

Paper for Consideration by HSSC**Application of S-100 Data Protection**

Submitted by:	PRIMAR
Executive Summary:	This paper describes PRIMAR activities to empower IHO to operate as Scheme Administrator for the S-100 protection scheme and what PRIMAR is doing with its member states to provide encrypted and digitally signed S-101 and S-102 datasets.
Related Documents:	IHO S-100 Universal Hydrographic Data Model edition 4.0.0 IHO S-63 Data Protection Scheme
Related Projects:	PRIMAR S-57 and S-101 Dual Fuel development project

Introduction / Background

The IHO S-100 Universal Hydrographic Data Model edition 4.0.0 was published December 2018. A new *S-100 Part 15 Encryption and Data Protection* was introduced defining the methods and procedures for the authentication and protection of datasets for use by product specifications based on the S-100 data model. Despite re-using protection principles defined in IHO S-63 Data Protection Scheme, it was agreed to amend many of the algorithms and formats to better harmonise with international security developments since 2003 when S-63 was introduced. This paper describes PRIMAR activities to apply the new protection scheme in its S-101 and S-102 developments.

Analysis/Discussion

PRIMAR and its member states have started a project to develop support for a dual-fuel S-57/S-101 distribution service. The S-101 ENC products will be protected using the new protection scheme defined in S-100. PRIMAR has the past years also been developing a S-102 distribution service where the products will be digitally signed and protected.

The stakeholders will require that IHO establish tools and procedures to operate as the S-100 protection Scheme Administrator before they can start development of S-100 protection support. The IHO S-100 Scheme Administrator role is similar to S-63, but requires that IHO Secretariat obtain some new software tools to fulfill the role.

PRIMAR and its member states have a high priority project to develop a dual-fuel S-57 and S-101 distribution service. PRIMAR is also running other projects to use the same service infrastructure to establish a S-102 distribution service. PRIMAR will continue to digitally sign and protect its products when we are switching over to S-10x based services.

PRIMAR and its member states have included activities in their S-101 project plan for 2019 to enable IHO Secretariat to start operating as S-100 Scheme Administrator. The activities will be

funded by PRIMAR member states. The following activities have been agreed and are in progress with IHO:

- Prepare and agree a requirement specification for a S-100 Scheme Administrator application to create S-100 compliant Data Server certificates. It will also include functionality to enable IHO Secretariat to digitally sign files in accordance with S-100 part 15; e.g. S-101 Feature Catalogue. Status: almost completed.
- Develop S-100 Scheme Administrator application. Status: in progress, expected completion March 2019.
- Suggest procedures and training to IHO Secretariat in the operation of S-100 Scheme Administrator. Review current Data Server and OEM agreements to support S-63 and S-100 data protection. Status: expected completion April 2019.

The current plan will enable IHO Secretariat to start operating as S-100 protection Scheme Administrator this spring. This will enable PRIMAR to continue its development and include data protection (digital signatures and encryption) in its S-101 and S-102 distribution services.

PRIMAR will make protected S-101 and S-102 test data available to all interested parties as soon as developments are completed later this year. Any issues identified during our developments will be forwarded to the appropriate HSSC working group.

We believe the wide availability of S-101 and S-102 test-data will encourage OEMs and other stakeholders to initiate their S-100 developments. Since IHO Secretariat has functionality to digitally sign their own S-10x standards documents (e.g. feature or portrayal catalogues), it will also contribute to raising the protection awareness among the stakeholders.

Conclusions

The release of S-100 part 15 Encryption and Data Protection in December 2018 requires IHO Secretariat to obtain tools and procedures to operate as the S-100 Scheme Administrator. The PRIMAR S-101 development project has included activities and funding to empower IHO Secretariat to start operating as S-100 Scheme Administrator spring 2019. PRIMAR S-101 and S-102 developments will make test-data available to stakeholders to encourage their development of S-10x compliant products.

Justification and Impacts

The results from PRIMAR S-101 and S-102 projects are:

- a. Provide the software tools and procedures required by IHO Secretariat to operate as S-100 protection Scheme Administrator spring 2019;
- b. The software tools will enable IHO Secretariat to digitally sign files in accordance with S-100 part 15. It can be used to digitally sign standardisation files; e.g. S-101 feature and portrayal catalogues.
- c. PRIMAR will provide encrypted and digitally signed S-101 and S-102 test-data to stakeholders to encourage their developments

Action Required of HSSC

The HSSC is invited to:

- a. Note this report
- b. Consider to inform relevant IHO working groups about information given in the paper and inform PRIMAR about any coordination activities.