

5TH MEETING OF THE HYDROGRAPHIC SERVICES AND STANDARDS COMMITTEE
Shanghai, China, 5-8 November 2013

Report of the Standardization of Nautical Publications WG (SNPWG)

Submitted by:	Jens SCHRÖDER-FÜRSTENBERG, GE
Related Documents:	Minutes of the 15 th SNPWG meeting (12-16Nov 2012), FTA Helsinki, Finland Minutes of the 16 th SNPWG meeting (3-7 June 2013), Silver Spring (MD), USA
Related Projects:	S-100; HSSC5-03B

Chair:	Jens SCHRÖDER-FÜRSTENBERG, BSH, GE
Vice-Chair:	Tom LOEPER, NOAA, U.S.
Secretary (acting):	Steven OFFENBACK, NGA, U.S.
Member States:	Brazil, Denmark, Estonia, Finland, France, Germany, Japan, Republic of Korea, Norway, Spain, Sweden, UK, USA, (and IHB),
Expert Contributor Organisations:	CARIS, Interschlacht, Jeppesen, NOVACO,

Meetings Held During Reporting Period

SNPWG15, 12-16 November 2012, Helsinki (Finnish Transport Agency), Finland
 SNPWG16, 3-7 June 2013 Silver Spring (MD), USA

Next Planned Meeting

SNPWG17, April 2014, BSH Rostock, Germany
 SNPWG18, December 2014, IHB Monaco or IHM Cadiz, Spain

Work Program

Clarification of “official digital nautical publications” in conjunction with the SNPWG work

HSSC assigned a working item “...to provide NP3 which covers/satisfies SOLAS requirements, to be maintained by HOs, disseminated by established distribution schemes and applied to on board ...”

The applying paragraphs of SOLAS Chapter V are the following:

Regulation 9

“3 Contracting Governments undertake to ensure the greatest possible uniformity in charts and nautical publications and to take into account, whenever possible, relevant international resolutions and recommendations. *

* Refer to the appropriate resolutions and recommendations adopted by the International Hydrographic Organization.

4 Contracting Governments undertake to co-ordinate their activities to the greatest possible degree in order to ensure that hydrographic and nautical information is made available on a world-wide scale as timely, reliably, and unambiguously as possible.”

Regulation 19

“2.1.4 All ships irrespective of size shall have nautical charts and nautical publications to plan and display the ship’s route for the intended voyage and to plot and monitor positions throughout the voyage; an electronic chart

display and information system (ECDIS) may be accepted as meeting the chart carriage requirements of this subparagraph.”

Regulation 27

“Nautical charts and nautical publications, such as sailing directions, lists of lights, notices to mariners, tide tables and all other nautical publications necessary for the intended voyage, shall be adequate and up to date.”

For nautical publications other than those mentioned explicitly in Regulation 27 of SOLAS V, the flag state requirements to carry distinct nautical publications are subject to national interpretation. It turned out to be a difficult task to reach a common understanding within the WG in respect of which existing national publications should be transformed into a NP3 shape to satisfy the SOLAS V requirements. Orientation was finally taken on SOLAS V Regulation 9 Part 3 which refers to the relevant IHO recommendations. Thus, the SNPWG considers the applicable parts of M-3 IHO Programme 2 Section 2.4, as providing appropriate elements for NP3-type products to satisfy SOLAS requirements. The future NP3-type Product Specifications on which SNWG is currently working will principally meet these M-3 parts. Proposals for enhancements and additional national requirements however, will be taken into consideration if they would be brought to SNPWG’s attention.

Data Modeling

The classification of the whole range of text based nautical publication content as semantic entities is the crucial prerequisite for any form of modern management of this information. SNPWG undertook this task in a year long campaign to create a comprehensive catalogue of attributable features. This catalogue has the ambition to cover the information elements of the following publications exhaustively and unambiguously:

- Sailing Directions;
- List of Radio Signals;
- List of Lights;
- List of Buoys and Beacon;
- Mariners’ Handbook;
- Routing Guides;
- Notices to Mariners (Publications correction).

The resulting collection of features and attributes is ready to be listed within the Geospatial Information (GI) Registry. Extensions and modifications of the data model will be considered by the WG if the Product Specification development requires this.

The IHO Geospatial Information (GI) Registry, GI Registers

The IHO maintains an on-line GI Registry with associated GI Registers. The registers are the repositories for all features, information object classes, attributes and complex attributes which are under the responsibility of the relevant register owner. The SNPWG is the register owner of the NPUB register.

The drafting process for registered elements of S-100 conformant NP3-type NPUBs is ongoing. To date, only a few items of the full NPUB data model have been populated in the relevant GI Register. If the “sandbox” solution will become available to edit entries before final commitment and if a bulk loading function would be available, the amount of elements populated at the NPUB Register would increase on short notice.

SNPWG was involved in the evaluation phase of the sandbox functionalities of the GI Registry and their respective registers. “Sandbox” in this context means a test environment for the tentative registration of features and attributes in their drafting phase before they would be confirmed as permanent and undeletable entries within the respective registers.

S-100 conformant NP3-type Product Specification: Marine Protected Area (MPA ProdSpec)

Small progress only has been made with the drafting of the S-100 conformant MPA Prod Spec. The completion of the components “Portrayal” and “Data Quality” is pending the contributions by DIPWG and DQWG. The completion of the “Data Capture and Encoding Guide” is pending decisions to be made for by TSMAD to facilitate interoperability with the charted content of S-101 ENC.

For the purpose of an S-100 based ECDIS, the ideal arrangement would be that all S-100 compliant digital data products used by this device would use identical data capture and encoding procedures. Thus, the SNPWG is striving to keep the S-100 conformant MPA Prod Specs Data Capture and Encoding Guides (DCEG) as consistent as possible with the S-101 ENC DCEG. Consequently, the progress of the S-101 ENC DCEG completion may require further amendments of the S-100 conformant NPUB data model.

Release of a questionnaire

As directed by HSSC4, the SNPWG discussed the best way on how to proceed with the NP3 Product Specifications development. The group discussed whether the Product Specifications could be either a digital remake of classic printed nautical publications or an information based approach. The group agreed that the user will not be concerned where the information came from (from which physical publication) but rather that the information is accurate and the most current available. The group were breaking the nautical publication information in semantic groups.

Finally, the group developed a questionnaire to seek experienced mariners’ views on

- the navigational purposes of publication information, and
- to determine which publication information would result in an immediate benefit for improving the safety of navigation and therefore, which information is most desirable if being integrated in an S-100 based ECDIS.

The questionnaire focussed on the following navigational purposes:

- Offshore;
- Nearshore (within the 12 nm zone);
- Approaching an or navigating in an estuary of harbour.

The questionnaire concentrates on the following main semantic groups:

- Hydrography (Features under the high water level which are not charted);
- Topography (Geographic features above the high water level, i.e. mountain ranges, plain, valley);
- Social/Political (Non-traffic regulations, geopolitical items);
- Traffic Management (Anything to do with routeing, berthing, anchorage, traffic control, traffic regulations);
- Marine services (Service to facilitate the business of shipping like pilotage, shore services, bunkering, etc.);
- Radio Signals (All radio services);
- Harbour infrastructure (Mooring, berthing facilities, shore line constructions);
- Navigational marks (Structures used as aids to navigation);
- Environment (Climate, weather, tide, tidal stream or other causes of water level variation);
- Reference (lookup information, help page, conversion table, etc.).

In order to gain qualified responses, SNPWG approached training facilities which specialised in EDCIS trainings of mariners and asked them for cooperation.

The following training institutes/academies participated:

- AIDA Cruises Academy, Rostock (Germany);
- Interschalt, Hamburg (Germany);
- ECDIS Ltd., Fareham (UK);
- Samtra, Simons Town (South Africa);
- Bridge Simulation Centre, Espoo (Finland);
- WINGS, Rostock (Germany);

- Marstal Navigationsskole (Denmark).

Japan kindly disseminated the questionnaire through their communication channels and the U.S. NOAA used their Twitter service contact to approach mariners.

The online version of the questionnaire was accessed about 600 times. That includes all visits of the site regardless of whether the form was filled in or not.

The questionnaire has received a total of 137 responses.

The result of the questionnaire forms the basis for the assignment of the above thematic groups to NP3-type NPub Product Specifications.

Maintenance of IHO Standards and Miscellaneous Publications

The SNPWG contributes or plans to contribute to the following IHO standards and miscellaneous publications:

- M-3 (Resolutions of the IHO) IHO Programme 2 Section 2.4,
- S-12 (Standardization of List of Lights and Fog Signals),
- S-32 (Hydrographic Dictionary),
- S-64 (IHO Test Data Sets for ECDIS) Similar to chart content as part of the ENC test data, the SNPWG plans to integrate NP3-type nautical publication content into the test data sets,
- S-100 (IHO Universal Hydrographic Data Model).

Progress on HSSC Action Items

Action HSSC1/8. Develop Marine Environment Protection Programme (MEPP) based on S-100.

An NP3-type Marine Protected Area Product Specification (MPA ProdSpec) comprising all mandated components defined by S-100 is nearing completion. The completion of the portrayal section and the data quality section depends on contributions by other HSSC WGs, namely DIPWG and DQWG.

The SNPWG considers the provision of the S-100 conformant MPA Prod Spec in two ways as a stand-alone product and as a product which overlays or interacts with an S-101 ENC. The relevant parts of the current S-100 version support the stand-alone product approach. The product will provide the relevant geometries for all features needed and contains all the attributes to be entirely independent from an ENC. A product which overlays the S-101 ENC and which refers to existing ENC features is not yet being supported by the current S-100 version. The necessary preconditions will be implemented into the next S-100 version. TSMAD and SNPWG are investigating the appropriate methods.

Compared to the S-101 ENC, the scope of MPA Prod Spec is limited to a small set of information associated with Marine Protected Areas. Thus, this Product Specification constitutes an excellent test case to examine all elements of an NP3-type Product Specification. In contrast to the S-101 ENC Product Specification which bases on ISO 8211, the drafted MPA Prod Spec bases on GML standards. Results of the development have already influenced the next S-100 version which is under development. The finalisation date of the MPA Prod Spec depends on S-100 Version 2.0 progress.

SNPWG is investigating ways of bulk loading the MPA Prod Spec features, associations and complex attributes to the designated GI Register. If done, the feature catalogue will then be built based on the MPA Prod Spec application schema. The required technology is under development at TSMAD.

Liasion with DIPWG has begun to consider portrayal.

Liasion with DQWG has begun to consider data quality.

Action HSSC4/27. SNPWG to provide an estimate of the number of potential Product Specifications related to nautical publications.

SNPWG plans to develop altogether seven S-100 conformant NP3-type Product Specifications. They are listed underneath in the sequence of their development:

1. Radio Services,
2. Navigational services,
3. Physical Environment,
4. Traffic Management,
5. Marine Services,
6. Harbour Infrastructure, and
7. Social/Political.

The MPA Prod Spec as the first NP3 compliant S-100 based Product Specification will start as stand-alone version of the Product Specification and is anticipated to become a component of the Traffic Management Product Specification (4.) at a later stage.

HSSC4/26. 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.

SNPWG reviewed all NPUB features which are actually stored in the SNPWG wiki and assigned the features to the potential Product Specification candidates from (1.) to (7.). The sequence of the development of the assigned seven themes of S-100 conformant NP3 Product Specifications mainly depends on specific contributions of other HSSC working groups.

The following road map gives a rough orientation for the different Product Specification components for Radio Services (1.):

	Start	End	Duration in days	
(1.) Radio Services	01.01.2013	31.12.2015	1080	
NP1 Data sample	01.01.2013	06.06.2013	155	
Prod Spec	01.07.2013	31.12.2014	540	
Application Schema	01.07.2013	30.09.2013	89	
Feature Catalogue	01.10.2013	31.12.2013	90	
Portrayal spec	01.03.2014	30.04.2014	59	
Portrayal catalogue				DIPWG dependent
DCEG	01.05.2014	open		Pending on S-101 DCEG progress
Test Bed				not yet defined

The data sampling is planned to be finalized by the end of April 2014 for:

- (2) Navigational Services,
- (3) Physical Environment, and
- (4) Traffic Management.

The road map for further steps of the development after data sampling for these three Product Specifications cannot be estimated at this stage. Its future progress will be largely influenced by the experiences to be gained with the drafting of the MPA and the Radio Services Product Specifications.

The production schedules for the data samples for Marine Service, Harbour Infrastructure and Social/Political also remain undetermined for the time being.

Problems Encountered

Although being supported by CARIS and Jeppesen, the relatively small size of the group means that expertise resources are limited. Thus, the group needs continuous assistance from TSMAD and DIPWG in technical issues.

Any Other Items of Note

Digital Mariners' Routeing Guide (DMRG) product developed by BLAST (Bringing Land and Sea Together) Harmonisation of Nautical Information project

SNPWG15 received a final report on BLAST. The DMRG was of particular interest. The SNPWG sees the DMRG as a test of a customised product. Selected components of the BLAST results could be the basis of future SNPWG Product Specifications.

Proposed modifications of the Terms of Reference

The SNPWG proposes modifications of their Terms of Reference. These modifications reflect a HSSC4 request to "Elaborate minimum requirements for the presentation of the content of this product – which is not necessarily to be fully integrated into ECDIS."

Consequently, it is proposed to modify the Objective and the Procedures (Paragraph 1) as follows:

"Objective

To develop guidelines for the preparation of nautical publications, in a **format compatible with digital information systems including but not limited to ECDIS.**

Procedures (paragraph 1)

a) The WG should:

- (i) Investigate the data format specifications, content and display requirements of digital nautical publications intended for use in ECDIS **and other information display devices.**
- (ii) Draft guidance document(s) and/or revised technical resolutions, as appropriate.
- (iii) Liaise with relevant IHO Technical WG's to ensure, technical feasibility and compatibility of any developed proposals."

Web based SNPWG data dictionary

A web based data dictionary embedded in the SNPWG Wiki [<http://www.fuerstenberg-dhg.de/mediawiki/index.php/SNPWG>] which explains the meaning and application of any of the features and attributes, is now complete and comprises all information necessary for the definition of digital S-100 conformant NPUB Product Specifications of NP3-type nautical information (attributed features compatible with ECDIS).

The Wiki itself is a working tool to evaluate the necessary information and to test the feasibility of the developed feature content during the Product Specification development. The Wiki doesn't have any formal status. The dictionary items will be moved to the NPUB GI register as soon as its functionalities support this.

Conclusions and Recommended Actions

- The SNPWG activities were focussed on making progress with the NP3-type NPUB Product Specifications development.
- All SNPWG Product Specifications would be based on the new S-100 version 2.0 which is currently under development. Therefore, the given time schedules depend on the S-100 v 2.0 development progress and on the progress of other HSSC WGs including, but not limited to, DIPWG and DQWG.

Action Required of HSSC

HSSC5 is invited to endorse:

1. the continued activity of SNPWG.

HSSC5 is invited to confirm:

1. that the applicable part of the M-3 resolutions are covering adequately the SOLAV V Regulations 9 (3) and thus, the carriage requirement for nautical publications,
2. the task to draft the listed seven NP3-type NPUB Product Specifications additionally to the both MPA Product Specifications which are under development,
3. the order of their development, and
4. the proposed development schedule.

HSSC5 is invited to note this report and to endorse:

1. the continuance of the Work Plan, and
2. the new Terms of Reference.

ANNEX A to SNPWG Report

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ANNEX B to SNPWG Report

SNPWG WORK PLAN 2013-14**SNPWG Tasks**

A	Decide on the Data Structure of NPs-Data intended for use in ECDIS (NP3) (IHO Task 2.6.2 refers)
B	Define the content requirements of NP data intended for use in ECDIS (NP3) (IHO Task 2.6.2 refers)
C	Develop test data (IHO Task 2.6.2 refers)
D	Develop basic display rules for NP data intended for use in ECDIS (NP3) (IHO Task 2.6.2 refers)
E	Draft guidance documents (IHO Task 2.6.2 refers)
F	Maintain and extend IHO resolutions in M-3 relating to Nautical Publications as required (IHO Task 2.6.3 refers)
G	Liaise with other HSSC WG's and other IHO and international bodies (IHO Task 2.6.2 refers)
H	Develop, maintain and extend S-10n - Nautical Information Product Specification (IHO Task 2.6.2 refers)
I	Conduct the 2013 and 2014 meetings of SNPWG (IHO Task 2.6.1 refers)

Task	Work Item	Priority H-high M-medium L-low	Next mi- lestone	Start Date	End Date	Status P-Planned O-Ongoing C-Completed	Contact Person	Related Pubs / Standard	Remarks
B2	Model the data where required.	H		2004	Open	O	Chair/Sec SNPWG	S-100	To be included in NPUBS domain of the FCD Register
B3	Review of objects and attributes	H	04/2014	2004	Open	O	Chair/Sec SNPWG	S-100	According to the tasks assigned by HSSC4

B4	Propose amendments to HYDRO domain of the FCD Register	H		2005	Open	O	Chair/Sec SNPWG	S-100	To be included in the FCD register
B6	Populate the NPUBS domain of the FCD Register	H		2006	Open	O	Chair/Sec SNPWG	S-100	
C1	Produce NP1 data sample	H		2009	Open	O	Chair/Sec SNPWG		According to the tasks assigned by HSSC4 Collection of information to be modeled
C1.1	For Radio Services	H	04/2014	2012	2014	O	Chair/Sec SNPWG		
C1.2	For Navigational services	H	04/2014	2012	2014	O	Chair/Sec SNPWG		
C1.3	For Traffic management	H	04/2014	2012	2014	O	Chair/Sec SNPWG		
C1.3.1	For Marine Protected Areas	H	04/2014	2011	2012	C	Chair/Sec SNPWG		
C1.4	For Physical environment	H	04/2014	2013	2014	O	Chair/Sec SNPWG		
C2	Set up a test bed ECDIS	M		Open	Open	P	Chair/Sec SNPWG		
D1	Develop basic display rules for NP data intended for use in ECDIS (NP3)	M		2008	Open	O	Chair/Sec SNPWG	S-52	Close co-operation with DIPWG required
E1	Draft Data Capture and Encoding Guides	H		2008	Open	O	Chair/Sec SNPWG		Document for NPs similar to Use of the Object Catalog
E1.1	For Marine Protected Areas	H	04/2014	2011	Open	O	Chair/Sec SNPWG		To be harmonized with S101 DCEG; Awaiting next S-100 version

E1.2	For Radio Signals	M		2014	Open	P	Chair/Sec SNPWG		Depends on modeling progress
E2	Draft Sample Product Specification	H		2008	2009	C	Chair/Sec SNPWG		Development of: a) a SNPWG profile of S-100 Part 11 Prod Spec; b) a draft sample for Pilotage; c) a draft sample for Waterways.
E3	Draft Product Specification	H		2010	Open	O	Vice Chair SNPWG	S-10X	Drafted in phases;
E3.1	For Radio Services	H	04/2014	Open	Open	P	Chair/Sec SNPWG		
E3.2	For Navigational services	H	04/2014	Open	Open	P	Chair/Sec SNPWG		
E3.3	For Traffic management	H	04/2014	2011	Open	O	Chair/Sec SNPWG		
E3.3.1	For Marine Protected Areas	H	04/2014	2011	2012	O	Chair/Sec SNPWG		Depends on progress of next S-100 version allowing GML data use
E3.4	For Physical environment	H	04/2014	Open	Open	P	Chair/Sec SNPWG		
F1	Resolutions in M-3 relating to Nautical Publications	M	04/2014	2012	Open	O	Chair/Sec SNPWG	M-3	A review is scheduled due to harmonization of M-3 information and potential ProdSpecs content
F2	S-12	L		Open	Open	P	Chair/Sec SNPWG	S-12	If considered necessary
G1	Liaise with the DIPWG for the development of the display rules	H		2005	Open	O	Chair/Sec SNPWG		
G2	Liaise with the TSMAD	H		2004	Open	O	Chair/Sec SNPWG		
G3	Liaise with other groups	H		2004	Open	O	Chair/Sec SNPWG		Including DPSWG, DQWG, TWLWG, MIO's, AML, ICE, Inland ECDIS

G4	Liaise with IALA e-Nav Committee	H		2013	Open	O	Chair/Sec SNPWG		As advised by HSSC4
H1	Develop, maintain and extend S-10n - Nautical Information Product Specification	H	04/2014	2009	Open	O	Chair/Sec SNPWG		Liaise with WWNWS-Sub committee
H1.1	For Radio Services	H	04/2014	2012	Open	O	Chair/Sec SNPWG		
H1.2	For Navigational services	H	04/2014	2013	Open	O	Chair/Sec SNPWG		
H1.3	For Traffic management	H	04/2014	2013	Open	O	Chair/Sec SNPWG		
H1.3.1	For Marine Protected Areas	H	04/2014	2011	Open	O	Chair/Sec SNPWG		
H1.4	For Physical environment	H	04/2014	2013	Open	O	Chair/Sec SNPWG		