# S-101 Product Specification Content Management

| Clause | 1 | Overview | | | | |
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| Section | Heading | | Content | Comments/Questions | Phase | FIN |
| 1.1 | Introduction | | | • Needs to be written | N/A | N |
| 1.2 | References | | | • Needs to be written | N/A | N |
| 1.3 | Terms, definitions and abbreviations | | | • Needs to be fleshed out | N/A | N |
| 1.4 | S-101 General Data Product Description | | General Information | **S57 DELTA: changed the spatial extent from 90 degrees to 88. This will prevent ENC data from crossing the poles.** | 1 | Y |
| 1.5 | Data Product Specification Metadata | | Identifies the product specification | • Should we put the catalogue versions in this section as well as in the discovery metadata?<br><br>8/19/10: The maintenance of the product specification is referred to here and it refers back to the IHO TR<br><br>**ACTION: Clarify how upticks in the FC/PC are handled and released and does it cause a new P.S to be published.** | 1 | N |

| Clause | 2 | Specification Scopes | | | | |
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| Section | Heading | | Content | Comments/Questions | Phase | FIN |
| 2 | Specification Scopes | | Contains the scope of the product specification | | 1 | N |

| Clause | 3 | Data Set Identification | | | | |
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| Section | Heading | Content | Comments/Questions | | Phase | FIN |
| 3 | Data Set Identification | Identifies what the data set is, its intended use and the spatial resolution including the display scales aligned to RADAR ranges | | | 1 | Y |
| | Spatial Resolution | Identifies the optimum display scales for ENC. | **ACTION: What is meant by AHO's comment on intermediate display scales?**<br><br>**S57 DELTA: Changed the name from Display scale to Optimum Display scale to align with the Swedish proposal.** | | | |

| Clause | 4 | Data Content and structure | | | | |
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| Section | Heading | Content | Comments/Questions | | Phase | FIN |
| 4.1 | Introduction | Introduction to data content and structure | • Do we add the portrayal catalogue to the application schema?<br><br>8/19/2010: Portrayal Catalog does not go in here. | | | |
| 4.2 | Application Schema | This will only contain a subset of the application schema | 8/19/2010: Recommended to include the S-100 GFM and constrain what is needed, this is a change from attempting to put examples in or modeling the entire | | All | N |

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| | | | FC in UML.<br>**ACTION: Will incorporate the S-100 GFM (only including what S-101 needs, will split out the features and the spatial)** | | |
| 4.2.1 | Feature | This will include the feature model of the GFM | **ACTION: Need words** | 1 | N |
| 4.2.2 | Spatial | This will include the spatial part of the GFM | **ACTION: Need words and the model.**<br><br>**QUESTION: Would this be covered under the spatial section?** | 1 | Y |
| 4.3 | Feature Catalogue | | | 1 | |
| 4.3.1 | Introduction | Brief explanation of what the feature catalogue is | | | |
| 4.3.2 | Feature Types | This clause discusses the various feature types allowed in S-101 | | 1 | |
| 4.3.2.1 | Geographic | Defines what a geographic feature type is | | | |
| 4.3.2.2 | Meta | Describes meta features | **S57 DELTA: Mandatory features are defined in the FC and Encoding is in the DCCG.** | 1 | |
| 4.3.2.3 | Aggregated | Defines Aggregated Features | | 1 | |
| 4.3.2.4 | Theme Feature Types | Defines what theme feature types are, each clause below will define various themes | • Do we have other use cases for themes? There may be one in the paper on pick reports.<br>**Action: Discuss the following as a possible theme: Update theme – update text and what changed and it would be in a summary later, information to the end user what is contained in the change – similar to the text in a NTM, maybe almost ,like an update pick report. Need to give some guidance on** | 1 | |

| | | | how this should be used. | | |
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| 4.3.2.4.1 | Skin of the Earth Theme | | **ACTION:  Need to create the skin of the earth theme.** | 1 | |
| 4.3.3 | Feature Relationship | Describes the types of feature relationships used in S-101 | | | |
| 4.3.3.1 | Associations | | | 1 | |
| 4.3.3.2 | Aggregation | | | 1 | |
| 4.3.3.3 | Composition | Strong Aggregation – if one part is removed then everything is removed | | 1 | |
| 4.3.4 | Information Types | Defines information types | • link information types across multiple cells – look at the scale independent cell dedicated to information types option discussed sep. 2009 | 4 | |
| 4.3.5 | Attributes | The clauses under this section describe the type of attributes | | 1 | |
| 4.3.5.1 | Numeric Attribute Values | | | 1 | |
| 4.3.5.2 | Complex Attributes | Defines Complex Attributes | | 3 | |
| 4.3.5.3 | Text Attribute Values | | | 1 | |
| 4.3.5.3.1 | Text Placement | Defines the use of cartographic attributes | | 3 | |
| 4.3.5.4 | Mandatory Attribute Values | These are defined in the feature catalogue | | 1 | |
| 4.3.5.5 | Missing Attribute Values | Deals with how to handle unknown attribute values | • At the Feature and Portrayal Catalogue review stage we need to look at the default symbol (?) and remove this and pick another symbol for the unknown part of the attribute<br>• Also need to look at the mandatory attributes that drive portrayal<br>• Discuss the addition of unknown as an attribute value<br><br>**ACTION:  The above are things that need** | 1 | |

| Section | Heading | Content | Comments/Questions | Phase | FIN |
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| | | | **to happen during FC/PC review** | | |
| 4.4 | Feature Object Identifier | Each feature needs a unique FOID | | 1 | |
| 4.5 | Scale Independent and Scale Dependent Cells | | • Place holder until a TSMAD decision is made | 2 | |
| 4.5.1 | Scale Independent Cell | | • Place holder until a TSMAD decision is made | 2 | |
| 4.5.1.1 | Scale Independent Cell content | | • Place holder until a TSMAD decision is made | 2 | |
| 4.5.2 | Scale Dependent Cell | | • Place holder until a TSMAD decision is made | 2 | |
| 4.6 | Optimum Display | Utilization of min and max display | **ACTION: Need to define what the new features are and explain in the PS.**<br><br>**ACTION: Need to define the encoding**<br>**ACTION: Need to define the portrayal**<br>**ACTION: Need to define minimum implementation guidelines** | 2 | |
| 4.7 | Geometry | Describes the geometry to be used in S-101 | | 1 | |
| | | Level 3a - This is the allowed level of geometry in S-101.  Constrains to Level 3a with an additional constraint of loxodromic and places an exception for soundings. | | | |

| Clause | 5 | Coordinate Reference Systems | | | |
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| Section | Heading | Content | Comments/Questions | Phase | FIN |
| 5.1 | Introduction | Explanation that S-101 uses compound CRS | | 1 | |
| 5.2 | Horizontal Coordinate | WGS84 | | 1 | |

| Section | Heading | Content | Comments/Questions | Phase | FIN |
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| | Reference System | | | | |
| 5.3 | Vertical CRS for Soundings | Explains that there can be multiple Vertical CRS | | 1 | |
| 5.4 | Coordinate Units | Allowable units of measure | **ACTION: Need to find a home for the following Units – Height, Positional Accuracy, Distance, Time and Bearings** | 1 | |

| Clause | 6 | Data Quality |
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| Section | Heading | Content | Comments/Questions | Phase | FIN |
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| 6.1 | Introduction | | **ACTION: This entire clause has been referred to DQWG** | 2 | |
| 6.2 | Quality, Reliability and Accuracy of Bathymetric Data | | | | |
| 6.2.1 | Quality of bathymetric data | | | | |
| 6.2.2 | Survey reliability | | | | |
| 6.2.3 | Quality of sounding | | | | |
| 6.2.4 | Sounding accuracy | | | | |
| 6.2.5 | Technique of sounding measurement | | | | |
| 6.3 | Accuracy of non-bathymetric data | | | | |
| 6.3.1 | Quality of positions | | | | |
| 6.3.2 | Horizontal accuracy | | | | |
| 6.3.3 | Vertical accuracy | | | | |
| 6.3.4 | Source of bathymetric data | | | | |
| 6.3.5 | Source of other data | | | | |

| Clause | 7 | Data Capture and Classification |
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| Section | Heading | Content | Comments/Questions | Phase | FIN |
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| 7.1 | Introduction | The bulk of this is in an appendix | | 4 | |

| Clause | 8 | Data Maintenance | | | |
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| Section | Heading | Content | Comments/Questions | Phase | FIN |
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| 8.1 | Introduction | Metadata regarding maintenance and update frequency. | | 1 | |

| Clause | 9 | Portrayal | | | |
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| Section | Heading | Content | Comments/Questions | Phase | FIN |
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| 9.1 | Introduction | | **ACTION: DIPWG reviewing S-52for appropriate content** | 2 | |

| Clause | 10 | Data Product Format (encoding) | | | |
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| Section | Heading | Content | Comments/Questions | Phase | FIN |
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| 10.1 | Introduction | Specifies 8211 | | 1 | |
| 10.1.1 | Encoding of Latitude and Longitude | Specifies Integers and that it is held under CMFX and CMFY with a multiplication factor of $10^7$ | **S57 DELTA: COMF does not exist in the revised 8211 and the X and Y are held in CMFX and CMFY** | | |
| 10.1.2 | Encoding of Depths | Specifies that depths are in decimal meters and are encoded in the CMFZ | **S57 DELTA: The Z value is stored in the CMFZ** | | |

| Clause | 11 | Data Product Delivery | | | |
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| Section | Heading | Content | Comments/Questions | Phase | FIN |
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| 11.1 | Introduction | | | 1 | |
| 11.2 | Exchange Set | Specifies what an exchange set | ACTION: Review in Phase 2 | 2 | |
| 11.3 | Dataset | | | | |
| 11.3.1 | Data sets | Explains what is in an ENC dataset | **S57 DELTA: Cells are now Datasets. Size limit is 10MB, re-issues are eliminated, and datasets can cross the 180 degree** | | |

| Section | Heading | Content | Comments/Questions | Phase | FIN |
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| | | | meridian. CATCOV = 2 is also eliminated, and so is the need for rectangular cells.<br><br>**ACTION: S-100 modification to increase the multiplicity on EX_BoundingBox**<br><br>**ACTION: Need to specify rules to handle gaps and overlaps.** | | |
| 11.3.2 | Dataset file naming | Specifies the naming convention | **S57 DELTA: Name is expanded to ten characters and the nav. Purpose is not part of the name.** | | |
| 11.3.3 | New Editions and Updates | Defines new editions and updates | | | |
| 11.4 | Support Files | S-101 will only utilize text and picture files. TSMAD20 | | 2 | |
| 11.4.1 | Support File Naming | Naming conventions for Support files | | 2 | |
| 11.4.2 | Support file Management | | **ACTION: Needs fleshing out** | 2 | |
| 11.5 | Exchange Catalogue | Specifies the exchange catalogue | | | |
| 11.6 | Data Integrity | This clause and subclauses refer to CRC | | 1 | |
| 11.6.1 | ENC data integrity measures | Specifies that the CRC-32 will be used | | 1 | |
| 11.6.2 | Implementation | Implementation of CRC | | 1 | |
| 11.6.3 | Processing | Processing of the CRC | | | |

| Clause | 12 | Metadata |
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| Section | Heading | Content | Comments/Questions | Phase | FIN |
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| 12.1 | Introduction | | | 2 | |
| 12.1.1 | Exchange Set Metadata | | **ACTION: Needs Fleshing out** | 2 | |
| 12.1.2 | Dataset Metadata | Fields required for dataset metadata | **ACTION: Needs TSMAD Review** | 1 | |
| 12.1.3 | Support File Metadata | Fields required for support file | **ACTION: Needs TSMAD Review** | 2 | |
| 12.1.4 | Exchange Catalogue File Metadata | Fields required for the Catalogue file metadata. | **ACTION: Needs TSMAD Review** | 2 | |

| | | In order to avoid duplication the exchange catalogue inherits the metadata from support files and datasets | | | |
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| 12.2 | Language | Specifies the language for S-101 | | 1 | |
| 12.2.1 | Use of lexical level 2 | Specifies lexical level 2 | **ACTION: Holger to provide verbiage --- How are dealing with this for Phase one since lexical level is no longer valid?** | | |

| Clause | A | S-101 8211 Encoding | | | |
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| Section | Heading | Content | Comments/Questions | Phase | FIN |
| A1.1 | Data set files | | | 1 | |
| A1.2 | Records | | | 1 | |
| A1.3 | Fields | | | 1 | |
| A1.4 | Subfields | | | 1 | |
| A1.5 | Base cell structure | Structure for the Base Cell | **ACTION: Needs TSMAD Review** | 1 | |
| A1.5.1 – A1.5.14 | 8211 fields for Base Dataset | | **ACTION: Mandatory Values need to be filed out and reviewed** <br><br>**DISCUSSION NOTE: In the previous version it was discovered that updates were included in the original structure, as there are differences the 8211 had to be split up.** | 1 | |
| A1.6 | Update dataset structure | Structure for the Update | **ACTION: Needs TSMAD Review** | | |
| A1.6.1 – A1.6.13 | 8211 fields for updates | | **ACTION: Mandatory Values need to be filed out and reviewed** <br><br>**DISCUSSION NOTE: In the previous version it was discovered that updates were included in the original structure, as there are differences the 8211 had to be split up.** | | |

| # | Sec | Action | WHO | FIN |
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| 1 | 1.5 | Need to establish how upticks in the FC/PC are handled and released? | | |
| 2 | 1.5 | If the FC/PC catalogue change does this trigger a new publication of the PS? | | |
| 3 | 3 | In one of the earlier drafts AHO made a comment on Intermediate display scales – need clarification? | | |
| 4 | 3 | Need TSMAD concurrence to officially change Display Scale to Optimum Display Scale | | |
| 5 | 4.2 | Need to incorporate the S100 GFM (only including what S-101 Needs, will split out the features and the spatial) | Barrie | |
| 6 | 4.2.1 | Need to review this Clause | | |
| 4 | 4.2.2 | Need to review this Clause | | |
| 5 | 4.2.2 | Need to add the Spatial Model – Is it the same as what is in the Geometry section in Clause 4.7? | | |
| 6 | 4.3 | Need to add and review UML diagrams for the features and attributes in this section | Tom R | |
| 7 | 4.3.2.4.1 | Need to create a Skin of the Earth Theme and submit to TSMAD for approval | Tom R | |
| | | Action:  Discuss the following as a possible theme:  Update theme – update text and what changed and it would be in a summary later, information to the end user what is contained in the change – similar to the text in a NTM, maybe almost like an update pick report.  Need to give some guidance on how this should be used. | | |
| 8 | 4.6 | Need to define the new features for this and explain the use in the PS | | |
| | | Need to define the encoding in the DCCG | | |
| | | Need to define the Portrayal mechanism | | |
| | | Need to define the minimum implementation guidelines | | |
| 9 | 5.4 | Need to find a home for the following units:  Height, Positional Accuracy, Distance, Time and Bearings (DCCG?) | | |
| 10 | 6 | Data Quality – awaiting DQWG effort.  Need discussion about what goes in this section other than M_SREL and M_Qual. | | |
| 11 | 11.3.1 | Need TSMAD concurrence on renaming cells to datasets. | | |
| | | Need TSMAD concurrence on the elimination of CATCOV=2 | | |
| | | Need to modify S-100 to increase the multiplicity of EX_BoundingBox | | |
| | | Need to specify the rules on how to handle gaps and overlaps between data in the same display scale. | | |
| 12 | 11.4.2 | Need to flesh out the support file management section | | |
| 13 | 12.1.1 | Need to review content for exchange set metadata | | |
| 14 | 12.1.2 | Need to review dataset metadata fields | | |
| 15 | 12.1.3 | Need to review support file metadata | | |

| 16 | 12.1.4 | Need to Review Exchange Catalogue metadata | | |
|----|--------|---------------------------------------------|--------|---|
| 17 | 12.2.1 | Need to review this clause | Holger | |
| 18 | Annex A | Need to Review this Annex as the following changes have occurred: | | |
| | | Updates have been split out from the Base cell | | |
| | | Mandatory values need to be populated | | |
| | | | | |
| 19 | DCCG | Do the mandatory features belong here or in the feature catalogue. | | |
| | | • These belong in the  DCCG | | |
| 20 | DCCG | There has been some discussion that M_QUAL is not useful at small scales – can it be mandatory for some display scales and not for others? | | |
| | | • This will be referred to the DCCG and will be mandatory for some scales and optional for others. | | |
| | | | | |