

**Paper for Consideration by
9th ARHC Conference
IHO Secretariat Report**

Submitted by:	Secretariat of the IHO
Executive Summary:	This paper reports on activities of the IHO Secretariat that may impact the work of the Arctic Region Hydrographic Commission.

Preparation of the 2nd IHO Assembly

1. The 2nd IHO Assembly is scheduled to take place from 21 to 24 April 2020. The announcement and draft agenda of the A-2 (See ACL 01) and some additional ACLs have already been issued. The IHO Work Programme and budget for the next 3 years (2021-2023) will be prepared for approval of the Assembly.

Outcomes of the 2nd Meeting of the IHO Council and preparation of the 3rd Council

2. The main outcomes of the 2nd meeting of the IHO Council were reported in IHO CL51/2018. The 3rd meeting of the IHO Council is scheduled to take place in Monaco, from 15 to 17 October 2019. The preparation of this meeting has already started (See CCL 01/2019). The most relevant items of the Agenda are the revision of the IHO Strategic Plan, the roadmap for the S-100 Implementation Decade (2020 – 2030) and the transformation of Worldwide Electronic Navigation Database (WEND) towards a future Worldwide Electronic Navigation Services (WENS) architecture.

Call for Member States to declare in which Regional Hydrographic Commission they wish to be counted for the purpose of determining the number of seats allocated in the IHO Council

3. Article 16 of the General Regulations of the IHO requires the Secretary-General to inform all Member States of the number of seats allocated to each RHC and those Member States eligible for selection by each RHC three months before the ordinary session of the Assembly and determine the procedure for the composition of the Council.

4. The start of the process for determining the composition of the Council is for Member States to indicate to the Secretary-General, at least six months before the session of the Assembly, to which RHC they apply for the selection (more details see IHO CL 33/2019) while the Secretary-General is tasked to determine the number of seats allocated to each RHC

5. CL 33/2019 invites Member States which are full members of more than one RHC, to indicate in which RHC they wish to be counted for the purpose of enabling the Secretary-General to determine the number of seats on the Council allocated to each RHC.

6. **Recommendations.** In order to provide as much time as possible for the Secretary-General to determine the allocation of the number of seats and to inform the Chairs of RHCs accordingly, the ARHC Member States concerned are encouraged to express their preferences at their earliest convenience and no later than 20 October 2019.

Status of Membership of the IHO

7. One of the main changes resulting from the entry into force of the revised IHO Convention is that, for States wishing to join the IHO that are already Member States of the United Nations, there is no requirement to seek the approval of existing Member States of the IHO. Since the last ARHC Conference **Guyana, Solomon Islands and Ghana** acceded to the IHO Convention and became the 90th, 91st and 92nd Member States of the IHO respectively. Unfortunately Democratic Republic of the Congo, Serbia and Syria remain suspended from Member States rights.

INT Chart and ENC Production Coordination Region N

8. Norway (Mr Edward Hands), is the designated INT Chart / ENC Coordinator for Region N. Compared to other regions, Region N is covered by a limited INT chart and ENC scheme due to substantial lack of survey in quality and quantity.

9. The status of the INT chart scheme for Region N is contained in Edition 3.0.2 of S-11 Part B dated Sept 2018. According to the S-11 Part B Web Catalogue, as of September 2019, there are 12 charts in the scheme, nine have been produced and published. The Coordinator and the IHO Secretariat have frequent and active exchanges.

10. Early January 2018, the IHO Secretariat informed the Chart Coordinators that the project INTOGIS Phase II was underway, thanks to the outstanding support provided by KHOA (Republic of Korea). INTOGIS Phase II aims to provide a very useful scheming tool, putting together ENC and INT charts, new base maps and also includes some useful tools that enable more efficient and consistent INT chart and ENC scheming (AIS data base, overlap checker, etc.). A workshop for Chart Coordinators is now planned on 4 November 2019 prior to the 5th meeting of NCWG. Most of the Coordinators, incl. Region N, will have an opportunity to experiment INTOGIS II before it is commissioned.

11. At its 14th meeting in Monaco (February 2019), the Data Quality Working Group discussed best practices on how CATZOC values should be populated for S-57 ENCs by Hydrographic Offices. In order to facilitate the harmonization and prepare the future transition to S-101 ENCs, it is recommended that ARHC ENC Producers provide their guidelines to the DQWG. So far inputs from Norway, France and UK have been received.

12. **Recommendations.** ARHC to consider providing regional CATZOC practices to the DQWG.

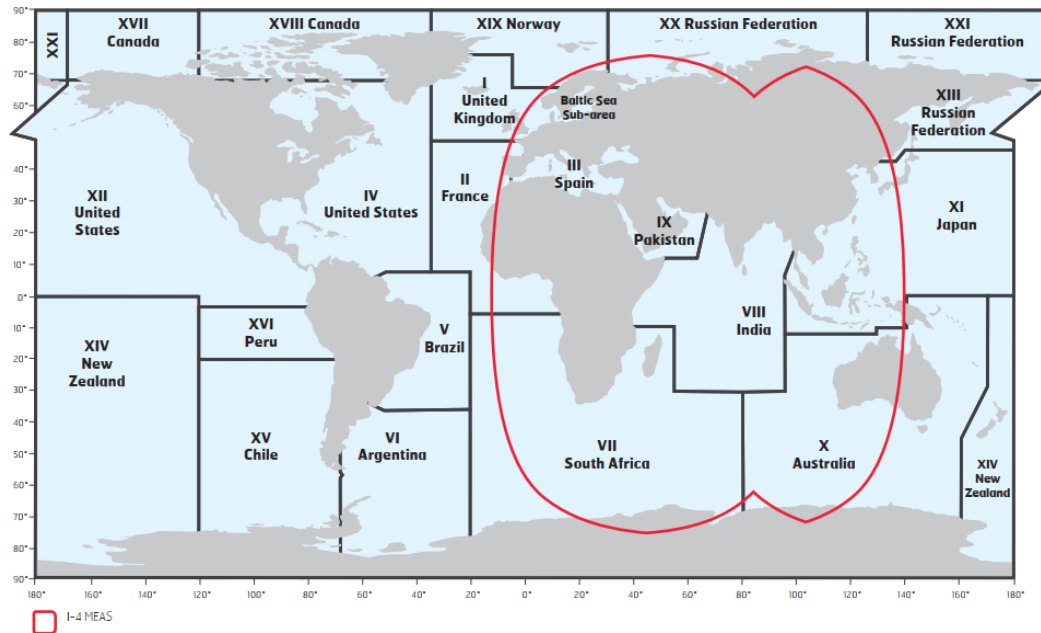
Maritime Safety Information Services

13. Inmarsat – stated coverage 76°N - 76°S via three geo-stationary I4 satellites, although up to 78°N has been achieved.

14. SafetyNET Services. Two systems are now available and in use by all information providers (NAV and MET Area Coordinators and RCCs):

- SafetyNET – SafetyNET messages are submitted by registered information providers for promulgation to the appropriate satellite Ocean Region(s) via an Inmarsat C Land Earth Station (LES) through the I4 satellites to vessels at sea.
- SafetyNET II – provides an interactive web portal for MSI providers to promulgate their MSI messages over the Inmarsat EGC system direct to I4 satellites via web interface. SafetyNET II messages are submitted by registered information providers via a secure interface to the Inmarsat network.
- Fleet Safety –MSC 101 approved MSC.1/Circ.1611 on *Interim guidance on technical requirements for Fleet Safety*, which will remain in force until such time as the information is included in MSC.1/Circ.1364/Rev.1 on *Amendments to the Revised International SafetyNET Manual*.

- Fleet Safety is the digital satellite communications system comprising of a FleetBroadband Ship Earth System, (SES) and type approved Maritime Safety Terminal (MST) for use within the GMDSS, enabling ships to meet the majority of the satellite communications requirements of the GMDSS including distress alerting, reception of MSI and SAR related information, voice distress and general communications.



Fleet Safety GMDSS approved area until Inmarsat 6 satellite constellation deployed

15. Iridium – global coverage through constellation of low orbiting satellites.

- MCS 99 adopted resolution MSC.451(99) on *Statement of Recognition of the Maritime Mobile Satellite Services provided by Iridium Satellite LLC*, recognized the maritime mobile satellite services provided by the Iridium Safety Voice, Short-Burst Data and enhanced group calling services, for use in GMDSS, now called generically Iridium SafetyCast services. The constellation is complete with spare satellites.
- MSC 101 approved MSC.1/Circ.1613 on *Interim Iridium SafetyCast service manual*, which will be made available in its current draft state to support the initial operational capability phase, when an increasing number of NAV and MET Areas and RCCs will engage with Iridium and test the Iridium SafetyCast Service. This process will continue until all NAV and MET Areas and RCCs are fully operational and all the necessary Full Operational Certificates have been issued by the IMO EGC Coordinating Panel; at which point the Chair will advise the IMO MSC and which then will request the International Mobile Satellite Organization to issue the final letter of compliance to Iridium. At this point Iridium SafetyCast Service will be an operational part of the GMDSS.
- The necessary SOLAS amendments are planned to come into force on 1 January 2020, however this will only mean that a ship carrying Iridium SafetyCast Service equipment will be SOLAS compliant, it will not mean that the system is operational.
- All NAV and MET Area Coordinators and RCCs will be required to provide MSI and SAR services via all recognized mobile satellite service providers, a point which will be included in the new FOCs issued by the IMO Enhanced Group Call (EGC) Coordinating Panel (formerly the International SafetyNET Coordinating Panel).

Capacity Building Programme

16. The level of activity of the IHO Capacity Building (CB) Programme increased in 2018. Expenditure in the IHO 2018 CB Work Programme (861 000 Euros) was 37% bigger than the budget for the previous year. Ongoing financial support is provided by the Nippon Foundation of Japan, the Republic of Korea and by a contribution from the IHO budget with in-kind support from Member States and from industry. The Secretariat is continuing its campaign to find additional donor States and funding organizations. In 2018, 81% of the budgeted work program was executed and paid for.

17. The ARHC members, having developed Hydrographic Offices, did not directly benefit from activities under the IHO CB Work Programme (CBWP). Norway engaged directly helping Albania and Mozambique to develop their hydrographic capabilities.

18. **Recommendations.** ARHC members are invited to identify opportunities in national or regional funding agencies to incorporate hydrographic development in the broader projects supporting developing countries.

Crowdsourced Bathymetry

19. In accordance with Decision 8 of the EIHC5, IRCC7 established the Crowdsourced Bathymetry Working Group (CSBWG) to provide guidelines on the collection and use of crowdsourced bathymetry. Member States and other interested parties were invited to nominate representatives to participate in the CSBWG (see IHO CL 42/2015). The CSBWG has developed the IHO publication B-12 – IHO Guideline on Crowdsourced Bathymetry. Edition 2.0.0 was circulated under IHO CL 11/19 and its approval was announced in IHO CL 28/2019. Replies to Annex B of IHO CL 11/2019 have been analysed and a table of coastal states indicating positive support for the activity within all or parts of their waters of national jurisdiction has been generated and will soon circulate as well as being published on the IHO website for the guidance of the wider maritime community. Member States may advise the Secretary General at any time of any change to their originally stated position and it is proposed to make a second request for support in the second half of 2020 after the 2nd session of the IHO Assembly.

20. The web-based interface portal to the IHO Data Center for Digital Bathymetry, hosted by the USA in Boulder, Colorado, as part of its commitment to the system of World Data Centres, is being upgraded to be compatible with the crowdsourced bathymetry concept. This will enable an IHO-led CSB infrastructure to be established and promoted in the IMO and across the wider maritime community.

21. **Recommendations.** ARHC members are invited to identify further potential sources of bathymetric measurements and survey data providers to be facilitate the further completion of the DCDB data holdings.

GEBCO support through Seabed 2030

22. The Nippon Foundation (NF)-GEBCO Seabed 2030 project builds on more than 100 years of GEBCO history; the project has established regional connections to all corners of the World and benefits from the human network of ocean mapping capacity built over 14 years through the Nippon Foundation – University of New Hampshire (UNH) ocean mapping training project. Through Seabed 2030, GEBCO's role is recognized and reinforced as the authoritative international initiative for mapping the World Ocean, from the coasts to the deepest trenches.

23. Seabed 2030 has established a network of 4 regional centres. Each centre focuses on discovering, gathering and assembling all available bathymetric data from their region to produce regional datasets and resulting products. The Baltic Sea is covered by the Arctic and North Pacific Ocean Regional Center located at the Stockholm University. A global centre will merge the regional datasets to generate the production of the annual GEBCO grid as well as other products. Within this structure, the IHO-DCDB will remain the central GEBCO repository for all raw bathymetric data and all Seabed 2030 project data will be data based there.

24. GEBCO released the GEBCO 2019 grid in March. Based on the variable resolution coverage, which was recently calculated and takes into account current technology capabilities, the cover has increased from 6% in the 2014 grid to 15% in the current grid. Most of this increase has been achieved through the release of previous survey data, which had not been placed in the public domain and was not available to GEBCO. The 2019 grid does also include the data gathered by the two contracts in the search for MH370, which have been released by the Australian authorities.

25. **Recommendations.** ARHC members are invited to consider the future invitation of Seabed 2030 project representatives to ARHC meetings to discuss options for deepened cooperation and support.

IHO GIS and Databases

26. Work has continued on the development of the IHO GIS which is composed of two main parts:

- a country information database, and
- a regional information database.

27. The country information database has been progressively upgraded to include additional administrative information and facilitate the maintenance of the IHO Yearbook (IHO Publication P-5) and related lists posted on the IHO website. Countries in the ARHC Region are invited to review their entry in the Yearbook on an annual basis and provide the IHO Secretariat with the appropriate updates or report no change. The status of updates in the IHO Country Information Database concerning the ARHC Countries, including those provided for C-55, is as follows:

Country	P-5 –Yearbook Last update received	C-55 Last update received
Canada	August 2019	August 2019
Denmark	January 2019	November 2016
Norway	September 2017	April 2019
Russian Federation	August 2016	June 2004
United States of America	March 2019	December 2016

28. An Esri-based GIS solution is being implemented to develop further the regional information database. This will enable access to various layers of information through the IHO website and through cloud-based on-line GIS options. Upgrades will include Polar Regions (Arctic and Antarctic) with ENC scheme management procedures (S-11 Part A, Ed 3.1.0 refers), CATZOC values and additional AIS traffic density.

29. The participants of the Hydrographic Commission of Antarctica (HCA) were informed by the HCA Secretariat at its recent 16th Meeting in July in Prague, Czech Republic on the transition in progress for the HCA GIS component, from the current quite invisible situation to Quantarctica (<https://quantarctica.npolar.no/>) in which the HCA GIS datasets will be getting the status of "Quantarctica Friend". ARHC is also invited to consider the new ATCM Resolution on hydrography that was adopted at ATCM421 (annexed to this report) and whether it would be appropriate to report to the Arctic Council/PAME for the same purposes.

30. Work has continued on developing a GIS database application to support C-55 - Status of Hydrographic Surveying and Charting Worldwide and the work of the IHO. In response to the request to complement C-55 composite data (percentage of areas adequately surveyed / requiring re-survey / not surveyed) with CATZOC information (see IHO CL 52/2015), CATZOC data was provided by PRIMAR - on behalf of IC-ENC, PRIMAR and Canada, Singapore, Sweden and Thailand. Useful options for visualizing the data in the IHO C-55 GIS are being investigated.

31. The IHO Secretariat has developed an online form to allow Member States to input data to the Yearbook and to C-55. The online forms also allow Member States to vote in response to CLs.

32. **Recommendations.** ARHC is invited to consider the ATCM42 Resolution for information and further consideration by PAME. Countries in the ARHC Region are invited to review their entry in the IHO Yearbook and C-55 and to provide the IHO Secretariat with the appropriate updates or to report no change (CL 20/2019 refers).

IHO Outreach

33. World Hydrography Day: Taking into account the discussions at the first IHO Council meeting held in Monaco in October 2017, the theme of the World Hydrography Day for 2019, as announced by IHO CL 52/2018, is:

"Hydrographic information driving marine knowledge"

34. As part of the report on the 2019 Work Programme that was proposed at the 2nd Council, the Secretary-General introduced the priorities, which he had defined with the associated issues and risks, for Work Programme 1 (Corporate Affairs). One of the priorities was to plan and start a complete overhaul of the IHO website including incorporation of GIS-services.

35. The Secretariat gladly accepted the temporary secondment of a social media expert through NOAA (USA) to assist provisions via LinkedIn and youtube. The Secretariat has already started a recruitment process for a local staff member to serve as Public Relations & Communication Assistant in succession of one Staff member who retires by January 2020.

36. The Secretariat introduced the new corporate design by event of the celebrations of the World Hydrography Day at 21st June 2019. By this date physical and digital means of communication used by the Secretariat changed to the new design – in particular to the new logo.

37. **Recommendations.** ARHC Member States are encouraged to replace the IHO old logo on all sorts of nautical publications and communication means by the IHO new logo soon the opportunity

1 See:

https://www.iho.int/mtg_docs/rhc/HCA/HCA16/atcm42_r_e_e_Resolution6%282019%29_hydrographic_mapping.doc.

arrives.

International Hydrographic Review (IHR)

38. The IHR provides an ideal opportunity for Regional Hydrographic Commissions and Member States to publicise technical and other achievements in the region. An Editorial Board comprising a representative from each region and expert contributors has been established. However, some of the members of the Editorial Board need to be updated due to change of the roles of the board members. Therefore papers for consideration for publication in the IHR should be forwarded directly to the Editor. Sadly, Mr Ian HALLS, the Editor of IHR passed away on 28 May 2019. For the interim period, papers for the IHR should be forwarded to the acting Editor, Assistant Director Alberto Costa Neves at ihreview@iho.int, copy to alberto.neves@iho.int. The deadlines are:

- end of January for the May Edition
- end of July for the November Edition

39. The IHO Secretariat is pleased to report that Mr Brian Connon, USA, Director of the Hydrographic Science Research Center of the University of Southern Mississippi and former Vice Chair of IHO CBSC has accepted to become the new Editor of IHR from January 2020.

40. The IHO Secretariat worked with the University of New Brunswick (UNB), Canada, in a project to develop a digital repository of the complete library of the IHR. As a result, volumes from the entire collection (1923 to 2018) and other relevant information are available online at the newly created web address: <http://review.iho.int>.

41. **Recommendations.** ARHC Members are invited to submit papers for publication in the IHR and to look for continued contribution to the IHR Editorial Board.

IHO Centenary Celebrations (IHO-100)

42. The years 2019 and 2021 will be important in the history of the International Hydrographic Organization. 2019 marks the centenary of the 1st International Hydrographic Conference, which was held in London in 1919 and 2021 will be the centenary of the establishment of the International Hydrographic Bureau (IHB) in 1921 in Monaco as precursor of the modern IHO.

43. In accordance with Decision A-1/23 and with the endorsement of C-2, the IHO Secretariat has already started the celebration activities. The conducted and planned outreach actions for the centenary celebrations are intended to raise awareness on hydrography, nautical charting and ocean mapping activities as well as highlighting the importance of the IHO and its relations with Monaco on all available platforms. Special emphasis is to be placed on the IHO's global scope of themes and commitments to promote the conduct of hydrography, the specific contribution of member states and the close collaboration with special United Nations and Inter Governmental Organizations, namely IMO, IOC and IALA.

44. The main activities so far happened for the IHO-100, coordinated by the IHO Secretariat are as follows:

- a. Exhibition on "*Historical Nautical Charts and Mediterranean*" which was displayed at the Monaco Yacht Club from 1 to 13 April 2019. The Exhibition was officially opened by H.S.H. Prince Albert II of Monaco.
- b. International Symposium on "*A Historical Approach for Measurements and Protection of Oceans and World Waters*" was held at the Oceanographic Museum of Monaco from 20 to 21 June 2019.
- c. In conjunction with the Symposium a reception was held on the roof terrace of the

Oceanographic Museum to celebrate the “World Hydrography Day 2019”. By means of this event, a new video clip “International Hydrographic Organization – 100 years in the making”, produced by BluOrange and sponsored by industry partners, was presented for the first time.

- d. A series of altogether eight “oral history” video interviews were produced with former office bearers of the Secretariat and important contributors to IHO issues and uploaded to the IHO youtube channel.
- e. Japan and Brazil contributed videos which address specific aspects of the history and the presence of hydrography in their respective countries. Those videos are available at the IHO youtube channel too.
- f. The preparations for the publication of an IHO Prestige Book on “*100 Years of International Cooperation in Hydrography*” are progressing. Germany generously offers typesetting and printing as in-kind contribution. It is planned to present the book in the margins of the Second Assembly to the delegates.

45. The further planned activities for the IHO-100, coordinated by the IHO Secretariat are as follows:

- a. To organise a half day special session on IHO-100 at the 2nd Session of the IHO Assembly (A-2) in April 2020.
- b. To reflect the respective development of hydrography through Member States contribution to the Chart Exhibition as part of the IHO Assembly (A-2).
- c. To conduct a prestigious peak event in collaboration with the Oceanographic Institute of Monaco at the World Hydrographic Day 21st June 2021. In order to receive a good level of participation, it is planned to hold the x IRCC meeting back to back with the event.
- d. To present the work and the achievements of the IHO with special emphasis on safety of navigation in collaboration with the IMO at the IMO Assembly in November 2021.

Action Requested of ARHC:

- a) **Note** this report
- b) **Consider** the recommendations on provision of CATZOC information as presented in **Paragraph 12**
- c) **Consider** the recommendations on Capacity Building in **Paragraph 20**
- d) **Consider** the recommendations on Crowdsourced Bathymetry in **Paragraph 23**
- e) **Consider** the recommendations on Seabed 2030 collaboration in **Paragraph 27**
- f) **Consider** presentation of ATCM42 Resolution to PAME and **review** entries related to IHO C-55 and P-5 (Yearbook) at least annually (**Paragraph 34**)
- g) **Replace** the old IHO logo with the new logo by next opportunity (**Paragraph 39**)
- h) **Consider** submitting papers for publication in the International Hydrographic Review (**Paragraph 43**)
- i) **Take any other actions** as considered appropriate.

Annex

Resolution 6 (2019)

Hydrographic Mapping of Antarctic Waters

The Representatives,

Recalling and noting the continued validity of Recommendation XV-19 (1989) and Resolutions 1 (1995), 3 (2003), 5 (2008), 2 (2010) and 5 (2014), which contain general provisions regarding cooperation on hydrographic surveying and charting of Antarctic waters;

Considering that reliable hydrographic data and nautical charts are essential for safe maritime operations and the protection of the marine environment;

Noting that the collection of accurate bathymetric data will improve navigational safety and support a range of other applications, including scientific research, management and monitoring of the marine environment, hazard and risk assessment, search and rescue activities and operational activities;

Concerned to ensure progress on hydrographic mapping and bathymetric data collection for Antarctic waters to minimise the risk of harm to people, ships, and the environment within the region;

Acknowledging the efforts of the International Hydrographic Organization (“IHO”) Data Center for Digital Bathymetry (“DCDB”), the Nippon-Foundation General Bathymetric Chart of the Oceans (“GEBCO”) Seabed 2030 project and the IHO Crowdsourced Bathymetry Data Working Group;

Recognising the role of the IHO Commission on Antarctica in the coordination of hydrographic surveying and nautical charting in the Antarctic region, and the value of cooperating with the Scientific Committee on Antarctic Research (“SCAR”), the Council of Managers of National Antarctic Programs (“COMNAP”), the International Association of Antarctica Tour Operators (“IAATO”) and other relevant expert bodies;

Recommend that their Governments:

1. give priority to reviewing existing bathymetric data holdings and collecting new bathymetric data in the Antarctic region by:
 - a. encouraging their national programme vessels and other vessels under their jurisdiction, including non-governmental vessels, as appropriate, to:
 - i. review existing bathymetric data holdings for inclusion, either directly or through their national hydrographic office, in the IHO DCDB;
 - ii. undertake hydrographic and bathymetric data collection on all their Antarctic voyages, as practicable;
 - iii. utilise IHO guidelines where appropriate, including the IHO *Publication B-12 – Crowdsourced Bathymetry Guidance Document*;
 - iv. share all data collected with the IHO DCDB, through their national hydrographic office, where applicable, or directly;

- b. encouraging cooperation between national research institutions and mapping institutions/authorities on hydrographic surveying and charting in the Antarctic region to ensure the use of basic hydrographic survey guidelines in order to secure the highest value of collected data for the widest possible (re)use;
2. recommend that Parties endeavour to find additional resources for improving hydrographic surveying and charting in the Antarctic region; and
3. encourage those Parties who are also Parties to the Convention on the Conservation of Antarctic Marine Living Resources (“CCAMLR”) to consider possible actions to ensure that fishing vessels and vessels undertaking CCAMLR research operating in the CCAMLR Convention area, which are under their respective jurisdiction, undertake hydrographic and bathymetric data collection on all their Antarctic voyages, as practicable.