



IHB File No. S3/8151/HSSC

CIRCULAR LETTER 44/2011  
21 July 2011

## PROGRESS REPORT ON S-100 AND ITS RELEVANCE TO E-NAVIGATION

- References:
- a) CL 83/2009 dated 4 December - *Adoption of S-100 as an Active Standard*
  - b) CL 5/2011 dated 12 January - *Approval of Edition 1.0.0 of S-99 – Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry*
  - c) CL36/2011 dated 15 June - *57th Session of the IMO Sub-Committee on Safety of Navigation*

Dear Hydrographer,

1 This letter is to inform Member States about the progress of implementation of S-100 - *Universal Hydrographic Data Model* and the encouraging level of interest now being shown by other international organizations to use S-100, especially with regard to using S-100 as a fundamental data model for data and information that will be available under the International Maritime Organization (IMO) e-Navigation concept. The attention of Member States is also drawn to certain longer-term support issues that will need to be addressed.

2 S-100 was adopted as an IHO standard effective 1 January 2010 (see reference a)). Associated with S-100 is an on-line Registry, operated by the IHO, that contains all the data model definitions and other supporting information that enables S-100 to be used to establish Product Specifications. Intentionally, S-100 and its associated registry are based on the established and well known 19100 series of geospatial standards maintained by ISO.

3 A particular feature of S-100 is that it is extensible. This was done so that it would encourage the widest possible use of hydrographic data modelled under S-100. It also means that additional related data and information not directly required by HO's can be modelled under S-100 by extending entries in the S-100 registry or by including new entries. The overall concept for S-100 and the detailed processes to include additions to the S-100 registry are explained in S-100 and its associated management document S-99 (see reference b)).

### **Growing interest from other International Organizations**

4 Because of the way S-100 has been defined, other maritime-related organisations that do not currently have an established data model are expressing interest in using S-100. Notably, the relevant subordinate bodies of the IMO are now consistently endorsing S-100 as "*the baseline for creating a framework for [e-Navigation] data access and services under the scope of SOLAS*". This recommendation is therefore likely to be adopted by the IMO in the future as part of its e-Navigation strategy. In practical terms, this means that for e-Navigation, S-100 will be considered as the default standard for modelling data and information – especially where no other data model has been adopted by a prospective data provider. In line with this, the International Association of Aids to Navigation and Lighthouse Authorities (IALA) is liaising closely with the IHO Transfer Standards Maintenance and Applications Development (TSMAD) Working Group (WG) and other related IHO WGs to ensure that its future e-Navigation data input obligations will conform to and be compatible with S-100.

### **Proposed IMO-IHO Harmonization Group on Data Modelling**

5 As reported in Reference c) in order to ensure that the data modelling requirements of e-Navigation are properly coordinated, the IMO is now considering establishing a joint IMO-IHO

Harmonization Group on Data Modelling. In particular, this new inter-organizational body will help to ensure that the various data models used under the e-Navigation concept will be compatible with S-100. The IMO-IHO Harmonization Group on Data Modelling will comprise representatives from Member States of IMO and IHO, supported by various relevant observer organisations. The joint IMO-IHO Harmonization Group on Data Modelling is not expected to be formed for at least another year or more.

### **IHO Progress**

6 Progress on S-100 will be reported fully at the next meeting of the Hydrographic Services and Standards Committee when it meets in November. In the meantime, the following is a summary of progress to date.

7 **S-100 based Product Specifications.** The development of S-100 based product specifications continues to gather pace. S-101, the *ENC Product Specification* and S-102, the *Bathymetric Surface Product Specification* are being developed by TSMAD and S-10n, the *Marine Protected Area Product Specification* is being developed by the Standardisation of Nautical Publications WG (SNPWG).

8 As part of the development of S-101, there are two key enabling components that will facilitate the extensive testing of data and its deployment in S-100 based systems. The first of these components is the development of an open-source software package which will be able to convert S-57 based data to S-100 based data. This is intended to enable the conversion of existing S-57 ENC data to S-101 data, but it is also capable of converting any S-57 data if it is accompanied by a compatible XML feature catalogue. This conversion software has been developed under a contract jointly funded by the US (NOS) and the GIS company ESRI and is currently undergoing testing by TSMAD.

9 The conversion software, which will be available free of charge from the IHO, will avoid the need for HO's to upgrade their current S-57 compilation tools to S-100 until such time as they wish to include the additional features that only S-101 ENCs (as opposed to converted S-57 ENCs) will offer. As such, it will offer HO's a long lead-in time for the introduction of S-101 ENC production capabilities. As has been consistently stated, the eventual replacement of all S-57 ENCs by S-101 ENCs is likely to be at least ten to fifteen years from the introduction of S-101 as an active standard. S-101 has yet to be adopted as an active IHO standard.

10 **S-100 Portrayal and Viewer.** The second development is the creation of an S-100 viewer or test bed which, in simple terms, will be capable of importing and viewing S-100 based data, such as S-101 ENCs. This will facilitate thorough testing of key components including the data, and feature and portrayal catalogues; something which was not available during the original development of S-57 ENCs. It will also enable the testing of other S-100 based products which will supplement S-101 data in the future. This package may be available early in 2012, but it is dependant on the finalization of the portrayal component of the S-100 standard.

11 The completion of the portrayal component of S-100 is another important, but as yet incomplete step. It is, in effect, a new portrayal catalogue which will enable the delivery of new or updated "presentation libraries". Unfortunately there is extremely limited expertise available from within Member States' resources. As has been the case for the maintenance of the S-52 ECDIS Presentation Library, the development of the Portrayal element of S-100 and an associated *Portrayal Catalogue Builder* will, most likely, need to be undertaken under contract. This will be discussed further at the next meeting of HSSC, but it is likely to have implications for the IHO budget in the future.

### **Digital Standards Support and Outreach**

12 Since the publication of S-100, the role of TSMAD and the scope of its work has increased significantly. Requests for technical assistance and advice from other HSSC WGs and from other organizations has increased. A revised structure for those HSSC WGs concerned with digital data will be considered at HSSC-3. This should help to maintain effectiveness and provide a better outreach and liaison capability.

13 **IHB Services.** Experience so far suggests that the IHB may need to increase its capability in relation to supporting both the existing (S-57) and future (S-100) primary digital data standards. The IHB is currently the Administrator for the S-63 Data Protection Scheme. This increasingly active role involves the licensing and implementation validation of ENC data providers and equipment manufacturers. It has both administrative and technical aspects - and the provision of technical advice on how to implement the scheme. The IHB is also the S-100 Registry Manager and it is anticipated that as dependency on S-100 and its associated Registry increases, the IHB will need to take on an increasingly active role in managing the component Registers that comprise the Registry. In addition, it is most likely that the IHB will be called upon to provide increasing levels of liaison and technical advice to new S-100 users, as well as existing and new ECDIS/ENC users, as these technologies become ever more widely used. At present, the IHB has only a limited technical capability, capacity or expertise in these subjects. The need for additional resources at the IHB to provide authoritative and timely responses will need to be investigated. It is expected that this matter will also be discussed at the next meeting of the HSSC and could have longer term IHO budget implications.

### **Conclusion**

14 The Directing Committee is particularly pleased to report on the very positive levels of support for S-100 in the wider maritime community and on the progress being made. At the same time, the success and the wide interest being shown in S-100 places an additional responsibility on the IHO to ensure that the standard and its component capabilities are properly supported, for which there may be resource and support implications. Some of these are already under consideration by TSMAD and will be presented to HSSC at its next meeting. Others may have budget and resource implications for the IHO and will require wider discussion in due course.

15 Meanwhile, the Directing Committee will continue to liaise with the relevant international organisations and the IHO's own Committees and Working Groups to help assist in the continuing good progress and implementation of S-100.

On behalf of the Directing Committee  
Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Robert Ward', with a stylized flourish at the end.

Robert WARD  
Director