards of Training and Watchkeeping (IMO)
TC80	IEC Technical Committee on Maritime navigation and radiocommunication equipment and systems
T&P	Temporary and Preliminary
ToR	Terms of Reference
TSMAD	Transfer Standard Maintenance and Applications Development Working Group
TWLWG	Tidal and Water Level Working Group
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
UN	United Nations
UOC	Use of the Object Catalogue for ENC (S-57 Appendix B1, Annex A)
USA	United States of America
WEND	Worldwide ENC Database
WG	Working Group
WMO	World Meteorological Organization

LIST OF DOCUMENTS

Document No	Document Title
HSSC4-01A rev4	List of Documents, by IHB
HSSC4-01B rev9	List of Participants, by IHB
HSSC4-01C	HSSC – List of Contacts, by IHB
HSSC4-01D	Terms of Reference for HSSC and related Working Groups, by IHB
HSSC4-02A rev6	Agenda and Timetable, by IHB
HSSC4-03A	Minutes of the 3rd HSSC Meeting, by IHB
HSSC4-03B rev1	List of Actions from HSSC3 and Status, by IHB
HSSC4-03C rev1 HSSC4-03C rev2	Status Report of the Correspondence Group on Definition and Length of Coastline, by France
HSSC4-03D	Comments on the Report to HSSC4 by the Correspondence Group on Definition and Length of Coastline, by UK
HSSC4-04.1A	Programme Performance Indicators for HSSC, by IHB
HSSC4-04.2A	Assessing the adequacy of the IHO Technical Capacity, by IHB
HSSC4-04.3A	Annual National Technology Updates, by USA (NOAA)
HSSC4-05.1A rev1	Report and Recommendations of TSMAD, by TSMAD Chair
	Draft S-57 App. B.1 Ann. A e3.1.0 - Use of the Object Catalogue (UOC)
HSSC4-05.1B	Proposed Revision to S-99, by TSMAD
	Draft S-99 e1.1.0 - Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry
HSSC4-05.1C rev1	Development of an S-100 Based Product Specification for Ocean Forecasts, by USA (NOAA)
HSSC4-05.1D	Proposal to formalize the identifiers for S-100 based product specifications, by UK

Document No	Document Title
HSSC4-05.1E	Proposal to add a Magnetic Variation information Product Specification to the TSMAD work program, by TSMAD Chair
HSSC4-05.1F	New Work Item Proposal for the establishment of a Surface Current Product Specification (S-10y) – to be used as a stand-alone product or fully integrated within other S-100 based products, by Canada
HSSC4-05.1G	S-101 Test Plan Funding, by TSMAD
HSSC4-05.1H rev1	AIS aids to navigation and ENC, by TSMAD Chair
HSSC4-05.1I	Comments on the TSMAD and DIPWG Working Group reports, by Finland
HSSC4-05.1J	Proposed Revision to S-57, by UK
HSSC4-05.1K	Magnetic Variation Product Specification - Comments on HSSC4-05.1E, by USA (NOAA)
HSSC4-05.2A	Report and Recommendations of DPSWG, by DPSWG Chair
HSSC4-05.3A	Report and Recommendations of DIPWG, by DIPWG Chair
HSSC4-05.3B rev1	Proposal for an Expenditure from the IHO Presentation Library Fund for Contract Support to Correct Hydrographic Portrayal Register Data, by DIPWG Chair
HSSC4-05.4A	Report and Recommendations of SNPWG, by SNPWG Chair
HSSC4-05.5A	Report and Recommendations of CSPCWG, by CSPCWG Chair
HSSC4-05.6A	Report and Recommendations of DQWG, by DQWG Chair
HSSC4-05.6B	Clarifications for “Use of Object Catalogue” (S-57 App. B.1, Annex A), section 2.2.3, by DQWG
HSSC4-05.6C	IMO Model ECDIS Course - Development of additional information for Maritime Colleges, by DQWG
HSSC4-05.7A	Report and Recommendations of MSDIWG, by MSDIWG Chair
HSSC4-05.8A	Report and Recommendations of TWLWG, by TWLWG Chair
HSSC4-05.8B	Comments on the TWLWG Report, by Finland
HSSC4-05.9A	Report and Recommendations of HDWG, by HDWG Chair

Document No	Document Title
HSSC4-05.9B	S-32: Definitions of Altitude, Elevation and Height, by UK (CSPCWG Chair)
HSSC4-06.1A	Status Report on ABLOS activities, by ABLOS Chair
HSSC4-07.1A	Report on IMO activities affecting HSSC, by IHB
HSSC4-07.1B	Progress Report on Results from the IHO ECDIS Data Presentation and Performance Check, by IHB
HSSC4-07.3A	Status Report on Inland ENC Development and Standardization, by IEHG
HSSC4-07.5A	Liaison Note to the IHO - Development of Recommendations and Guidelines on e-Navigation Portrayal, by IALA
HSSC4-09A	Draft HSSC Work Plan, by IHB
HSSC4-11A	HSSC Elections, by IHB
HSSC4-11B	List of Candidates, by IHB
	Information Papers
HSSC4-INF1 rev1	Status Report on IHO Publications under HSSC, by IHB
HSSC4-INF2	IHO Participation in the UN Committee of Experts on Global Geospatial Information Management, by IHB
HSSC4-INF3	National Report of USA (NOAA) on Technical Matters
HSSC4-INF4	Outcome of the 4th IRCC Meeting, by IHB
HSSC4-INF5	Revision of IEC 61174 – Status, by IEC
HSSC4-INF6	CIRM Activities affecting HSSC, by CIRM

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Note: Attendees to the IHO Stakeholders' Forum are listed at the end of the table below.

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AGENDA AND TIMETABLE

Monday 24 Sep	**HSSC CHAIR GROUP**
1400	Chair Group meet at the UKHO
1400 - 1730	HSSC Chair Group Meeting (HSSC WG Chairs, Vice-chairs, WG speakers only)
Tuesday 25 Sep	**HSSC4**
0830	Participants depart from Hotel to the Somerset County Cricket Ground
0900	**1. Opening and Administrative Arrangements** *Docs:* *HSSC4-01A* *List of Documents (IHB)* *HSSC4-01B* *List of Participants (IHB)* *HSSC4-01C* *HSSC – List of Contacts (IHB)* *HSSC4-01D* *Terms of Reference for HSSC and related Working Groups (IHB)*
0915	**2. Approval of Agenda** *Docs:* *HSSC4-02A* *Agenda and Timetable (IHB)*
0930	**3. Matters arising from Minutes of 3rd HSSC Meeting** *Docs:* *HSSC4-03A* *Minutes of HSSC3 (IHB)* *HSSC4-03B* *Status of Actions List from HSSC3 (IHB – M. Huet)* *HSSC4-03C* *Status Report of the Correspondence Group on Definition and Length of Coastline (France)* *HSSC4-03D* *Comments on the Report to HSSC4 by the Correspondence Group on Definition and Length of Coastline (UK)*
1030	**Group Photo followed by Coffee Break**
1100	**4. HSSC Administration** 4.1 Implementation of Programme Performance Indicators *Docs:* *HSSC4-04.1A* *Programme Performance Indicators for HSSC (IHB)* 4.2 Increasing technical capacity at the IHB *Docs:* *HSSC4-04.2A* *Assessing the adequacy of the IHO Technical Capacity (IHB)* 4.3 Annual National Technology Updates *Docs:* *HSSC4-04.3A* *Annual National Technology Updates (USA (NOAA))* *HSSC4-INF3* *National Report on Technical Matters (USA (NOAA))*
	5. Reports by HSSC Working Groups
1145	5.1 Transfer Standard Maintenance and Application Development (TSMAD) *Docs:* *HSSC4-05.1A* *Report and Recommendations of TSMAD (TSMAD Chair)* *HSSC4-05.1B* *Proposed Revision to S-99 (TSMAD Chair)* *HSSC4-05.1C* *Development of an S-100 Based Product Specification for Ocean Forecasts (USA (NOAA))*
1230	**Lunch**

1400	5.1 Transfer Standard Maintenance and Application Development (TSMAD) (continued) *Docs:* *HSSC4-05.1D* *Proposal to formalize the identifiers for S-100 based product specifications (UK)* *HSSC4-05.1E* *Proposal to add a Magnetic Variation information Product Specification to the TSMAD work program (TSMAD)* *HSSC4-05.1F* *New Work Item Proposal for the establishment of a Surface Current Product Specification (S-10y) – to be used as a stand-alone product or fully integrated within other S-100 based products (Canada, S. Hinds)* *HSSC4-05.1G* *S-101 Test Plan Funding (TSMAD Chair)* *HSSC4-05.1H* *AIS aids to navigation and ENC (TSMAD Chair)*
1530	**Coffee Break**
1600	5.1 Transfer Standard Maintenance and Application Development (TSMAD) (continued) *Docs:* *HSSC4-05.1I* *Comments on the TSMAD and DIPWG Working Group reports (Finland)* *HSSC4-05.1J* *Proposed Revision to S-57 (UK, TSMAD Chair)* *HSSC4-05.1K* *Magnetic Variation Product Specification - Comments on HSSC4-05.1E (USA (NOAA))*
1730	END OF DAY ONE
1740	Departure to Hotel
Wednesday 26 Sep	**HSSC4**
0830	Participants depart from hotel to the Somerset County Cricket Ground
	5. Reports by HSSC Working Groups (continued)
0900	5.2 Data Protection Scheme (DPSWG) *Docs:* *HSSC4-05.2A* *Report and Recommendations of DPSWG (DPSWG Chair)*
1030	**Coffee Break**
1100	5.3 Digital Information Portrayal (DIPWG) *Docs:* *HSSC4-05.3A* *Report and Recommendations of DIPWG (DIPWG Chair)* *HSSC4-05.3B* *Proposal for an Expenditure from the IHO Presentation Library Fund for Contract Support to Correct Hydrographic Portrayal Register Data (DIPWG Chair)* *HSSC4-05.1I* *Comments on the TSMAD and DIPWG Working Group reports (Finland)*
1230	**Adjourn HSSC4 - Lunch**
Wednesday 26 Sep	**IHO STAKEHOLDERS FORUM:** **Realising the full potential of ECDIS, ENCs and Digital Hydrographic Data**
	See PROGRAMME
1345	Industry stakeholders arrive at the Somerset County Cricket Ground - Registration
1400	IHO Stakeholders' Forum – Session 1
1530	**Coffee Break**
1600	IHO Stakeholders' Forum – Session 2
1730	END OF DAY TWO
1740	Departure to Hotel

1830	**Informal Evening Event** Dinner offered by the UK at the Somerset Museum, Taunton Castle, Castle Green, Taunton, TA1 4AA. Guests to be there at 1830 promptly and wear their registration badges so Museum staff can identify them as they arrive. The Museum is in the centre of town just behind the Castle Hotel. The programme for the evening to be as follows: 1830 Arrive, aperitif 1845 UKHO or IHB Speaker welcomes guests and reminds them of the topic for discussion '*Is there something that the IHO should be doing but is not!*' 1900 Food served Somerset Ploughman's 1930 Look around museum and quiz 2100 Guests depart
Thursday 27 Sep	**IHO STAKEHOLDERS FORUM (Continues)**
0830	Participants depart from Hotel to the Somerset County Cricket Ground
0900	IHO Stakeholders' Forum – Session 3
1030	**Coffee Break**
1100	IHO Stakeholders' Forum – Session 4
1220	**Closure of the IHO Stakeholders Forum**
1230	**Lunch**
on/completion	Departure of Stakeholders' Forum participants
Thursday 27 Sep	**RESUME HSSC4**
1400	**5. Reports by HSSC Working Groups (continued)**
	5.4 Standardization of Nautical Publications (SNPWG) *Docs:* *HSSC4-05.4A* *Report and Recommendations of SNPWG (SNPWG Chair)*
1445	5.5 Chart Specifications and Paper Charts (CSPCWG) *Docs:* *HSSC4-05.5A* *Report and Recommendations of CSPCWG (CSPCWG Chair)*
1530	**Coffee Break**
1600	break into drafting groups (as required)
1700	END OF DAY THREE
1740	Departure to Hotel
Friday 28 Sep	**HSSC4**
0830	Participants depart from Hotel to the Somerset County Cricket Ground
0900	consider work of drafting group(s) (as required)
	5. Reports by HSSC Working Groups (continued)
0945	5.6 Data Quality (DQWG) *Docs:* *HSSC4-05.6A* *Report and Recommendations of DQWG (DQWG Chair)* *HSSC4-05.6B* *Clarifications for "Use of Object Catalogue" (S-57 App. B.1, Annex A), section 2.2.3 (DQWG Chair)* *HSSC4-05.6C* *IMO Model ECDIS Course - Development of additional information for Maritime Colleges (DQWG Chair)*
1030	**Coffee Break**
1100	5.7 Marine Spatial Data Infrastructure (MSDIWG) *Docs:* *HSSC4-05.7A* *Report and Recommendations of MSDIWG (MSDIWG Chair)* *HSSC4-INF2* *IHO Participation in the UN Committee of Experts on Global Geospatial Information Management (IHB)* *HSSC4-INF4* *Outcome of the 4th IRCC Meeting (IRCC Chair)*

1130	5.8 Tidal and Water Level (TWLWG) *Docs:* *HSSC4-05.8A* *Report and Recommendations of TWLWG (TWLWG Chair)* *HSSC4-05.8B* *Comments on the TWLWG Report (Finland)*
1200	5.9 Hydrographic Dictionary (HDWG) *Docs:* *HSSC4-05.9A* *Report and Recommendations of HDWG (HDWG Chair)* *HSSC4-05.9B* *S-32: Definitions of Altitude, Elevation and Height (CSPCWG Chair)*
1230	**Lunch**
1400	**6. Inter-Organizational Bodies** 6.1 IHO-IAG Advisory Board on the Law Of the Sea (ABLOS) *Docs:* *HSSC4-06.1A* *Status Report on ABLOS activities (ABLOS Chair)*
1410	**7. Decisions of other bodies affecting HSSC** 7.1 IMO *Docs:* *HSSC4-07.1A* *Report on IMO activities affecting HSSC (IHB)* *HSSC4-07.1B* *Progress Report on Results from the IHO ECDIS Data Presentation and Performance Check (IHB)*
1420	7.2 IEC *Docs:* *HSSC4-INF5* *Revision of IEC 61174 – Status (IEC)*
1430	7.3 Inland ENC Harmonization Group (IEHG) *Docs:* *HSSC4-07.3A* *Status Report on Inland ENC Development and Standardization (IEHG co-Chair)*
1440	7.4 CIRM *Docs:* *HSSC4-INF6* *CIRM Activities affecting HSSC (CIRM)*
1450	7.5 IALA *Docs:* *HSSC4-07.5A* *Liaison Note to the IHO - Development of Recommendations and Guidelines on e-Navigation Portrayal (IALA)*
1500	7.6 IRCC *Docs:* *HSSC4-INF4* *Outcome of the 4th IRCC Meeting (IRCC Chair)*
1505	**8. Liaison with External Stakeholders** 8.1 IHO Stakeholders Forum – Outcomes and matters arising
1520	**9. Review and Endorsement of HSSC Work Plan and List of Actions** *Docs:* *HSSC4-09A* *Draft HSSC Work Plan (IHB)*
1530	**Coffee Break**
1600	**10. Review of other Information Papers** *Docs:* *HSSC4-INF1* *Status Report on IHO Publications on Standards and Specifications (IHB)*
1610	**11. Election of Chair and Vice Chair** *Docs:* *HSSC4-11A* *HSSC Elections (IHB)* *HSSC4-11B* *List of Candidates (IHB)*
1620	**12. Date & Location of 2013 Meeting, and Date of 2014 Meeting** Tentative dates: early November 2013 (HSSC5) and early November 2014 (HSSC6). MS invited to propose venues.
1625	**13. Closure of the Meeting**
1630	END OF MEETING
1640	Departure to Hotel

LIST OF ACTIONS FROM HSSC4

AGENDA ITEM	SUBJECT	ACTION No.	ACTIONS (in bold, action by)	TARGET DATE/EVENT
3	Actions from HSSC3	HSSC4/01	**IHB** to survey Member States again in 2013 regarding their progress in implementing the recently approved Guidelines for Encoding T&P ENC Updates and to communicate the results to MS (former action HSSC3/20).	Report to HSSC5
3	Length of coastline	HSSC4/02	**Correspondence Group on Definition and Length of Coastline** to submit a paper describing a method of calculation of the length of coastline, based on ENCs, to the International Hydrographic Review editor before the end of January 2013.	Publication in IHR May 2013
4.1	Performance Indicators	HSSC4/03	Contributions for the 2012 period to be provided by **HSSC WG Chairs** (Performance Indicators no 2 and 3) and **WEND WG Chair** (Performance Indicator no 5) by 31 January 2013.	31 Jan 2013
4.1	Performance Indicators	HSSC4/04	**IHB** to include the HSSC Working level Performance Indicators (WPIs) in the IHO monitoring report for 2012.	IHO Annual Report 2012
4.1	Performance Indicators	HSSC4/05	**HSSC5** to revisit the usefulness of the Working level Performance Indicators (WPIs) adopted by HSSC4.	HSSC5
4.3	Technology Updates	HSSC4/06	**Secretary** to change the title of HSSC agenda item 10 to "review of new developments and other information papers" and move it to after item 7 of the agenda of future HSSC meetings.	HSSC5 (draft agenda)
5.1.1	TSMAD Work Plan	HSSC4/07	**TSMAD Chair** to include in the TSMAD work plan an additional work item to produce a roadmap (using mind map), taking into account the S-101 impact study and showing key tasks that have to be completed in order to implement S-100, and indicating interaction between the tasks and the implications for stakeholders.	TSMAD25
5.1.1	Use of Object Catalogue	HSSC4/08	**IHB** to circulate the draft edition 3.1.0 of S-57 Appendix B1 Annex A *Use of the Object Catalogue for ENC* (UOC) to Member States for approval.	30 Nov 2012
5.1.2	S-99	HSSC4/09	**IHB** to circulate the draft edition 1.1.0 of S-99 *Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry* to Member States for approval.	30 Nov 2012

AGENDA ITEM	SUBJECT	ACTION No.	ACTIONS (in bold, action by)	TARGET DATE/EVENT
5.1.3	Ocean Forecasts	HSSC4/10	**IHB** to approach the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) to elaborate a joint strategy to develop S-100 based multi-disciplinary products in the context of the implementation of the e-navigation strategy.	Report to HSSC5
5.1.4	Identifiers for S-100 based P.S.	HSSC4/11	**TSMAD** to develop, with IHB support and in consultation with the relevant stakeholders, a nomenclature for S-100 based product specifications as part of the GI registry management, and revise S-100, taking into account the following guidance: • S-100 to S-199 should be reserved for IHO product specifications; • Non IHO product specifications identifiers should be assigned by the registry manager on a first come first served basis from S-200 onwards.	Report to HSSC5
5.1.5	Magnetic Variations	HSSC4/12	**IHB** to invite Member States to implement Encoding Bulletin 44 dealing with magnetic variations.	30 Nov 2012
5.1.6	Surface Currents	HSSC4/13	**IHB** to invite Member States to consider participating in the working group on surface current product specifications and inform Canada not later than end of 2012.	30 Nov 2012
5.1.7	S-101 Test Plan Funding	HSSC4/14	**TSMAD** to draft a statement of requirements for the development of S-101 test plan and submit it to the IHB for tendering.	TSMAD25
5.1.7	S-101 Test Plan Funding	HSSC4/15	**IHB** to prepare and award a contract for the development of S-101 test plan within the allocated IHO budget.	31 March 2013
5.1.8	AIS AtoN and ENCs	HSSC4/16	**TSMAD** to develop an Encoding Bulletin that describes how to encode virtual AIS Aids to Navigation using the New Object (NEWOBJ) feature.	TSMAD25
5.2	DPSWG	HSSC4/17	**IHB** to invite Member States to nominate experts and candidate office bearers to participate in the work of the DPSWG.	30 Nov 2012
5.2	S-63 Edition 1.0	HSSC4/18	**IHB**, as scheme administrator, to inform all S-63 accredited OEMs and Data Servers that using S-63 Edition 1.0 beyond 1 January 2014, will result in the termination of their protection scheme agreement in accordance with clause 8.1.2 of the agreement.	31 Dec 2012
5.3.1	DIPWG Work Plan	HSSC4/19	**DIPWG Chair** to amend the title of work item A.5 in the DIPWG work plan, to read: "Develop new Presentation Library Version 3.5 and coordinate with TSMAD for appropriate changes to S-64".	DIPWG5

AGENDA ITEM	SUBJECT	ACTION No.	ACTIONS (in bold, action by)	TARGET DATE/EVENT
5.3.1	Portrayal Modelling	HSSC4/20	**DIPWG Chair** to send a note to OEMs to clarify the objectives of a side meeting on portrayal modelling issues, to be held in conjunction with the ECDIS anomalies workshop (London, UK, 15-16 October 2012).	8 Oct 2012
5.3.1	Portrayal & PL Issues	HSSC4/21	**UK** (Mr Jonathan PRITCHARD) to provide the DIPWG Chair with all the feedback and information gained from ECDIS anomalies analysis, concerning portrayal and Presentation Library issues. If there is an issue that needs immediate action, **DIPWG** to issue a portrayal bulletin.	31 Dec 2012
5.3.1	DIPWG Work	HSSC4/22	**DIPWG Chair** to liaise with the IHB to agree how best to expedite the work of DIPWG (especially the S-100 portrayal model work) by facilitating the attendance of key persons to focus group meetings.	31 Dec 2012
5.3.2	Contracting out Portrayal & PL enhancements	HSSC4/23	**DIPWG** to draft a statement of requirements for each of the following tasks and submit them to the IHB for tendering: a. correction of errors in the hydrographic portrayal register; b. updating the digital presentation files; and c. creation of an S-100 portrayal catalogue builder.	31 Dec 2012
5.3.2	Contracting out Portrayal & PL enhancements	HSSC4/24	**IHB** to prepare and award a contract for the following tasks, in using the PL fund and/or other available resources: a. correction of errors in the hydrographic portrayal register; b. updating the digital presentation files; and c. creation of an S-100 portrayal catalogue builder.	31 March 2013
5.3.3	S-100 & S-101 Master Plan	HSSC4/25	**TSMAD and DIPWG Chairs** to produce, by the end of January 2013, a "master plan" document for the development of S-100 and S-101, in accordance with the life cycle diagram included in resolution 2/2007, incorporating sequencing with DQWG and DPSWG, and scheming the implications for stakeholders.	31 January 2013
5.4	SNPWG Master Plan	HSSC4/26	**SNPWG** to prepare a master plan for developing electronic nautical publications, with priority assigned to defining data models and product contents in order to coordinate the scheduling of deliverables with the implementation of S-101.	Report to HSSC5

AGENDA ITEM	SUBJECT	ACTION No.	ACTIONS (in bold, action by)	TARGET DATE/EVENT
5.4	Nautical Publications related P.S.	HSSC4/27	**SNPWG** to provide an estimate of the number of potential product specifications related with nautical publications.	Report to HSSC5
5.5	CSPCWG ToR	HSSC4/28	**IHB** to amend Clause 2 of the CSPCWG terms of reference, to read (changes underlined): "This WG is a subsidiary of the Hydrographic Services and Standards Committee (HSSC). Its work is subject to HSSC approval. In respect of the current cycle of revision of S-4 and in the interests of procedural efficiency, the WG has authority to reach decisions on the maintenance and updating of this document ~~for which it is responsible~~ and to seek direct endorsement of its proposals by IHO Member States via the IHB. This does not include matters that may have a strategic or financial implication for Member States or other interested stakeholders."	30 Nov 2012
5.6.2	Change to the Use of Object Catalogue	HSSC4/29	**TSMAD** to apply to S-57 Appendix B.1 Annex A (Use of the Object Catalogue for ENC), the changes identified in section 8 of HSSC4-05.6B and dealing with reflecting the impact of extreme events through CATZOC.	TSMAD25
5.6.3	Training on the quality aspects of the practical use of ENCs	HSSC4/30	**DQWG** to review, in liaison with training institutions, the adequacy of existing HOs' publications on the quality aspects of the practical use of ENCs.	Report to HSSC5
5.6.3	Training on the quality aspects of the practical use of ENCs	HSSC4/31	**IHB** to investigate how to interface with STW for improving training on the quality aspects of the practical use of ENCs.	Report to HSSC5
5.7.3	"Introduction to MSDI" Training Course	HSSC4/32	**MSDIWG** to consider, within its work plan, the development of content for an "introduction to MSDI" training course.	MSDIWG4
5.8	TWLWG coordination with other organizations	HSSC4/33	**TWLWG** to report at HSSC5 on the coordination of its work plan with the relevant activities conducted under the auspices of other organizations, such as IOC.	Report to HSSC5
5.9	HDWG Membership	HSSC4/34	**IHB** to invite Member States to provide experts to HDWG and report, in liaison with HDWG, to HSSC5 on the options for continuing the maintenance of the Hydrographic Dictionary (S-32).	30 Nov 2012

AGENDA ITEM	SUBJECT	ACTION No.	ACTIONS (in bold, action by)	TARGET DATE/EVENT
5.9	Definitions of Altitude, Elevation and Height	HSSC4/35	**HDWG** to review the approved definitions of Altitude, Elevation and Height, in light of HSSC4-05.9B.	Report to HSSC5
8.1	Stakeholders' Forum	HSSC4/36	**IHB** to report to the Forum participants its views on the issues raised in the poll.	31 Dec 2012
8.1	Stakeholders' Forums	HSSC4/37	**IHB** to reconsider the format for future Stakeholders' Forum events, to improve interest and interaction with stakeholders.	Report to HSSC5
9	HSSC Work Plan	HSSC4/38	**IHB**, in liaison with the working group chairs, to revise the draft HSSC work plan (HSSC4-09A) for distribution with the meeting minutes.	30 Nov 2012
9	Implementation of S-100 based products and services	HSSC4/39	**IHB**, in liaison with HSSC chair, to develop an outline of the regulatory process associated with the implementation of S-100 based products and services.	Report to HSSC5
9	e-Navigation	HSSC4/40	**Secretary** to add an item on e-navigation in the draft agenda of HSSC5.	HSSC5 (draft agenda)
12	Date & location of 2013 meeting	HSSC4/41	**Member States** to consider hosting HSSC5 and inform the IHB of possible venues before 1st February 2013	31 Jan 2013

SURFACE CURRENT WORKING GROUP – Terms of Reference

1. Objective

To develop standards for the delivery and presentation of navigationally relevant current information.

2. Authority

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

3. Procedures

a. The WG should:

(1) develop S-100 based product specifications, including content and display requirements with technical characteristics, for navigationally relevant currents;

(2) advise on matters concerning the exchange, distribution and use of navigationally relevant current data;

(3) liaise with relevant IHO WG's to ensure technical feasibility and compatibility of relevant developed proposals.

b. The WG should work primarily by correspondence; may meet face to face if required in conjunction with another convenient IHO forum.

c. The WG should liaise with other international bodies as appropriate.

4. Composition and Chairmanship

a. The WG shall comprise of representatives of IHO Member States (MS), Expert Contributors and accredited NGIO Observers, all of whom have expressed their willingness to participate, and a representative of the IHB.

b. Member States, Expert Contributors and accredited NGIO Observers may indicate their willingness to participate at any time. A membership list shall be maintained and confirmed annually.

c. Expert Contributor membership is open to entities and organizations 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 should normally be decided at the first meeting following each ordinary session of the Conference (Conference to be replaced by Assembly when the revised IHO Convention enters force) and, in such case, shall be determined by vote of the Member States present and voting.

e. Decisions should generally be made by consensus. If votes are required on issues or to endorse proposals presented to the WG, only MS may cast a vote. Votes shall be on the basis of one vote per MS represented. In the event that votes are required between meetings or in the absence of meetings, including for elections of the Chair and Vice-Chair, this shall be achieved through a postal ballot of those MS on the current membership list.

f. If a secretary is required it should normally be drawn from a member of the WG.

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 Chair.

i. Expert Contributor membership may be withdrawn in the event that a majority of the MS 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 Chair 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 Chair may restrict attendance by inviting Expert Contributors to act through one or more collective representatives.

Is there something that the IHO should be doing that it is not?

Responses from the HSSC meeting 2012.

ECDIS and ENC related issues

- Legacy systems – take a lead in updating.
- Provide mariners the means to test ECDIS.
- Issue a revised version of S-64 to enable better type approval of ECDIS testing.
- Consistency between test procedures and the type approval process – i.e. if fails one then should fail the other.
- Rigorous testing of ENCs before they get status "official".
- Coordinate consistency, quality and availability of ENCs from all nations not just MS.
- Ensure data access is improved and encourage/mandate through IMO lobbying the full dissemination of existing ENCs.
- Visual display of navigational warnings in ECDIS.
- Encourage MS to implement 1m contours in 5-30 depth areas.
- Fund a gap analysis of required top level system safety requirements for ECDIS against existing implementation of ECDIS; to address both technical and organizational issues.
- Implications of ECDIS gap analysis for e-navigation.
- Work with stakeholders to establish a portal or website for all partner ECDIS information.
- Provide an open source ECDIS with generic user interface to provide backup on non ECDIS approved devices.
- Ensure smooth transition to S-101 world.
- Expedite S101 finalization/testing (including portrayal issues) before May 2013 so that standards are considered at the next HSSC meeting in 2013.
- Provided detailed information on how and when S-100 and S-101 will be ready for service.
- Investigate how non hydrographic data will be integrated into e-navigation and ECDIS.
- Own and manage RENC functions.

General Issues

- Pay more attention to end users and what they need, what they want and less on economic interests.
- Let mariners drive the requirements / listen to and update the end user.
- Establish expert review process to test standards prior to publication.
- More proactive approach to implement standards and specifications.
- Technical ability not so reliant on MS – take the lead rather than be lead.
- Try and further influence IMO and industry stakeholders.
- Speed up – technology and private sector are moving fast and IHO needs to keep up to ensure they are a 21st century organization.
- Take the lead in encouraging MS to make their data (hydrographic and other) more widely available for the benefit of the scientific community.
- Advise MS on how regional directives will affect their work e.g. INSPIRE.
- Ensure or even enforce that all MS step into the 21st digital century (i.e. distribution of SENC worldwide).
- Decent risk assessment that includes accepting that variation will occur and that if mariners can misinterpret something, a significant minority will (don't just fall back upon "*well the mariner needs to be trained better*"); keep it simple for operators!!
- Redesign ourselves at an organisational and procedural level to address the complexity in the era of e-navigation and Spatial Data Infrastructure (enterprise re-engineering).

- Initiate the prototyping of a future Maritime Information and Intelligence Exchange, based on the lessons, processes and methods of the aviation domain, and implementing open standards.
- Concentrate on ensuring that the seas are adequately surveyed as a priority.
- Concentrate on your main reason for establishment – hydrography.
- Work closer with the GIS community.

Miscellaneous

- Permit raster charts.
- Check INT charts to ensure they conform to specifications.
- Host and maintain a state of the art telephone and video conferring system that any MS can access and use free of charge.