

S-102 PT18 Minutes
 10 June and 12 June 2024: 1300 – 1600
 VTC (all times UTC+2/CEST)

Agenda Item	Subject	GitHub Issue	GitHub PR	Actions	Responsible for action	Target date
10 June 2024						
Topic A: Incidentals						
A.1	Welcome/Housekeeping	N/A	N/A	N/A	N/A	N/A
A.2	Review of S-102PT17 Minutes/Pending actions	N/A	N/A	N/A	N/A	N/A
Topic 1: Edition Number in S100_DatasetDiscoveryMetadata						
1.1	Discussion: Near-term (Ed. 3.0.0) solution regarding EditionNumber	89	N/A	Issue postponed for edition 3.0.0. It will remain open in GitHub.	N/A	N/A
1.2	Brief discussion: Possible paths forward for future editions of S-102	-	-	-	-	-
Topic 2: Accommodating Multiple Vertical Datums						
2.1	*Discussion: Potential solutions to the problem of multiple VD within a dataset (for Ed. 3.0.0)	79	90	Continued discussion on day 2 of PT18. See agenda item 2.3.	N/A	N/A
2.2	Brief discussion: Other changes to be considered for future editions of S-102	-	-	-	-	-
Topic 3: Transboundary Coverage and Data Overlap						
3.1	*Discussion: Near-term problems to be addressed	99	N/A	Continued discussion on day 2 of PT18. See agenda item 3.2.	N/A	N/A
Topic 4: Demonstrations						
4.1	NOAA: Vignette demonstrating impact of S-102 on Savannah, Georgia pilot operations	N/A	N/A	Presentation with data available for download. Links below.	N/A	N/A
4.2	Placeholder for other demonstrations, test bed results	N/A	N/A	No other demonstrations were presented.	N/A	N/A
Topic B: Agenda Review for Day 2						
B.1	Review of items needed before Wednesday session	N/A	N/A	Actions remaining for day 2 of PT18: Item 2.1 and 3.1.	PT	12 June

12 June 2024						
Topic C: Incidentals						
C.1	Welcome/Housekeeping	N/A	N/A	N/A	N/A	N/A
Topic 2: Accommodating Multiple Vertical Datums (Revisited)						
2.3	*Decision regarding the 3 sub-questions listed in Issue 79	79	N/A	No decision was reached regarding this issue. PT members expressed both support and opposition. Decision was ultimately reached in an ad hoc PT meeting on 27 June.	Chair	2 July (done)
Topic 3: Transboundary Coverage and Data Overlap (Revisited)						
3.2	*Discussion on what logically follows from decision for Item 2.3	99	N/A	While the decision on 2.3 adopted on 27 June does not explicitly solve this issue, PT generally agreed that a framework for a solution does exist. Issue will remain open in GitHub, and guidance to be developed will be added to future Editions of the PS.	N/A	N/A
Topic 5: Alignment, Image Updates, ISO MD Clarification						
5.1	Review of progress from Small Group re: S-100 alignment on 6 June	77	95	Sections needs to be reviewed – check with most recent version of S-100 ed. 5.2.0 https://iho.int/uploads/user/pubs/standards/s-100/S-100_5.2.0_Final_Clean.pdf	Appointed working group in issue #77	21 June (done)
5.2	Placeholder for questions arising during S-100 alignment reviews	77, 76	95, 100	-	-	-
5.3	Determination of status of Raphael's proposal relating to ISO metadata file	69	N/A	Issue resolved. It will be closed in GitHub.	Chair	ASAP (done)
Topic 6: S-102 Portrayal Catalogue & Feature Catalogue						
6.1	Brief look at new GitHub repo	93	N/A	https://github.com/iho-ohi/S-102-Portrayal-Catalogue	N/A	N/A
6.2	Solicitation for review/feedback	N/A	N/A	Encouragement to open issues on the PC repo and to provide dataset adapted to this version of the PC.	PT	Continually
6.3	Questions regarding Feature Catalogue	N/A	N/A	Incorporate the changes through the FC Builder. Include what the user may want to see in the Pick Report that is currently missing in the FC.	Chair	ASAP
Topic 7: Document Generation						
7.1	Metanorma errors	N/A	40	Building document works. Smaller issue with the PDF version remains.	Support from Ribose	Ongoing
7.2	Discussion on how we move forward		40	(omitted because major errors have been resolved)		
Topic 8: Timelines Moving Forward						
8.1	Projection of completion dates, establishment of review period for 3.0.0	N/A	N/A	*1.Resolution regarding item 2.3 and 3.2 2.Completion alignment task #77 3.Distribution of Draft (PDF) of ed. 3.0.0 to PT	1.PT & Chair 2.Appointed working group in #77 3.Chair	1. 27 June (done) 2. 21 June (done) 3. 24 June

				4.Review period for PT 5.Deliver ed. 3.0.0 to S-100WG	4.PT 5.Chair	4.2-19 July 5. July 22
8.2	Fixing time for S-102PT19 (VTC)	N/A	N/A	S-102 PT19 planning to be held on the 28-29 August (13-16 UTC+2)	Leadership team	(done)
8.3	Note of next in-person meeting	N/A	N/A	S-100WG9 Genoa, Italy, 8 November	Leadership team	After summer

Agenda Item A1 and A2

Chair (Lawrence Haselmaier) welcomed everyone to PT18, day 1. The agenda for the meeting was presented.

The S-102 PT17 minutes were reviewed. For point 2.3 Dealing with multiple Vertical Datums, Vice Chair sent a reminder to Chair for TWCWG inquiring if this issue is also being addressed in their working group. There were no other comments to the PT17 minutes.

Agenda Item 1.1 Discussion: Near-term (Ed. 3.0.0) solution regarding EditionNumber

The GitHub issue was reviewed during the meeting. BSH mentioned that they have also discussed this issue with IC-ENC. BSH said that, in practice, the use of EditionNumber for S-102 looks different than S-101, since a S-102 product in HDF5 file will always be updated completely. They argued that there is no real need of EditionNumber and it would mean less maintenance without it. However, PRIMAR raised a caution that this has not yet been tested and it would be unwise to change it at this point of time. Although, they do agree that it is an issue that is worthwhile looking into in coming version of S-100 and S-102. It was concluded that this issue will be postponed to S-100 ed. 6 and possibly S-102 ed. 4.0. There were no objections from the PT to postpone it. The GitHub issue will remain open.

A question from Denmark was if the solution for this issue was already decided or if it would be evaluated in the future. Chair responded that the solution will still be evaluated before any decision is made in the future edition.

Agenda Item 1.2 Brief discussion: Possible paths forward for future editions of S-102

This agenda item was combined in the discussions during item 1.1.

Editor's note: The purpose of these notes is to provide context and detail regarding the discussions. This particular topic required much discussion during this meeting and was not decided until a future meeting (27 June 2024).

The account below (as regards the Day 1 and Day 2 discussions) depicts the conversation according to real-time observation. It is indispensable for the purposes of context and detail, but it should not be considered as an indication of the Project Team's opinions, decisions, or actions.

If the reader is seeking an authoritative description of the outcome of this topic, such information can be found in the notes for that meeting. Those notes have been distributed to the S-102 Project Team and other attendees. In case of difficulty obtaining the notes, please contact the S-102 Project Team Chair for assistance. Thank you.

***Agenda Item 2.1 Discussion: Potential solutions to the problem of multiple VD within a dataset (for ed. 3.0.0)**

A significant part of the meeting was dedicated to this agenda item. The GitHub issue #77 and PR#90 has been serving as a place for previous substantial discussion. This topic also touches upon other issues and product specifications.

An opinion from BSH was that splitting the product into different VD (Vertical Datums) will not solve the problem. It will only move the problem somewhere else. There has been a discussion in GitHub

that true position in a grid cell could end up outside the domain extent polygon. This would become the main issue for safe navigation. A response and a clarification from NIWC was that a direct position is anywhere within the cell. The point determines the value within the whole cell. Even when splitting the cell, there would be values in that remaining part of the cell still, i.e. it would not automatically be NoData. It was expressed from members that it is positive, that the remaining part of the cell would be filled with a value. NIWC added, however, that in their latest product this does not apply, but what was discussed here is the correct way to interpret it. More testing is needed to prove the support for this.

BSH continued that with the domain extent polygon, it could be possible to push this information into the ECDIS. The question about overlap remains and how S-98 handle this.

Vice Chair raised the question if this topic actually is a major issue. It is, in reality, small gaps at a border. A response from BSH was that the coarser the grid resolution the larger the gaps and there is an example showing this in the PR. At 10m or 15m resolution, it becomes a bigger gap and for S-104 it would become an even greater issue since they have a much larger grid resolution.

PRIMAR said that producers may need to relate the products to each other. For example, one particular S-102 product is connected to a particular S-101 product. It is possible to add this in the S-128 data model. NIWC did not see an issue in moving forward with Solution “2” that BSH has proposed in GitHub. BSH added that this still does not solve the issue entirely, or the connected agenda item 3.1 regarding overlapping products. With a split S-102 cell, there would still be portrayal issues and two pick reports. NIWC continued that ECDIS are going to use the information for WLA and the products need to align. An ECDIS would go to the direct position so there was a question if the boundaries really need to match. NIWC also mentioned that the interoperability does not apply to WLA in ECDIS. It will be the OEMs solution. They suggest having this as a choice and test the scenarios. BSH mentioned that there is a test data set available in the GitHub issue.

NOAA highlighted the question of how the information of an S-102 product is used. The implementation can get complex, and information needs to be available in order to solve the problem between the different products.

BSH mentioned that they use a regular gridding scheme for their S-102 products. If they were to split their S-102 [product] cells, they would move away from this and instead have to use an irregular scheme. BSH do not see that splitting [product] cells is a good solution.

Denmark asked if it would be possible to focus on one of the three discussion topics in this item and to postpone the others. BSH responded that overlap is not allowed, and it is already possible to implement the extent domain polygon. NIWC added that the goal is to have a clear guidance.

A question from NOAA was if it would be possible to use `QualityOfBathymetryCoverage` to determine which VD is to be used where. This would be a simpler solution when several VD are being used in the same product. According to BSH this would not work, and the discussion went to the use of survey information. BSH argued that it would be better to split the boundary rather than splitting the survey. Also, it would not be good to have it rasterized in `QualityOfBathymetryCoverage`, and in reality they would not align. The result would still be that one side of the border is not correctly coded.

NIWC suggested that the PT can address this issue differently depending on the order of 1) How to encode the data (multiple feature per dataset), 2) allow overlapping coverage data, 3) using bounding box or a domain extent polygon. The encoding is specified in S-100 ed. 5.2.0. BSH added that size may not be the issue, since the depth values only occurs once in both feature instances. The NoData part of it will be compress well in the HDF5 file.

Chair directed the discussion to the timeline and said that this issue needs to be resolved during day 2 of PT18. The PT have a solution that could work. Focus is needed on what is workable for ed. 3.0.0.

Denmark noted three sub-issues 1) multi vs single file, 2) polygon vs bounding box, 3) overlapping data or no (data-nodata and nodata-nodata allowed) and concluded that there are 8 potential ways to go (2³).

There was a general agreement that there could be no overlapping depth information, but overlaps with data-nodata and nodata-nodata allowed. The PT also had a quick look in to S-98 and what was specified there. The guidance in S-98 would apply for two different producers. However, this particular issue talks about overlaps within a single dataset from the same producer. The S-98 does not address this particular issue.

Denmark raised the question; regardless of what the PT chose, is there any action needed. Their understanding is that the current PS allows multi file, bounding box and no overlapping data at a specific display scale.

NIWC stressed that we do not want to allow overlapping data. It would be a burden on the mariner. For the implementation side of it, it would not be a big workload to use multiple files or multiple features in the same file. A bounding box can be used by the HO's if they do not use a coverage polygon.

The discussion did not result in a clear decision. Chair sent out a question in the GitHub issue #79 and asked the PT prepare a response for day 2.

Agenda Item 2.2 Brief discussion: Other changes to be considered for future editions of S-102
Nothing else was discussed during this agenda item.

***Agenda Item 3.1 Discussion: Near-term problems to be addressed (Transnational boundary Coverage and Data Overlap)**

On this agenda item, Vice Chair clarified that a guidance for HOs would be preferable and that different implementation is the risk if the PT do nothing. A comment from the PT was that S-98 says that it should be left to the mariner to switch to the display they want. The question was if the PT want to solve the issue within the PS or S-98. Vice Chair added that the PT does not need to do anything but the ECDIS manufacturer wants to know what to do. The PT should make a statement to the manufacturer. There was a general agreement within the PT that rules and/or guidance would be good. Chair mentioned that implementation guidance would be good to have as soon as possible and it would be possible to add into edition 3.0.0. Teledyne CARIS said that a main extent polygon is an option, but otherwise a bounding box would work. S-100 DataCoverage states that the Exchange Set Catalogue should specify where the data comes from and that the user can rely on it.

Chair concluded that this agenda item is dependent on decisions connected to item 2.1 and will also be revisited on day 2 of PT18.

Agenda Item 4.1 NOAA: Vignette demonstrating impact of S-102 on Savannah, Georgia pilot operations

NOAA demonstrated the use of S-102 products in the Harbour of Baltimore, where they quickly could update the products to the pilots during the Francis Scott Key Bridge collapse. This is a good example of the power of S-102 and getting reliable navigation data.

The other presentation from NOAA showed the use of the raster attribute table (QualityOfBathymetryCoverage table). The pilots in Savannah, Georgia, use the information in the table in their turning basin. Specifically, information regarding areas with updated surveys. This type of additional metadata makes the pilots trust the data.

The data is available for download in version 2.2 and can be found:

(Official) distribution link: https://noaa-s102-pds.s3.amazonaws.com/index.html#ed2.1.0/national_bathymetric_source/savannah/dcf2/tiles/

Test and Evaluation data: https://noaa-ocs-nationalbathymetry-pds.s3.amazonaws.com/index.html#Test-and-Evaluation/Navigation_Test_and_Evaluation/

Agenda Item 4.2 Placeholder for other demonstrations, test bed results

No other demonstrations were presented.

Agenda Item B.1 Review of items needed before Wednesday session

Agenda item 2.1 and 3.1 will be discussed early on day 2 of PT18.

Agenda Item C.1

Chair (Lawrence Haselmaier) welcomed everyone to PT18, day 2.

***Agenda Item 2.3 Decision regarding the 3 sub-questions listed in Issue 79**

1. Multiple files v. Single files w/ multiple features
2. Coverage polygon v. mere bounding box
3. Allowance of overlapping data (1 data w/ 1 or more no-data)

BSH started with presenting a QGIS screen for the discussion. There was an ENC displayed in the background and an S-102 regular gridding scheme above it. The example showed an area of an S-102 product with two different VD; Approximate LAT and a local datum within a basin. The depth information had a grid cell resolution of 10m. The information within the grid cells would be cut by the border (in this case a lock), but the actual cell would still overlap the other side of the lock. BSH commented that the domain extent polygon can be a solution for this technical issue. They also argued that there is a need for having 2 VD specified in the same file. If 2 products would be used instead, it would mean more work. More work as a producer, more work for the RENCs, a larger S-128 product catalogue, and so on. BSH concluded that using several feature instances within 1 file would solve this problem.

NOAA brought up what the value of an S-102 product is to the mariner. What would be the value to the mariner with the information in the lock? BSH responded that there is a demand to have it readable in S-102 and WLA need to have the correct VD. It was also mentioned again that S-104 has a larger resolution and would cover the whole example area. BSH added that domain extent polygon would determine the VD. The direct position would make sure the correct depth will be drawn. This is directly linked to the data. The data coverage is not.

Esri Inc asked: why in addition to 2 bathymetry grid coverages, there were not 2 quality coverages, one for each? There was only one quality coverage. BSH responded that it is because both features have to have the same extent. They share the same extent, just like the bathymetry coverage. BSH explained that they did not want to make it too complicated and that it is not necessary to have different quality coverages. NIWC commented if the PT approve of this solution, it does not require us to do anything more. It gives optionality. Finland added that this would allow more freedom and do not mandate anyone. It would still be depth value in only one of the cells.

Denmark recommended that the PS must clarify the use of multiple VD in S-102. It should be limited to a bounding box. They do not want to add a domain extent polygon. They also agree that it should be one valid depth for each cell and storing it in the Quality of Bathymetry Coverage. NIWC commented that in the Feature instance group, it is possible to have multiple feature and to use bounding box or polygon. They also added that bounding box is harder to align with S-101, but testing will show what it would look like.

Chair proposed a vote if the PT want to prohibit the use of a domain extent polygon and only leaving bounding box as an option.

The members who voted for (prohibiting it and thus not supporting domain extent polygon): Denmark, NOAA.

The members who voted against (not prohibiting the use of domain extent polygon): Finland, France, Sweden, NIWC, Canada, Germany.

Chair concluded that the use of a domain extent polygon should not be prohibited. Vice Chair added that it is important to hear what the OEMs say about this. NOAA agreed. They added that goal is the ease of use and the mariner's perspective. BSH argued that the solution would not be an implementation problem. NIWC agreed that the option would allow to move forward with the testing. Seven Cs also agree that it can be left as an option so that it is open for testing. They also added that testing is important since it can be difficult to predict the outcome beforehand.

Since there were still some opposing voices, Chair wanted NOAA to discuss this topic internally and report back COB 14 June what the result of their discussion is.

For the minutes, it was also noted that Denmark also want to prohibit overlapping depths, France wishes that, given the deadlines, the optional side of these possibilities be clearly explained and OEMs system developers argued that before prohibiting anything it is better to test the solution.

NOAA raised that concern what would happen if this does not work. BSH responded that one or the other of the alternatives can be implemented. The other standards do not limit multiple features and the PT need to bear in mind that the S-102 PS will not be a frozen standard in the future.

***Agenda Item 3.2 Discussion on what logically follows from decision 2.3**

1. Guidance/explicit description in S-102?
2. Guidance in other document (S-98)?
3. Assigning task to either draft or contact S-100WG, e.g.

Since this topic is connected to 2.3 it was a similar discussion here. Vice Chair mentioned the solution of having multiple feature in a file. NIWC added that overlaps would occur if using bounding box. BSH said that the Data Coverage in the Exchange set catalogue would solve this issue at the borders and NIWC argued that this would require agreement between the countries.

PRIMAR added that it is worth noting the WEND principals, where it is stated that overlap should be avoided. "*WEND-100 Principles: 5.4. In order to ensure unambiguous safety of navigation, concurrent ("overlapping") S-1XX products should be avoided, particularly where official, nationally provided products are available...*".

Chair concluded that the issue will remain open in GitHub and the PT will await NOAAs response COB 14 June.

Agenda Item 5.1 Review of progress from Small Group re: S-100 alignment on 6 June

The discussion during this agenda item was that a newer version of S-100 ed. 5.2.0 has been published, which differs from the one dated to December 2023. The latest version that can be found in the Registry is ed. 5.1.0. Through Circular Letter (CL) in the beginning of June, the final ed. 5.2.0 was adopted by the IHO.

Link to the final version https://iho.int/uploads/user/pubs/standards/s-100/S-100_5.2.0_Final_Clean.pdf.

Link to the CL https://iho.int/uploads/user/circular_letters/eng_2024/CL27_2024_EN_Rev1.pdf

Chair informed that lot of work have been going on regarding the alignment. Many changes have been made. He does recommend a review and check of the sections against the most recent version of S-100. Redistribution of the tasks can be made to others if the time is too short for those allotted.

There was no objection from the PT to remove the informative Annex S-102 Dataset Size and Production.

Agenda Item 5.2 Placeholder for questions arising during S-100 alignment reviews

Nothing further was discussed during this agenda item.

Agenda Item 5.3 Determination of status of Raphael's proposal relating to ISO metadata file

This issue is now resolved. The new version of S-100 ed. 5.2.0 makes the *metadata* attribute in the HDF5 file optional. The issue will be closed in GitHub.

Agenda Item 6.1 Brief look at new GitHub repo

The new repository for S-102 PC can be found here <https://github.com/iho-ohi/S-102-Portrayal-Catalogue>. Any topics related to PC should go in to this repo.

Chair stated that the FC is an important requirement for a functioning PC. Today there is one version of the FC in the PC repo and another version in the Main repo. NIWC added that the FC in the PC repo is somewhat modified to support the current development and testing of the PC. For instance, the FC in the PC repo does not include any so called broken changes. The official FC should be fetch from the IHO Registry.

If anyone in the PT is hesitant to which repo should be used for what issue, do not hesitate to reach out to the leadership group for assistance.

Agenda Item 6.2 Solicitation for review/feedback

NIWC informed that the current colour scheme includes 4 colours, which was proposed years ago. However, there are other richer colour schemes available, thus alternative portrayal is possible. NIWC also stated that the intention of the PC repo is to promote transparency and inclusion and they encourage the PT to open issues if they find anything related to implementation or bugs. Chair also mentioned the value of test datasets and that these should be adapted to this version of the PC.

Agenda Item 6.3 Questions regarding Feature Catalogue

During this agenda item there were some discussions regarding the FC. Chair mentioned the Raster Attribute Table and how to deal with attribute bindings. A suggestion from BSH is to use the FC Builder developed by KHOA. The Builder communicates with the GI Registry, which means that it is possible to choose what goes in to the FC directly from the Registry. Chair will incorporate the changes that has been made in the PS to the FC through the FC Builder. NIWC added that there are a few things missing in the existing FC, that will not show in the pick report. It is a worth including all elements that should be exposed to the mariner into the FC. This was noted by Chair, who will include the things that should be portrayed. Input from PT what is lacking is highly encouraged.

Agenda Item 7.1 Metanorma errors

Previously, the ability to build a document (Word, PDF) in GitHub has not been working properly. This issue has now been fixed by the support from Ribose. The function in GitHub is now building the documents almost correctly. Remaining is the PDF version, where the Overview section of the PS ends up in the wrong place of the document. Ribose continue to support to solve this.

For the final delivery of the PS to S-100WG, the Word version will be downloaded from GitHub and exported to a PDF version from Word.

Agenda Item 8.1 Projection of completion dates, establishment of review period for 3.0.0

Chair went over the important dates for the near future.

**14 June* – PT will vote for or against allowing multiple feature instances for BathymetryCoverage in S-102 ed. 3.0.0. The voting will occur via email. This task is connected to GitHub issue #79 and Pull Request #90. The result will be posted in GitHub issue #79 shortly after the voting closes.

21 June – Completion of alignment to S-100 ed. 5.2.0. Connected to GitHub issue #77.

24 June – Distribution of draft of Product Specification ed. 3.0.0 in PDF format to Project Team.

24 – 28 June – Review period for Project Team. Any comments/amendments/textual corrections can be made during this period.

End of June – Chair will deliver S-102 PS ed. 3.0.0 to S-100WG.

The work on Validation checks will continue and Chair will inform the PT when there is a specified date to go over this task.

Agenda Item 8.2 Fixing time for S-102PT19 (VTC)

The leadership is planning to hold the next online meeting for S-102 (PT19) on 28-29 August (13:00-16:00 UTC+2 both days). More information will come as soon as the dates have been finalized.

Agenda Item 8.3 Note of next in-person meeting

The next in-person meeting for S-102 will be in conjunction with 100WG9 in Genoa, Italy, most likely on Friday 8 November.

The minutes and actions for PT18 were presented by the Secretary. Chair thanked the PT for all the efforts put in during PT18 and then closed the meeting.

***Update after PT18: The need to solve the Vertical Datum issue before publication of ed. 3.0.0 is urgent and another meeting will be held to reach consensus on this matter. Essential attendees include: anyone in the S-102PT with an opinion on the issue, representative for S-98/S-164, representative for S-100WG and representative for S-104.**