S-158:130

Polygonal Demarcations of Global Sea Areas Data Product Validation Checks

(Draft) Edition 1.0.0-20250320

Aligned to S-130 Edition 2.0.0

IHO

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Document History

Changes to this Specification are coordinated by the IHO S-130 Project Team. New editions will be made available via the IHO web site. Maintenance of the Specification shall conform to IHO Resolution 2/2007 (as amended).

Version Number	Date	Author/Editor	Purpose
0.0.1	2025-01-21	Lingzhi WU	Initial draft for S130 Validation Checks.
1.0.0	2025-03-17	RM	Updated for HSSC draft
1.0.0	2025-03-20	S-130PT	Final HSSC draft

Summary of Substantive Changes in Edition x.x

Bold references in the Clauses Affected column indicate the principal sections/clauses that are affected by the described change.

Change Summary	Clauses Affected
(To be populated for editions following Edition 1.0.0)	

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1 Introduction

This document specifies a set of checks that producers of S-130 Polygonal Demarcations of Global Sea Areas validation tools must implement in their validation software in order to ensure conformance of S-130 datasets and exchange sets with requirements specified in S-130 Product Specification. The initial list of checks for S-130 was compiled by the IHO S-130 Project Team.

The checks listed in this document are product-specific. They supplement but do not replace the generic S-100 validation checks applicable to all S-100 products which are defined in a separate IHO publication (S-158:100 – Universal Hydrographic Model Validation Checks).

1.1 Scope

This document, designated as “S-158:130” by the IHO, specifies validation checks for data products conforming to Edition 2.0.0 of IHO Product Specification S-130 (Polygonal Demarcations of Global Sea Areas) Product Specifications.

This document specifies product-specific validation checks for both datasets and exchange sets containing datasets conforming to the listed Product Specifications.

The checks specified in this document supplement the checks described in Edition 1.0.0 of S-158:100 (Universal Hydrographic Data Model Validation Checks). Both sets of validation checks, those described in S-158:100 as well as those defined in S-158:130, must be applied to test the validity of S-130 datasets and exchange sets. Since S-130 is not intended for use on ECDIS, the additional cross-product checks, defined in S-158:98, need not be applied.

1.2 Conformance

This specification conforms to Edition 1.0.0 of IHO specification S-158 (Validation Checks – Introduction and Structure).

The validation checks described herein conform to Edition 2.0.0 of IHO Product Specification S-130 (Polygonal Demarcations of Global Sea Areas).

1.3 References

1.3.1 Normative references

S-100 *IHO Universal Hydrographic Data Model*, Edition 5.2.0, June 2024

S-130 *Polygonal Demarcations of Global Sea Areas*, Edition 2.0.0, March 2025

S-158 *Validation Checks – Introduction and Structure, Edition 1.0.0, ??? 2025.* In preparation.

S-158:100 *Universal Hydrographic Data Model Validation Checks, Edition 1.0.0, ??? 2025*. In preparation.

1.3.2 Informative references

ISO 19157-1:2023 *Geographic information – Data Quality – Part 1: General Requirements.*

S-98 *Data Product Interoperability in S-100 Navigation Systems, IHO Publication S-98, Edition 2.0.0, ??? 2025*. In Preparation.

1.4 Terms, definitions and abbreviations

1.4.1 Terms and definitions

The terms and definitions listed in S-158 apply to this document. In addition, the following terms are used in this document or Annex A:

precede
to go before in time; to happen or exist before; to be earlier than

1.4.2 Abbreviations

This Specification uses the abbreviated terms defined in S-158.

1.4.3 Symbols

The symbols used in logical and spatial expressions are defined in S-158 clause 1.3.3 (Symbols).

1.5 Use of language

Within this document:

- "Must" indicates a mandatory requirement.
- "Should" indicates an optional requirement, that is the recommended process to be followed, but is not mandatory.
- "May" means "allowed to" or "could possibly", and is not mandatory.

1.6 General description

S-158:130 is a specification describing validation checks for S-130 data products. There are no data products based directly on this edition of S-158:130 and therefore no general information applicable to data products conforming to it.

1.7 Specification metadata and maintenance

1.7.1 Specification metadata

This information uniquely identifies this Specification and provides information about its creation and maintenance.

Title: Polygonal Demarcations of Global Sea Areas Data Product Validation Checks

Version: 1.0.0

Date: 2025-03-20

Language: English

Classification: Unclassified

Contact: International Hydrographic Organization.
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Role: Owner

URL: https://registry.iho.int

Identifier: S-158:130

Maintenance: Changes to this Specification are coordinated by the IHO S-130 Project Team and made available via the IHO Publications website. Maintenance of the Product Specification must conform to IHO Technical Resolution 2/2007 (revised 2010). For

reporting issues which need correction, use the contact information. Please use the contact information above if amendments to this specification need to be reported.

1.7.2 Specification maintenance

1.7.2.1 Introduction

Changes to S-158:130 will be released by the IHO as a New Edition, revision, or clarification.

The list of checks, which accompanies this document is considered part of this Specification and changes to it are considered changes to this Specification.

S-158:130 is not accompanied by separate artefacts such as an XML Schema, Feature or Portrayal Catalogue and therefore this clause does not address the question of changes to such derived artefacts.

1.7.2.2 New Edition

New Editions of S-158:130 include at least one of the following changes:

- introduce a new validation check (of any classification);
- remove an existing validation check (of any classification);
- change the classification of a validation check, whether upgrade (such as Error to Critical) or downgrade (such as Error to Warning);
- extend a validation check to include new features, conditions, etc., in a way that requires validation software manufacturers to change their software.

New Editions are likely to require validation software manufacturers to change their software or invalidate datasets which passed validation according to the previous Edition of S-158:130.

All cumulative revisions and clarifications must be included with the release of approved New Editions.

1.7.2.3 Revision

Revisions are defined as substantive semantic changes to S-158:130. Typically, revisions will change S-158:130 to correct factual errors or introduce necessary changes that have become evident as a result of practical experience or changing circumstances. Revisions include corrections of misinterpretations of S-130, or extensions to checks that do not require changes to validation software.

A revision must not be classified as a clarification. All cumulative clarifications must be included with the release of approved revisions.

1.7.2.4 Clarification

Clarifications are changes to S-158:130 arising from non-substantive reasons.

Typically clarifications for non-substantive reasons remove ambiguity; correct grammatical and spelling errors; amend or update cross references; revise check messages or clarify check descriptions without requiring manufacturers to change their software.

1.7.2.5 Version numbers

The associated version control numbering to identify changes (boldface **n**) to S-158:130 must be as follows:

New Editions denoted as **n**.0.0

Revisions denoted as n.**n**.0

Clarifications denoted as n.n.**n**

2 Check Structure

Check structure in S-158:130 includes the fields specified in S-158.

3 Check Syntax

The check syntax conforms to the syntax and operators for product-specific checks described in S-158 clause 4.2.

4 Organisation

The list of validation checks for this edition of S-158:130 is available separately (see clause 9). The list of checks accompanies this specification and forms an integral part of it.

5 Other Applicable Checks

5.1 Generic S-100 checks

S-130 datasets and exchange sets must also be validated using the following subset of the generic S-100 validation checks defined in S-158:100 Collection A.

Table 5.1 - Applicability of generic Collection A S-100 checks

Document reference in S-158:100 list	Checks	Apply to	Remarks
Part 1	N/A	N/A	No direct implementation on datasets or exchange sets
Part 2 / 2a	N/A	N/A	No direct implementation on datasets or exchange sets
Part 4a	N/A	N/A	No direct implementation on datasets or exchange sets
Part 4b	N/A	N/A	No direct implementation on datasets or exchange sets
Part 5 / 5a	All Collection A checks for Parts 5 and 5a	Datasets	The S-158:100 checks in Collection A compare datasets to the Feature Catalogue
Part 6	N/A	Datasets	No direct implementation on datasets or exchange sets
Part 7	All Collection A checks	Datasets	Except checks applicable only to spatial types not used by S-130 (e.g., multipoint)
Part 8	None	N/A	Part 8 does not apply to S-130
Part 9 / 9a / 13	None	N/A	Part 9 / 9a / 13 does not apply to S-130
Part 10b	All Collection A checks	Dataset	
Part 10a / 10c	None	N/A	Parts 10a and 10c do not apply to S-130
Part 11	All Collection A checks	Dataset	Checks for dataset size and CRS validity
Part 15	All Collection A checks	Exchange Catalogue Dataset	Checks for validity of digital signatures, which are mandatory in S-100 Edition 5.2.0

Document reference in S-158:100 list	Checks	Apply to	Remarks
Part 17	All Collection A checks	Exchange catalogue Exchange set	Except checks for constructs not used in S-130: • ISO metadata files • Support files other than language packs • References to support files from datasets • Cancellation methods not used in S-130 • Metadata prohibited for S-130

NOTE: Checks in S-158:100 Collection B apply to various components of Product Specification packages (application schema, feature catalogue, GML Schema, etc.). They do not apply directly to datasets or exchange sets and are not expected to be implemented for the purposes of validating datasets or exchange sets.

5.2 Interoperability checks

Since S-130 datasets and exchange sets are not intended for use on ECDIS, the interoperability checks listed in S-158:98 need not be applied.

5.3 Check messages

Application software is expected to identify the location in the file where the error was detected, and indicate the location in addition to the check message. The method used to identify and indicate the location will depend on the format and is left to the application software developer.

6 Check Application Sequence

The suggested check application sequence is described in Table 6-1.

Table 6-1 - Suggested application order of validation checks

Order	Check Collection	Defined in	Apply to
1	S-100 generic checks for datasets	S-158:100	Dataset, in isolation
2	Product-specific checks for datasets	S-158:130	Dataset, in isolation
3	S-100 generic checks for exchange sets	S-158:100	Exchange set
4	Product-specific checks for exchange sets	S-158:130	Exchange set

7 Check Classification

The check classification conforms to the scheme described in S-158.

8 Geometry and Spatial Operators

S-130 products use vector geometry. Any spatial operations mentioned in checks pertaining to vector spatial primitives must conform to the operations for vector products described in S-158:100.

For all spatial operators a default tolerance should be applied in validation software as follows:

- For coordinates in decimal degrees – a tolerance of 10^{-7} degrees or the precision of the lowest-precision coordinate field, whichever is greater.
- For coordinates in metres (UTM or UPS) – a tolerance of 0.01 m or the precision of the lowest-precision coordinate field being compared, whichever is greater.

9 Other Components of this Specification

The other components of this Specification listed below are provided as separate documents or artefacts accompanying this document and form an integral part of this Specification.

1) Spreadsheet of S-130 validation checks named S158_130_1_0_0_YYYYMMDD. The build date is the YYYYMMDD suffix in the file name, whereas the “1_0_0” component represents the edition, revision, and clarification number. The file with the same edition and revision number as this document but with the most recent build date must be used.