



U.S.-Canada Hydrographic Commission Minutes of the 45th Meeting

9-10 June, 2022, Ottawa, Ontario

Participants list and materials: <https://iho.int/en/uschc45-meeting-2022>

On Thursday, June 9, 2022 and Friday June 10, 2022, approximately 34 participants met in Ottawa to convene the 45th of the U.S.-Canada Hydrographic Commission (USCHC).

1. Introduction and Welcome / Opening Remarks

Dr. Geneviève Béchar, as co-Chair of the USCHC and meeting host, opened the meeting and welcomed the participants. In addition to the USCHC membership, the IHO Secretary-General and the delegations from the United Kingdom Hydrographic Office (UKHO) and the Australian Hydrographic Office (AHO) were recognized as observers. The host spoke about how nice it was to be back altogether in person. She reflected on the past couple years, and the difficulties we all faced. She acknowledged the resiliency of the group despite the trying times.

Co-Chair RDML Benjamin Evans echoed Dr. Bechar's sentiments.

Assistant Deputy Minister of Ecosystems and Oceans Science at Fisheries and Oceans Canada, Dr Arran McPherson welcomed the delegates to this meeting on behalf of the Department.

At the suggestion of the host, and with thanks from RDML Evans, the meeting was dedicated to the memory of RDML Richard Thomas Brennan, Jr., the late Director of the Office of Coast Survey NOAA.

IHO Secretary-General Dr. Mathias Jonas made opening remarks. He expressed his appreciation on being invited to this commission as well as his full of admiration regarding how well we have performed during the COVID-19 pandemic. He expressed how virtual cannot fully replace direct conversation. It was acknowledged that North America is the powerhouse of hydrography in many dimensions. The United States and Canada belong to the top 5 most active IHO member states, providing ideas and resources in quantity. It was expressed that this is something that is greatly needed on a global scale as the IHO is comprised of the Member States and is not just the Secretariat.

Having USCHC follow the CHC was considered by all as a perfect combination. Industry, academia, and government administrative bodies were recognized as bringing energy to the field and this energy would carry over to the USCHC45.

2. Approval of the Agenda DOC: [USCHC45 Agenda rev5](#)

The agenda was approved.

3. National Reports

3A. CA National Report DOC: USCHC45-03A ([Presentation/Report](#))

Dr. Geneviève Bécharde along with CHS NCR/Regional directors and members of the Department of National Defence (DND) presented the CA National Report. Some of the items noted were:

- Highlighted activities since USCHC44.
 - CHS hosted an international workshop on the Hydrographer of the Future (HOTF). See Sec. 16.
 - Expanded S-100 trial to Saint John, NB in cooperation with Atlantic Pilotage Authority.
 - Launched new dissemination application and a mobile application to provide live/real time Integrated Water Level System (IWLS) data and enhanced IWLS system by adding air gap data in Ports of Halifax & Vancouver.
 - Workplace wellness – Conducted a cultural audit of CHS to move toward a more inclusive, diverse & psychologically safe workplace.
 - CA continues to support Women in Hydrography activities both nationally and internationally.
- A summary of the 2017-2022 Ocean Protection Plan (OPP) results were presented. Objectives going forward, including the CA Arctic strategy were also described.
- Progress on surveying and production in 2021-2022 were summarized. Of note, 31,398 km² of bathy data collected in the Arctic for 2021-22 by CHS, and an additional 2,250km² coverage was achieved via contract including deployed USVs. During that period, 121 new ENC's and 6 paper charts were released and 837 NOTMARs were issued.
- CHS is working towards implementing an ENC-to-Paper solution and new ENC schema. At the same time, CHS is beginning to withdraw raster products where vector (ENC) coverage exists as well as re-designing its print-on-demand and nautical publications business models.
- CHS continues to test and deploy S-100 products and services. Active coverage of S-102 and S-104 (in the near future) in selected areas is maintained and S-111 coverage is available nationally.
- The services provided by the CHS Remote Sensing Centre of Expertise (RSCoE) were highlighted.
- The status of CHS's long-term transformation initiative and some of the ongoing tasks were presented, as were some of the challenges facing the organization.

3B. US National Report

RDML Benjamin Evans offered the U.S. National Report Summary. DOC: [USCHC45-03B](#)

The US highlighted some of the activities, achievements and upcoming plans. A selection of points made, while not exhaustive, included:

- NOAA will be assuming operation of the Drix (a 25-foot-long customizable USV that carries a multitude of survey sensors including a multibeam echo sounder and side scan sonar within its gondola). It is going through a transition period. Drix engineer's are helping so NOAA can take over full operational responsibilities. It will undergo testing in the Great Lakes this year.
- The data servicing team at NOAA will be contacting the CHS about licensing in the St. Lawrence seaway. A question to think about is how to best incorporate data licensing into our MOU.
- The Office of Coast Survey will be receiving an S101 staff member in July 2022.
- NGA created worldwide grid for its ENC portfolio – about 35% of the work is complete.

- DCBM working on enhancing underway for data access and discovery.
- Progress on MSDI, surveying and production.
- Sponsoring federated MSDI Pilot
- Raster Chart cancellation (Lake Superior 2021-12-30)
- Global Traffic Density Service now available.
- NGA Certified Printed ENC's (CPENCs summer 2022)
- WIH NOAA hosting three women on NOAA ships this summer

Simon Harden of the UKHO expressed that the UK was planning to withdraw from paper over the next five years. He asked about how to engage with the Coast Guard community and how print on demand working is out with USCG.

Active ongoing conversations with USCHC – what does the process to discontinue paper mean in terms of regulations. US regulations have some variation. If OCS says the chart is the ENC, then that class of vessel [in the US] not required to have capability to fix position electronically; this can create conflict.

3C. IHO Report DOC: [USCHC45-03C](#).

Dr. Mathias Jonas, Secretary-General of the IHO presented the IHO Report with some of the key elements highlighted below.

- With the additions of Kenya, Iraq, Angola, and Albania in the past year bring the number of IHO Member States (MS) has grown to 98.
- Items from C-5 of relevance to USCHC were highlighted including the invitation to MS to: Continue the implementation of the IHO Strategic Plan; Provide contributions of on-line training material to the IHO e-Learning Centre, and; Continue to support the IHO's Empowering Women in Hydrography (EWH) project. CA and the US were thanked for their support of the EWH project thus far.
- Support and data contributions to GEBCO and the DCDB was encouraged. The Secretary-General noted that there appears to be substantial amount of Canadian data in existence but not available from the DCDB. The plans to update the NOAA-IHO MOU with respect to the DCDB were noted, as were plans to integrate the DCDB into the IHO portal.
- In preparation for the 3rd IHO Assembly, USCHC was asked to note the dates, consider comments to the IHO work programmes, and to select its candidate for the next Council period 2023-2026.
- The Secretary-General highlighted some of the relevant themes related to each of the IHO Strategic Plan (SP) goals. These included the proposed changes to the ECDIS Performance Standards (to accommodate S-100) and the implicit commitment for the production and provision of products and services by IHO MS, actions to make hydrographic more relevant and accessible, and, related, participation in international ocean initiatives, e.g. UN Decade of Ocean Science, by not only individual MS but also RHCs.
- The launch of the Joint IHO-Singapore Innovation and Technology Laboratory (The Lab) in October 2021 was reported and the initial projects being undertaken and planned were noted.

4. Actions and Decisions (Review) DOC: [USCHC45-04](#)

Mr Jonathan Justi and Mr Doug Brunt provided a summary review of actions pertaining to the USCHC from USCHC44 (2021), IRCC and HSSC. Most of the items were either completed or would be covered during the USCHC45 agenda. Participants were invited to review the list and provide updates as required to the USCHC Secretariat.

5. Preparations and deadlines for USCHC DOC: [USCHC45_05](#)

Preparations and deadlines for USCHC was presented for reference. The document aimed to identify key meetings and events in the upcoming year, to identify missing events worthy of early notice, and to stimulate thinking for USCHC MS input into IHO and other events of interest.

Participants were invited to review the list and propose edits and additions to the USCHC Secretariat.

6. HGPSC Update DOC: [USCHC45_06](#)

The co-Chairs of the USCHC Hydrographic Geospatial Products and Services Committee (HGPSC), Ms Christie Ence (OCS) and Mr Louis Maltais (CHS) presented this update.

It was reported that informal monthly meetings involving agencies of both countries operating in the St. Lawrence/Great Lakes region were taking place. The focus of these meetings have proved effective in dealing with operational items and maintaining open lines of communication.

As both countries move to ENC grids greater cooperation and coordination will be required and some of the elements of the CA-US Transboundary MOUs may have to be revisited. As an example, CHS Pacific region wishes to amend the existing transboundary agreement to use the 48° parallel instead of the 47°59'00" at the Band 2 usage band level. Initial meetings regarding transboundary issues have been held. To facilitate these discussions, NOAA is hosting a web map that allows both countries to see the grids as they are planned and what has been released.

It was also agreed in this discussion that the CA and US will continue to collaborate on the development of the processes and technologies to support paper chart-from-ENC generation.

7. WENDWG update DOC: [USCHC45_07A](#)

The USCHC45 were briefed on WENDWG activities and issues in a presentation provided by the c/WENDWG.

Highlighted in the report were:

-The HD ENC Survey and Outcome in which 37 MS participated. Given that HD ENCs are not an IHO strategic objective, as S-102 should fulfill this niche data demand, it is recommended that the IHO does not develop an HD ENC specification nor create a new performance indicator for HD ENC production.

-The S-101 Scheming group findings. This group was established by WENDWG11 to investigate the possibility of some kind of small-scale global common scheme for S-101. Japan, as chair of the group reported that while the idea was generally supported, no consensus could be reached. The issue may be revisited during WENDWG13.

-WENDWG 11 established an ad hoc team to work on the implementation guidelines for S-1xx (including S-102, 104, 111, 124, 128 and 129). The team focused on "SOLAS" products for the first version of the Guidelines and agreed to submit them in time for IRCC-14.

-WENDWG agreed on the proposed way forward on the development of INTogIS III which will use S-128, as much as is practical, to allow hydrographic offices and other users to visualize S-1xx product coverage in the future, and was pleased to note the US (NGA) update on the World Port Index and looks forward

to a status report on the traffic density layer later this year. KHOA was commended for its continued work and leadership on INTOGIS.

-WENDWG has built a WEND-100 product matrix as a tool to help ensure that UN- Integrated Geospatial Information Framework the principles and the 9 strategic pathways are being considered as new S-1xx products become available. The matrix will also facilitate the tracking of progress towards IHO SP targets and progress with respect to the IHOS-100 Implementation Roadmap.

USCHC agreed to complete the matrix, as per Action WENDWG12/33, and to keep the matrix update status as a standing agenda item.

-MS were reminded that Dual-fuel Governance Document was currently available for comment.

8. USCHC engagement with other international initiatives DOC: [USCHC45-08A](#) *Seabed 2030 data gap analysis -US*, : [USCHC45-08B](#) *Seabed 2030 data gap analysis -CA*, [USCHC45-08C](#) *IHO Women in Hydrography Project report*, [USCHC45-08D](#) *CA and the Ocean Decade*

- As part of the USCHC GEBCO/Seabed 2030 Coordinator report, both the US, Capt Andy Armstrong, and CA, Ms Dana Gallant, briefed the participants on their respective bathymetric data gap analyses (vis-à-vis Seabed 2030 requirement). The US created a web service that provides the public with an up-to-date picture of the situation for all of the US EEZ. CA explained its methodology and provided the results from the Great Lakes as an example.

Both analyses showed that there are significant gaps in the Great Lakes and it was agreed that this area presents an excellent opportunity for collaboration. The co-Chairs agreed to making the Great Lakes a mapping priority. It was acknowledged that there is no funding currently available for new mapping, however, the formulation of a plan, which could include a joint international dashboard/web service, would be valuable to articulating the need and for joint planning.

It was also noted by the Director of OCS that a dashboard, could also be extended to include other data of mutual interest, like S-122 marine protected areas (MPAs).

UKHO added that the UK is planning to close its gap using by a target of 1.5% per year.

- Ms Annie Biron (CA), member of the IHO Empowering Women in Hydrography (EWH) project Directing Committee, provided a summary of the activities under the project thus far and briefed the USCHC on planned activities.

The project held a virtual kick-off meeting in September 2021 with 33 participants from 16 countries. It has sponsored one internship for outreach at the IHO Secretariat and allowed for 3 interns to attend the IBSC45 meeting. On behalf of the IBSC, Capt Andy Armstrong thanked the IHO supporting the interns and expressed that the IBSC thought this was an extremely valuable experience for all parties.

Also under the umbrella of the project, NOAA provided at-sea experiences for 3 selected candidates.

Additional internships and expanded activities are planned for the next year and these will hopefully include more in-person activities.

Finally, the EWH project has been submitted as an 'Action' as part of the UN Decade of Ocean Science for Sustainable Development (UNDoOS).

- Ms Marie-Elaine Boivin and Mr David Moran of the DFO Ecosystems and Oceans Science sector, presented on how Canada is contributing to the UNDoOS.

It was highlighted and examples were given of Canada's unique contributions in the many areas including, Indigenous knowledge, the Arctic, youth and early career ocean professionals, ocean literacy, gender equality, and climate change.

A multi-level, multi-agency governance approach in the form of a Canadian National Decade Committee has been set up to build and effectively coordinate Canadian contributions.

9. USCHC IHO SP Gap Analysis DOC: [USCHC45-09A](#) *USCHC Gap Analysis*, [USCHC45-09B](#) *USCHC Gap Analysis Takeaways*, [USCHC45-09C](#) *USCHC Gap Analysis Takeaways presentation*

The USCHC Gap Analysis findings were presented at USCHC45 and a presentation on the takeaways was made by Mr Jonathon Justi to summarize the findings and facilitate further discussion. In general, USCHC is one of the better-positioned RHCs with respect to the implementation of the IHO SP. However, there still are outstanding questions on the best way to report progress towards the Goals, e.g. by strategic performance indicators (SPIs). In effect, takeaways could be divided into items requiring "discussion and decision", and those items that relate to "administrative and reporting", though, naturally, there is a direct connection between the two.

The Goal 1 SPI 1.3.1 -The ability and capability of MS to meet the requirements and delivery phases of the S-100 Implementation Plan- discussion concluded that 'delivery' is key particularly with the recent MSC decision to recommend 1 January 2026 as the beginning of S-100 implementation. Related, it was noted that not all of the S-100 specifications of the Roadmap are the responsibility of the Hydrographic Offices e.g. S-123 and S-124; the question as to how to handle these was not fully answered. CA mentioned that there was an S-100 National Committee in Canada that should help with deal with this (See Sec. 13 of this report). USCHC MS will begin reporting on SPIs at USCHC46 and reporting will be adding as a standing agenda item. This should provoke more discussion on how to refine the measure(s).

It was also noted in this discussion that the SWPHC had stood up an SPI WG and that is an option for the USCHC. There was a suggestion from the Secretary-General that the IGIF template could be used as a way to evaluate progress on the Roadmap for the S-100 Decade. This will be done and reported at USCHC46.

With respect to Goal 2, there was an inconclusive discussion as to whether or not USCHC needs a strategy and communications plan to accelerate and increase coverage to support increasing MSDI and/or improved appreciation of value of hydrographic data in the region. The key topics in this discussion were, what is the intended outcome, who would be the audience, and what resources would be required.

Similarly, for Goal 3, USCHC considered whether or not a UN Decade of Ocean Science (UNDoOS) engagement strategy is desirable and, if so, what it would look like. It was suggested that USCHC could focus on regions within the region e.g. Gulf of Maine or Great Lakes, and a few specific data sets, for example, S-111 (surface currents) and S-412 to S-414 (wave information). See also the related discussion in Section 8.

10. MSDI Activities and Initiatives DOC: USCHC45_10A ([Report/Presentation](#))

Ms Caitlin Johnson, NGA-USA, gave a presentation summarizing the most recent activities of the IHO MSDIWG. The most recent meeting of the WG (MSDIWG13) in May was arranged as a joint meeting together with the Marine Domain Working Group (MDWG) of the Open Geospatial Consortium (OGC)

and the UN-GGIM Working Group on Marine Geospatial Information (WG-MGI). To facilitate communication and coordination, it was recommended that each RHC establish an MSDI ‘Ambassador’ to act as the single point of contact with the MSDI WG.

Some of the key points included: The value and importance of HOs incorporating FAIR Data Principles (Findable, Accessible, Interoperable, Re-usable), perhaps, as a checklist, in their MSDI works; How the concept of the “digital twin” relates to MSDI; the updating of C-17 into a “meta-standard” and the inclusion of the UN-GGIM IGIF; and, S-100 initiatives from a MSDI perspective.

Details on joint OGC-IHO pilots were also highlighted. In particular, is the IHO-OGC Federated MSDI Pilot that will focus on S-122 – Marine Protected Areas (MPAs). A planned later phase (Phase 3) of this project will be take what is learned and apply it to the Arctic region.

The MSDI WG is also examining what it has to do to help the IHO reach Goal 2 of the strategic plan, i.e. *Increasing the use of hydrographic data for the benefit of society* (specifically Targets 2.1 and 2.3) and the development and tracking of related SPIs.

11. UKHO Report DOC: [USCHC45-11](#)

Mr Simon Hardern provided a report on UKHO activities including surveying, charting, nautical publications and capacity building.

It was noted that as the PCA for approximately 71 states and the UKHO is involved in capacity building through many initiatives, e.g. the UKHO-delivered, Nippon-sponsored IHO-accredited Cartography Cat B Course (now broadened to include ENC training, and referred to as a GEOMAC Cat B course).

In other news, the UK Government will shortly (21 Jun 22) be announcing the establishment of the UK Centre for Seabed Mapping as a new strand of the UKHO’s responsibilities, and the UKHO has signed an MOU with the GEBCO Seabed 2023 Project that will see the UKHO develop data contribution plans for the UK and its PCA partners.

11. Australian Hydrographic (AHO) Report

AHO, represented by Ms Hilary Thompson, provided a status report on several of the organizations main initiatives. Its digital transformation project is advancing and it is working towards S-100 implementation. It is aiming to replace its traditional paper chart product by 2025. This will be an auto-generated paper chart that will meet carriage requirements and allow users to self-serve.

An update on AusSeabed, Australia’s national seabed mapping initiative to provide freely available seabed mapping data and for the coordinating mapping remaining gaps in information, was given.

Australia is the primary charting authority (PCA) for several countries in the regions and is very active in the SWPHC. Notable activities from the SWPHC are its leadership/mentoring program and its work tracking RHC strategic plan indicators.

13. Canada and e-Navigation status DOC: [USCHC45-13](#)

Ms Antonella Ferro, Director, Marine Navigation, and Mr Marc Mess, Director General, Fleet and Maritime Services of the Canadian Coast Guard (CCG) gave this report which provided an overview of CCG’s ongoing efforts to modernize marine navigation service delivery in Canada, with a focus on e-Navigation as a driver to advance digital delivery of marine navigation programs.

It was explained that CCG is undergoing a long-term, wide ranging, effort to modernize marine navigation services in Canada. One important element of this modernization is the effort to align CCG services with international standards such as S-123 (Marine Radio Services), S-124 (Navigational Warnings), S-125 (Marine Navigational Services), S-127 (Vessel Traffic Management), and, S-129 (Under Keel Clearance) were given as examples.

The presenters also highlighted the CCG's research into the potential use of AIS to communicate application specific messages (ASM). CCG's e-navigation roadmap was presented as was Canada's e-Navigation Portal of which CCG is the application custodian.

14. Government of Canada S-100 Committee DOC: [USCHC45_14](#)

Mr Louis Maltais briefed USCHC45 on the Canadian S-100 Committee. This is a Government of Canada (GoC), inter-agency committee established to facilitate communication and coordination related to the implementation of S-100 infrastructures.

The necessity of such a group stems from the situation in Canada where the provision of S-100 products and services will be the responsibility of many different organizations across government and the coordination of the production and maintenance of the CA S-100 portfolio will be required. In an ideal scenario there would be a single GoC 'pipeline' delivering secure and authoritative data.

Challenges, for example, the management of the S-128 catalogue, the cost of operation, business plan(s), and various technical issues, have been identified, for which this group will have to work towards practical solutions.

The primary focus will be on S-100 for route planning and monitoring, however, S-100 is also seen as a potential data enabler for a wide range of non-navigation applications such as MSDI, ocean observations, marine spatial planning, marine protected areas, and etc..

15. USCHC Capacity Building DOC: USCHC45-15 CB Coordinator ([Report/Presentation](#))

CDR Jen Landry, USN, the USCHC Capacity Building Coordinator prepared the CB report and presentation.

The report noted that at the CBSC level, a new CB Strategy was approved and that a CB PT has been stood up to develop the IHO strategic plan indicators (SPIs) that relate to capacity building. CDR Landry also reported on the CB sources and levels for both directed and non-directed funds, and importantly highlighted that the IHO's allocations to its Capacity Building Fund has declined in recent years. This means that fewer CB project applications from MS can be accepted in a given year and the queue of unfunded projects continue to grow. The IHO Secretary-General explained the IHO's approach to the capacity building programme. On a positive note, the easing of COVID-19 related restrictions has permitted the increase in the delivery and planning of CB activities.

E-learning and the activities of the e-learning project team were reported on including the efforts, supported by ROK, to establish an IHO e-learning Centre. MS were reminded that contributions of funds or in-kind (e.g. on-line training materials) are welcome and necessary for the sustainability of the Centre. It was requested that MS update their C-55 data and it was suggested that CA and US ensure they use the same methodology in doing so. MS were also asked to report other, non-CBSC funded CB activities with the CB Coordinator.

16. Report on the Hydrographer of the Future Workshop DOC: [USCHC45-16](#) *Summary presentation.*

Dr Sonja Bhatia provided an overview of the Hydrographer of the Future (HOTF) workshop that was hosted by CHS. Working with an international advisory group consisting of some of the most recognized leaders and innovators in hydrography, CHS prepared a workshop to envisage the skillset that will be required to work in field of hydrography in the future. While this exercise was to help CHS develop future employee profiles for its own needs, it quickly drew the attention of other hydrographic offices, industry, and others in the hydrographic community.

The 4-hour workshop, which was held on 21 April 2022 had 86 participants from 26 countries. There were 7 breakout groups, with a chair and a rapporteur, each assigned a particular question to discuss. The questions were on topics such as, technology as an enabler and/or as an *agent provocateur*, the contents of the hydrographer’s ‘toolbox’ in a digital world, specialization versus generalization, and what talents hydrographers may need to work in, and contribute to, the broader Blue Economy.

Naturally, there was some generous overlap between some of these topics. Technology and its impacts was a common thread as was importance of people and culture to change.

The next steps for the project include incorporating all the input from the participants into a final report. These results will be shared both internally and externally.

17. IHR Report

DOC: [USCHC45-17 IHR Report](#)

The USCHC representative on the International Hydrographic Review (IHR) Editorial Board, Mr Denis Hains, prepared this report.

The IHR has a new editor, Dr Patrick Westfeld from Germany. To promote and modernize the distribution of the content of the IHR the IHO Secretariat has worked out a new IHR website with Geomares ihr.iho.int

It was noted that papers for consideration for publication in the IHR should be forwarded directly to the editor (ihr.review@iho.int, copy to ihr.editor@iho.int.com). The deadlines are: end of January for the May edition; and, end of July for the November edition.

It was reported that there has been a recent positive improvement in the number of USCHC submissions to the IHR. USCHC MS states are encouraged to meet the target number of submissions as indicated below.

	IHR Note	Peer-Reviewed Article
Canada	2 per year	1 per year
United States	2 per year	2 per year
USCHC co-produced	1 per year	1 per year

To manage and plan these efforts, it was recommended that each USCHC MS designate a IHR coordinator and that “IHR Contributions” be made a standing agenda item for USCHC meetings.

18. Informational and other items of interest

Several presentations were made and discussions help on other items of interest. These included:

- Community Hydrography and Crowd-sourced Bathymetry (CSB) DOC: [USCHC45-18A Community Hydrography and CSB](#).
-Mr Mark LeBlanc reported on a Canadian project to support community hydrography and highlighted project objectives, the utility of CSB, the project partners, and the equipment being

deployed. In the subsequent discussion it was noted that other low-cost (about 10 USD/unit on a gross of 50) and open specifications (e.g. on GITHUB) are available.

- Schedule A's report -Nothing to report for 2022.
- There was a discussion on the Future of the Paper Chart with reference to the US paper to HSSC14 [HSSC14-05.4C Guidelines for ENC derived Paper Charts](#) during which the US shared more on the tough process in developing the arguments in the paper.
 - The MS and the observers appreciated the insight and concurred with premise presented. The AHO and CHS are considering taking the PC 2.0 concept further to the point of authorizing the ENC-derived paper chart as meeting carriage requirements.
 - The IHO Secretary-General expressed the opinion that RHCs are within scope to push these ideas forward.
 - On the technical side, cartographic text and control of the display/printing scales to ensure they accurately reflect the compilation scale, were highlighted as aspects that may require more work to make the product acceptable.
- Reflections on CHS moving to 3 usages, DOC: [USCHC45 18C Reflections on moving to 3 usages](#), was reported by Mr Mark LeBlanc.
 - The rationale and objectives of adopting such a grid-based approach was explained, as were some of the advantages and challenges. The most relevant challenge within the USCHC context is the alignment of grids in the trans-boundary areas. It was noted that US and CA are working closely together to address these issues.
 - Some of the resulting schema and the resulting datasets were presented, as were some ECDIS screen shots of the new ENCs.
- Report from IHO MASS PT, DOC: [USCHC45-18D](#) was present by the CA representative on the project team, Ms Annie Biron. The PT has a two-year mandate and has been working by correspondence.
 - It was noted that there are 15 MS participating on the PT and that there has been extensive outreach to both IHO and non-IHO groups.
 - The activities and achievements of the PT thus far were noted including the production of a report which identified MASS navigation requirements.
 - The next phase of the work is to conduct a 'gap analysis' between the current navigation ecosystem and the ecosystem required to support MASS navigation. Once completed this work would be followed by developing recommendations to address those gaps and any other issues.

19. Selection of USCHC representative to the IHO Council 2023-2026

Initial discussions were held regarding the USCHC rep to the IHO Council for the next cycle (2023-2026). No official position could be offered by the US at the time of USCHC45, however, there was a strong possibility that CA will retain that role.

20. Date and location of next meeting

US announce that USCHC46 will take place in conjunction with US Hydro 2023, which is to be held 12-16 March 2023 in Mobile, Alabama. The exact date(s) of the USCHC46 meeting have not been determined.

21. Closure of USCHC45

After final remarks and words of gratitude from both the IHO Secretary-General Dr Mathias Jonas and co-Chair RDML Ben Evans, Dr Bécharde added her own words of thanks and officially closed USCHC45.

ANNEX A

ARHC Actions, Decisions, and Recommendations

From USCHC45 (9-10 June 2022)

[Gold-ish=Action; Green=Decision; Blue=Recommendation]

Updated 2022-12-07

Ref # A=Action D=Decision R=Recommendation	Agenda Item	Actions	For	Deadline	Status
USCHC45-R01	3B	Investigate the utility of the NGA Global Vessel Traffic Density Service products for CA planning prioritization.	CA	n/a	ongoing
USCHC45-A01	3C	Investigate the Canadian data that is reported as in existence in the DCDB, but is still not available.	CA	USCHC47	ongoing
USCHC45-A02	4	Review outstanding Actions, past and current, and report any updates to the USCHC Secretariat.	All	As soon as possible; USCHC46	ongoing
USCHC45-A03	5	Review USCHC planning document and provide any suggestions to the USCHC Secretariat.	All	USCHC46	ongoing
USCHC45-D01	8	Make the Great Lakes a mapping priority as a contribution to Seabed 2030 objectives.	n/a	n/a	n/a
USCHC45-A04	8	Synthesize the Seabed 2030 gap analysis results and methodologies	GEBCO/Seabed 2030	USCHC47	ongoing

		for the Great Lakes and investigate the creation of a web service/dashboard to articulate the situation and to support and communicate joint seabed mapping planning.	Coordinators for US and CA		
USCHC45-A04	7, 9	Complete IGIF matrix and present to USCHC46.	USCHC Secretariat	USCHC46	ongoing
USCHC45-D02	7, 9	Add IHO SPI reporting and IGIF matrix status update as standing USCHC agenda items.	USCHC Secretariat	USCHC46	ongoing
USCHC45-A06	9	MS to report on IHO SPI 1.3.1 (include in above).	All	USCHC46	ongoing
USCHC45-D03	10	MS to update status vis-à-vis FAIR Principles.	All	USCHC46	ongoing
USCHC45-A07	10	Appoint a USCHC MSDI Ambassador and forward contact info to MSDIWG	CA, US	USCHC46	ongoing
USCHC45-R02	10	Continue participation in the IHO-OGC Federated MSDI Project for S-122 and engage in Phase 3 (for the Arctic).	CA, US	n/a	n/a
USCHC45-A08	15	Update C-55 information. It was recommended that US and CA coordinate their submissions with the aim of using the same methodology.	CA, US	Permanent	ongoing
USCHC45-R03	17	Continue to submit articles for peer review, and notes to the IHR at the rate suggested (see Agenda Item 17).	CA US USCHC co-produced	Permanent	n/a
USCHC45-R04	17	Designate an IHR Contribution Coordinator	CA US	USCHC46	ongoing
USCHC45-	17	Add "IHR Contributions" as a standing USCHC meeting agenda	USCHC Secretariat	USCHC46	ongoing

R05		item.			
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ANNEX B

USCHC45 Group Photo

https://iho.int/uploads/user/Inter-Regional%20Coordination/RHC/USCHC/USCHC45/USCHC45_2022_Groupphoto.gif

