

Paper for Consideration by S-100WG

S-102 Product Specification Update

Submitted by:	US – US Naval Oceanographic Office
Executive Summary:	S-102 Status Update
Related Documents:	S-102, Edition 2.0.0 WORKING DRAFT
Related Projects:	N/A

Introduction / Background

In 2012 the IHO member states approved S-102 as the first S-100 based product specification. This specification is based on the Open Navigation Standards Working Group (ONSWG) work on the Bathymetric Attributed Grid (BAG). At TSMAD 27 the U.S. (Naval Oceanographic Office) requested approval to work with the OEMs and other hydrographic Offices to upgrade the product specification. Approval was granted during TSMAD 29 (2015).

The initial goal set by TSMAD 29 was to complete update efforts by S-100WG1 (2016) in preparation for final submission to HSSC8. Multiple events including change of project team lead and level of effort required to draft Section 9.0 (S-102 Portrayal) delayed this effort. The current goal is to finalize version 2.0 for submission to HSSC9.

Discussion

Over the past year the following interactions have taken place:

- During S-100WG1 (Japan). Group discussed portrayal and file size limits.
- Email distributed to working group providing update of specification and requested feedback on potential portrayal options. Several responses were received.
- Project Team lead met with SPAWAR to discuss portrayal options and future test bed support.
- Discussed portrayal options and file size limits with multiple individuals at 2016 S-100 Test Strategy meeting in Rostock, Germany.

In preparation for final submission at HSSC9 the following work plan was briefed at HSSC8.

Clause	Section Name	Due Date	Status	Comments
12.0	Metadata	12/30/16	Completed	<ul style="list-style-type: none"> • Clean up section 12.0 to ensure compliance with S-100 version 3.0.0.
9.0	Portrayal	3/30/17	Conceptual Portrayal Completed. To be discussed at S-100 WG2 meetings.	<ul style="list-style-type: none"> • (12/30/16) Develop draft portrayal options for submission to the S-102 project team. • (2/28/17) Hold telecom to discuss draft portrayal. • (3/2017) Hold breakout session to finalize portrayal at S-100WG2 (Genoa, Italy).
4.3	S-102 Feature Catalogue	3/30/17	Ongoing	<ul style="list-style-type: none"> • S-102 features to be registered during portrayal phase. • Features to finalized after S-100WG2 meeting.
Annex B	HDF	12/30/16	Draft Completed.	<ul style="list-style-type: none"> • Clean up HDF5 section.

A WORKING DRAFT of S-102 version 2.0.0 (03/03/2017) has been submitted for S-100 working group review. Version 2.0.0 contains the following additions, updates:

- **Clause 4.0: Data Content and Structure**

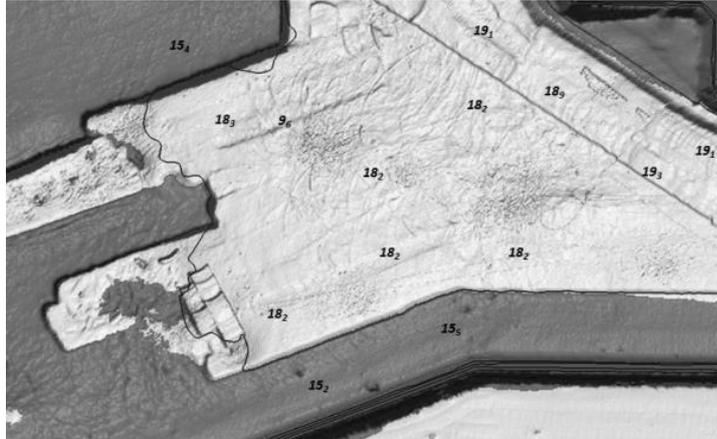
Incorporated feedback sent in by project team members (documentation corrections).

- **Clause 9.0: Portrayal:**

Drafted Conceptual Portrayal Schemes:

– **Portrayal Option 1 (Display of soundings extracted from an S-102 dataset):**

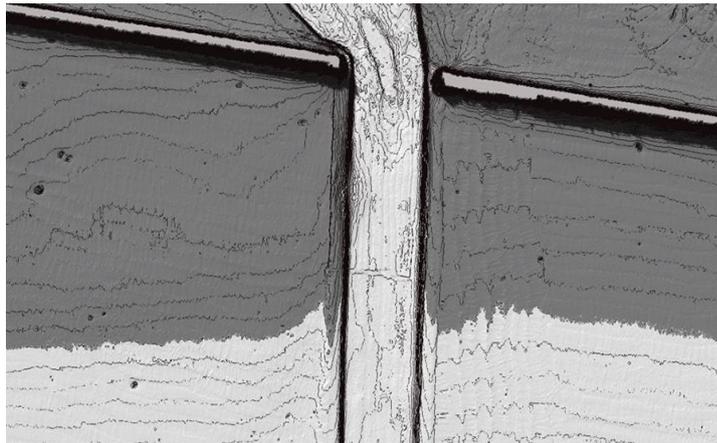
Bathymetric surface data products contain discrete grid data values representing depth, and the associated uncertainty of that depth, of the sea or other navigable water way. Through the use of sounding selection and thinning routines, S-100 compliant systems can display a field of soundings extracted directly from the S-102 product.



Example: Display of S-102 Extracted Soundings

– **Portrayal Option 2 (Generation and display of S-102 derived depth contours):**

Depth contours have traditionally been generated by the charting authority at time of chart compilation. With the addition of S-102 the ECDIS has the ability to generate and display enhanced depth contours using mariner provided context parameters.

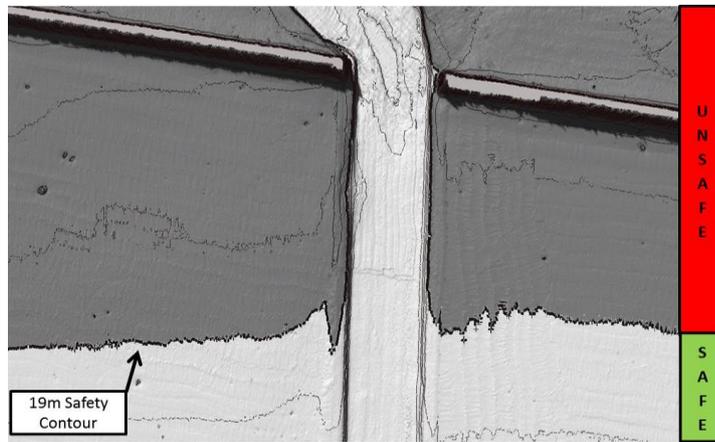


S-102 Enhanced Contours

– **Portrayal Option 3 (Generation and display of safety contour and associated depth zones):**

S-101 product specifications state that the mariner has the ability to define own-ship safety contour, selected from among displayed contours in the SENC. The addition of an S-102 dataset enhances this capability, providing means to render and display the safety contour and associated depth zones directly from the grid.

As S-102 data is ingested the ECDIS will perform two operations using the current value for safety contour: 1) delineation and display of depth zones shades, and 2) generation of a safety contour. The functionality defined below will only exist within the extents of the S-102 dataset.



Display of Safety Contour w/ Depth Zones (1m contours)

- **Clause 12.0: Metadata:**

Updated S-102 dataset metadata to align with S-100 product specification (version 3.0).

- **Annex B: HDF5 Overview:**

Provided information on S-102 utilization of the Hierarchical Data Format version 5 or HDF5.

The following clauses are currently under development:

- **Annex F Surface Generalization (under development, not included in S-100WG submission):**

The proposed portrayal schemes will require that S-100 compliant systems possess the capability to generalize gridded surfaces in order to generate on-the-fly contours. S-100 systems will also need to be able to extract, thin and display selected soundings. NAVOCEANO is currently drafting additional documentation discussing the procedures required to prepare S-102 datasets to support these functions.

Conclusions

Current S-102 progress is on track for final submission to HSSC9.

Recommendations

None.

Justification and Impacts

None.

Action Required of S-100WG.

The S-100 WG is invited to:

- c. note the progress with version 2.0 of S-102.