PRO 1.9 **REPORT ON THE INFORMAL CONSULTATION PROCESS FOR THE FUTURE OF S-23**

Submitted by: **Secretary-General**

References: A. Proceedings of the first Session of the Assembly

B. FINAL REPORT OF S-23 WORKING GROUP TO MEMBER STATES February 2012 – *revised June 2012*

C. S-23 WG - Terms of Reference

Annex: A. Concept on the Future of S-23 - Modernization of Standardization of Limits of Oceans and Seas

PROPOSAL

- **Noting the considerations made in the course of the informal consultation process regarding the future of S-23, noting the consent of the participants and observers on the need for the provision of digital coordinates for limits of oceans and seas, informing that no consensus on the revision of S-23 was reached, the Assembly is invited to take note of the implementation of the process and its results, and subsequently:**
- **PRO 1.9.1- to agree on the provision of digital coordinates for limits of oceans and seas to meet requirements of contemporary geographic information systems.**
- **PRO 1.9.2 – to task the appropriate IHO subordinate technical body**
  - **to develop a dataset named "Polygonal demarcations of global sea areas" to designate geographic sea areas by a system of unique numerical identifiers only, and**
  - **to profile or adapt appropriate IHO S-100-based standards through a new S-130 dataset, to facilitate the digital provision of the "Polygonal demarcations of global sea areas".**
- **PRO 1.9.3 – to consider, if and when necessary, the development of basic guidelines for the allocation and display of attributes of sea areas to be applied to Geographic Information Systems.**
- **PRO 1.9.4 – to note that S-23 is kept publicly available as part of existing IHO publications to demonstrate the evolutionary process from the analogue to the digital provision of limits of oceans and seas.**
- **PRO 1.9.5 – to task the Secretary-General, as part of the process resulting from PRO 1.9.2, to consider subsequent amendments to the relevant IHO Resolutions 32/1919 as amended and 13/1919 as amended, for endorsement by the Council, if and when appropriate.**
- **PRO 1.9.6 - to instruct the Secretary-General to take any other actions considered necessary.**

EXPLANATORY NOTE

1. At its first Session, the Assembly tasked the Secretary-General to facilitate an informal consultation process regarding the future of S-23 among interested Member States, including determining mutually agreed modalities of work, and to report the result of the consultations to the Assembly at the next ordinary session (Decision A1/04).

2. Over summer 2017 the following Member States indicated interest to participate in this process in writing or phoning:

- Democratic People's Republic of Korea,
- Republic of Korea,
- Japan,
- China, Italy, Portugal, Oman, Russian Federation, UK, USA.

3. Since the first session of the Assembly, informal conversations were held with China, Italy, Portugal and Russian Federation.

4. The Secretary-General chaired two informal consultative meetings with attendance of Democratic People's Republic of Korea, Republic of Korea and Japan. USA and UK participated as observers.

5. At first, the participants jointly reviewed the options proposed by the S-23WG between 2009 and 2012 (Reference B) as potential approaches for a renewed revision process. In a second step, the Secretary-General requested proposals for new options beyond those made by the S-23WG for such renewed approach. Both exercises did not result in new suggestions how to revise S-23 successfully.

6. In the absence of a consensual approach for the revision of S-23, the Secretary-General presented a concept for the modernization of standardization of the limits of the oceans and seas by means of a digital dataset designating the geographic sea areas by a system of unique numerical identifiers only. The rational of this approach is annexed to this report.

Annex A to PRO 1.9

Future of S-23 – Modernization of Standardization of Limits of Oceans and Seas

Historical background

1. The attempts to update the 3rd Edition of S-23 date back to the Seventies of the previous century. The significant changes of the tentative draft 4th Edition compared to the 3rd Edition were:

   - Improved structure and indexing of the content
   - Improved chartlets
   - Incorporation of the Southern Ocean
   - Change of title and preface towards: "Names and Limits of the Oceans and Seas"

2. The tentative draft 4th Edition was submitted for approval for the first time by Circular Letter No. 6/1986 but did not receive the required amount of affirmative votes. There was a variety of reasons for low support – not limited to the naming problem in question.

3. A final tentative draft was submitted to Member States approval by Circular Letter 30/2002 for approval of Member States. This draft did not include pages 7-16 and 7-17 which present the sea area between the Asian Coast and the Islands of Japan. As a result of significant interventions made by Japan with Member States, the voting of the 4th Edition was interrupted "to study the details of the subject".

4. Based on discussions at the XVII IHO Conference, Circular Letter 86 / 2007 proposed to publish S-23 4th Edition in two volumes:

   - the first of which would contain all the data agreed upon and could be published immediately,
   - the second one containing the disputed portion to be withheld until an agreement will be reached.

5. CL 86/2007 also presented Japan´s proposal to remain on the naming of the 3rd Edition but included general annotations on the naming problem/issue corrigenda in case of future agreement. In 2009, the IHO Directing Committee had acquired approval for the establishment of the S-23 WG, which met the first time June 2009 under chairmanship of the IHO-President. The S-23 WG got Terms of Reference and Rules of Procedures aiming to present a report not later than June 2011.

6. S-23 WG identified three areas of concern:

   - Whether the Malacca and Singapore Straits should be located in the Indian Ocean or the South China Sea and Eastern Archipelagic Seas;
   - Proposals by China for changes in names and limits in the South China Sea, East China Sea and Yellow Sea.
   - The naming of the sea area between the Korean Peninsula and the Japanese Archipelago;

7. In its final report the S-23 WG dated June 2012 reported consensus for:

   - Malacca and Singapore Straits to be accepted as a single, continuous waterway, forming a separate administrative division in S-23; and
   - The Chinese proposals to be accepted for inclusion in S-23.

8. No Consensus was reported for:

   - The inclusion of the “Important Notice” in the preface of S-23.
   - On the issue of naming the sea area between the Korean peninsula and the Japanese archipelago.

9. This situation has not changed since though the intentions expressed in the IHO Resolution 32/1919 as amended in 1977 remains fully valid:

   It is resolved that in view of the increasing use being made by cartographers, national institutions and commercial agencies of S-23 "Limits of Oceans and Seas", the IHB shall undertake a revision of this publication in order to update its content.

10. At its first Session, the Assembly tasked the Secretary-General to facilitate an informal consultation process regarding the future of S-23 among interested Member States, including determining mutually agreed modalities of work, and to report the result of the consultations to the Assembly at the next ordinary session (Decision A1/04).

Need for modernization

11. As the preface of the 3rd Edition of S-23 suggests, this global collection of limits is published for the convenience of hydrographic offices when compiling their nautical charts and publications. However, the role and consequently the products and services which Hydrographic Offices are providing nowadays have tremendously changed since the updating processes started in the seventies. Therefore, the purpose of a standardized global collection of limits is not solely designated to nautical cartography anymore - modern geoinformation services operated by hydrographic offices, governmental bodies and international organizations of associated domains (for example, in weather and oceanography) need this basic information. This purpose is not appropriately maintained anymore by S-23 since its last publication in 1953, because not only the topography of the seas and oceans in terms of the geographic limits but the scope and the way this information is applied and provided have changed significantly in the digital era.

12. The provision of geographic information is without question one of the most popular digital services – accessible and used by nearly everybody who uses web technology. But S-23 in its current form is not suitable for this. The need for modernization of provision of geographic limits of the global seabed is therefore to revise some of the limits defined by the standard, but also to promulgate the included area information in digital geographic coordinates. In short: this global collection of limits needs an update through modernization of the information carrier to get ready for digital dissemination!

13. The principal means to make S-23 content fit for this purpose is the transformation information contained in a database of attributed area feature objects with global coverage. The resulting dataset should be based on modern digital technology and facilitate the following aims:

    - Compatibility with the S-100 Universal Hydrographic Data Model, and its underpinning Geospatial Information Registry, for the purpose of the IMO´s e-Navigation concept.
    - Provision for the variety of Geospatial Information Systems (GIS) being utilized by the IHO Secretariat, national Hydrographic Office services, including Marine Spatial Data Infrastructures (MSDI); and the respective national reporting obligations within the framework of UNCLOS.
    - Higher resolution of the standardized limits of the oceans and seas by means of vectorized chain-node topology.
    - Greater flexibility offered to users and systems for geographical names
    - Customization of displayed information about the limits according to regional and national priorities; and end user requirements.
    - Expansion of attributes assigned to the limits on demand.

- Preparedness for the application of future voice command functionality of GIS applications; application of artificial intelligence; and “deep learning” on marine geoinformation.
- Support of machine-to-machine communication for the facilitation of autonomous shipping.

14. As a generic approach, each marine area limit included in this dataset shall be designated by a unique and unambiguous numerical feature object identifier, noting that it is a digital evolution of the analogue S-23 in its first step. The most modern approach for such provision of information about the limits of oceans and seas is the marine application of the URI (Uniform Resource Identifier) paradigm. This approach is well suited to the S-100 framework. It offers unambiguous identification of marine areas through a unique numeric identifier system.

Side conditions

15. Modern geoinformation systems can handle locations, boundaries and regions completely by numerical identifiers without any naming. Machine to Machine communication is fully maintained anyway but even full local orientation of human readers can be supported through visual means depicting the area in various orientations, projections and scales. Symbology can fully substitute any naming which is never a precise designation as numeric values for geographic positions do represent.

16. However, there is an undeniable political resonance of the ongoing debate about the S-23 update and modernization attempts which have to be considered as part of a proposed solution for modernization.

Proposed solution

17. As a follow-up to the Informal Consultation Process regarding the future of S-23, IHO develops a dataset named “Polygonal demarcations of global sea areas” based on numerical feature object identifier or, alternatively, the Uniform Resource Identifier (URI) approach to designate the geographic sea area by a unique numerical identifier only. No names will be applied. The geographic structure of the dataset takes orientation on the 3rd Edition of S-23, paying due regard to the factors as contained in para 1.1 of the Terms of Reference of the S-23WG (Reference C). The polygonal vertices of the dataset will however deviate from S-23 Edition 3 in terms of improved accuracy to meet modern GIS needs.

18. The dataset of “Polygonal demarcations of global sea areas” will be granted by a name of the range of the S-1xx Standards. It is proposed to designate it as S-130.

19. IHO will, if and when necessary, consider the development of basic guidelines for the allocation and display of attributes of sea areas to be applied to Geographic Information Systems.

Conclusion

20. The 3rd Edition of S-23 “Limits of the Oceans and Seas” is not suitable for use in a digital environment. A transformation into a digital dataset named “Polygonal demarcations of global sea areas” would facilitate the joint standardization and service activities of IHO and other adjacent domains to support the e-Navigation concept of the IMO. The affected standards of IHO and IMO that currently refer to S-23 can be adapted to the new dataset solution with comparably low effort.

21. S-23 is kept publicly available as part of the existing IHO publications to demonstrate the evolutionary process from the analogue to the digital provision of limits of oceans and seas.