NCWG 8 Wollongong 15th – 17th November 2022

Day 1

**2: Approval of the agenda**

* Secretariat, the S-101 project team has been submitted a paper linked with changing the wire swept and diver checked symbol, this is linked with an existing piece of NCWG action (NCWG-0.89)
* Secretariat, there is also a minor change to the ZOC table in S-4 requested, this can be tackled in AOB.
* Netherlands, suggested that agenda item 12.1 (referring to UKHO sunsetting paper charts) is oved to earlier into the agenda as the topic might be relevant to other items on the agenda, agreed by NCWG chair.
* SHOM, the paper which is submitted to the ENCWG next week which refers to contours generated for HD ENCs which would be relevant to (7-12 auto-generation of contours for HD ENCs) which will be discussed at the INF paper section 12.2.
* There are some similar papers from the S-101 PT discussing use/depiction of Pilot Boarding Areas link with the NCWG paper.
* Agenda approved with the amends above.

**3: matters arising from NCWG 7**

* 3.1, final minutes were not circulated which is normally done by letter via the secretary, however the group approved the minutes of the last meeting.
* 3.2, status of actions
	+ 7/1: SBD depiction will be tackled using the paper in the agenda.
	+ 7/2: pilot boarding areas will be tackled using the paper in the agenda.
	+ 7/3: quality of horizontal measurement in S-101 there is a paper in the agenda.
	+ 7/4: review the changes submitted by Secretariat (Jeff Wootton), which was submitted too late for NCWG 7 agenda, this should be carried over and sent out for comment by the new secretary.
	+ 7/5: decommissioned oil and gas jackets will be tackled using the paper in the agenda.
	+ 7/6: baseline symbology project team, this will be updated during the session by Dan Brosseau which is already on the agenda.
	+ 7/7: baseline symbology project team, also on this meeting’s agenda.
	+ 7/8: Section V for data quality, will be updated verbally.
	+ 7/9: removal of stumps from S-4, raised by Germany and supported by secretariat, neither Germany nor Secretariat (Yves Guillam) are not present, left open at this stage.
* Comments: Secretariat (Jeff Wootton) clarified the requirement for 7/4.

**4: 4.1 Matters arising from HSSC 14**

* [HERE](https://iho.int/uploads/user/Services%20and%20Standards/HSSC/HSSC14/HSSC14_2022_05.4A_EN_Presentation_NCWG_Report.pdf) is the presentation delivered to HSSC by Mikko Hovi to update on NCWG activity.
* There are currently no plans to restructure or rewrite S-4.
* INT 1 status report (no anticipated changes to INT 2 or 3)
	+ The Spanish HO confirmed their latest NE will be completed by the end of the calendar year (2022).
* S-11-part-A is also maintained by NCWG, the group are monitoring this requirement but there are no active plans for a revision, there will be advice provided by the WENDWG describing how scheming will work for S-101 which may generate changes to S-11, part A.
* Baseline Symbology Project Team (BSPT) is formally established, and the TORs are finalised.
* An action was given to NCWG by HSSC to review S-124 which was achieved by correspondence.
* An action was given to NCWG by HSSC to provide an update on the CHS Subscription Service which was raised at short notice to the 2020 VTC, there are no additional updates at this stage.
* NCWG reported, it has been observed at most/all the other WGs that progress has been impeded by a lack of face-to-face meeting, some meetings in December will not be hybrid, only one-way streaming.
* A separate domain was not created for the Baseline Symbology Project Team (BSPT) in the IHO registry as it would have created a requirement to generate separate domains for many other products which are currently stored in a ‘catch-all’ domain which is a lot of unnecessary work, hence the decision to include the Baseline Symbology Project Team (BSPT) in the ‘catch-all’domain.
* NCWG Report on the implementation of the recommendations stated in the future of the paper chart document
	1. Establish the baseline symbology PT: **done**
	2. NCWG did not recommend adding a workplan item for simplified back-up nautical charts, which was endorsed by HSSC 12, Council and Assembly.
	3. NCWG did not recommend freezing S-4 or INT 1, which was also endorsed by HSSC 12, Council and Assembly.
	4. Recommendation to IRCC to focus on coordinating and registering ENC schemes which should be prioritised over the traditional paper chart schemes which is usually their priority.
	5. Note the end of paper charting by some HOs.
	6. Approved the latest updates to the NCWG TOR.
* AUS: where is the TOR for the baseline symbology PT?
* Chair: this will be addressed during the PT update
* Canada: the TOR has been created but without a secretary, they are not stored centrally yet.

NCWG 8 Group Photo and a VTC Screenshot have been provided to the Secretariat for upload to the website on 5/12/22 ✓

**4: 4.2 outcome of HSSC 14 and Council 6 affecting NCWG**

* HSSC 14 actions and decisions:
	+ **HSSC:**
	+ 54A: noted assembly of the Baseline Symbology Project Team (BSPT) and requested a project plan ASAP, intended to generate this during this meeting intend to provide to the next HSSC which is June 2023 (Action created during NCWG 8).
	+ 54B: reconsider the need for a domain for the symbology library, which will be reconsidered if it is really needed and reported/requested at HSSC 15 in June 2023.
	+ 55: HSSC noted the NCWG report recommendations on the FOPC.
	+ 56: US requested a new task to lead on minimum guidelines for paper charts from ENCs, also discussed at Council 6 and NCWG, HSSC decided that nothing prevents HOs from developing their own guidance but did not put an action on NCWG but requested the HOs do keep NCWG advised on their progress.
	+ 57: request from the US (supported by others requesting) for the back-up specification.
	+ **Council 6:**
	+ 15: decision stated the council should monitor the implementation of the recommendations stated in the FOPC paper.
	+ 16: decision stated that HSSC recommendation on automation of paper chart guidelines meeting minimum requirements of S-4 is linked with the baseline symbology PT actions.
	+ 17: council endorsed the offer from the US to document the use-cases and create guideline to achieve automated production of paper charts generated from HDBs and report back to HSSC, in this case Council is requesting clarification of the use-cases for those paper charts.
	+ Secretariat (Jeff Wootton): Council will report on all of the above to the 3rd Assembly next year.
	+ CHS: will the council paper (C6-17) be shared?
	+ Secretariat (Jeff Wootton): yes, C6-4.1b there is a [presentation](https://iho.int/uploads/user/About%20IHO/Council/council6/C6_2022_04.1B_EN_submisison_Guidelines%20for%20ENC%20derived%20paper%20charts_final.pdf) and the [paper](https://iho.int/uploads/user/About%20IHO/Council/council6/C6_2022_04.1B_EN_submisison_Guidelines%20for%20ENC%20derived%20paper%20charts_final.pdf)
	+ NOAA: what is the expected timing from Council to describe the use cases, who has the action to describe this detail?
	+ Chair: NOAA and others are requested to submit use-cases to HSSC in June 2023
* **4 4.3: update from S-100WG including S-101PT**
	+ Edition 5 of S-100 is with member states to vote on adoption accompanied by letter 35, it is considered the first edition of S-100 which can be used for full-implementation.
	+ 2.0.0 of S-99 has been published.
	+ S-100WG 7 is taking place in 3 weeks in December.
	+ S-101PT the data classification and encoding guide has been published plus an updated feature catalogue and they are on the front page of the GI registry (1.0.2).
	+ The next meeting of the S-101PT is next week in conjunction with the ENCWG, looking to finalise the specification of S-101 version 1.1.0 which will be a baseline version suitable for implementation.
	+ The focus will be to adjudicate comments which have been provided (38 pages).
	+ Reports of portrayal progress and the data model will also be provided plus data validation checks and test datasets.
	+ Progress has been inhibited by enough native datasets to use for testing.
	+ Plus, a paper on the mechanical sweeping of wrecks has been raised (08.9) which linked to a paper which has been submitted for discussion at NCWG.
	+ Secretariat (Jeff Wootton): is the TOR for CNWG to review symbology?
	+ Chair: Yes
	+ There is a Domain Control Body who oversee submissions to the IHO registry, it would be important to propose someone from NCWG to join the domain control body as NCWG reviews symbology. The S-101 symbols have been proposed and at this stage, no one at NCWG will see them as part of the approval process.
	+ Chair: confirmation NCWG is happy to participate
	+ **ACTION**: discuss and confirm a NCWG rep for the Domain Control Body (DCB) at this session
	+ CHS: I have seen in the GITHUB area that there is discussion ongoing about S-101 portrayal which overlap with the work being done by the NCWG PT.
	+ Chair: note that the ownership is the S-101 PT, NCWG should advise when requested.
	+ NOAA: can you confirm that the DCB accept symbols for inclusion in the registry but not for actual use?
	+ Secretariat (Jeff Wootton): registering data can be considering proposing the symbol, then the DCB are the only people who can see the symbol at this stage, they evaluate but it is not yet confirmed what the rules are to decline/deny use of a symbol which has been proposed. Once DCB have accepted a symbol (the rules for this are as-yet not finalised) the status of the symbol is set to valid by the registry manager (Secretariat (Jeff Wootton)) and anyone can use that symbol. A symbol submitted to the register, does not mean it has to come to NCWG for discussion and approval, but where concern is raised, NCWG can be involved for advice. This will become more important as S-98 (interoperability) is further progressed and developed, NCWG should have a strong roll in that as cartographers.
	+ NOAA, so NCWG is more of a passive role until we are asked to be involved in as advisory capacity?
	+ Secretariat (Jeff Wootton): yes, my opinion is that NCWG has 2 future roles, one as a DCB member and also supporting how these symbols interact if there are issues and conflicts with portrayal when it is viewed in an ECDIS. NCWG should have visibility of everything proposed to the DCB. Note that without a NCWG member of the DCB, they will not report to the NCWG as a matter of course.
	+ **ACTION**: discuss and progress this opportunity/requirement.
	+ Chair: when will the portrayal catalogue be published?
	+ Secretariat (Jeff Wootton) / Alvaro, March 2023, the S-101 standard 1.1 will not be published without the supporting requirements i.e., catalogues (feature/portrayal).
	+ Work is also progressing on the S-101 data loading and unloading algorithm is also being developed which will be different from how S-57 is loaded, hence a whole new algorithm.
* **4 4.4: update from ENCWG**
	+ Is responsible for the current ENC and ECDIS standards i.e., S-57 and S-52.
	+ Once S-101 is at edition 2, it is considered to be an operational version, at version 2, this S-101 will come under the ownership of ENCWG.
	+ There was an exception for S-102 as they published version 2 while still in the development phases
	+ 4.3.0 of the UOC was published this year.
	+ Edition 7 of S-58 was also published this year.
	+ S-65 annex B, S-57 to S-101 conversion (1.0.0) was also published this year.
	+ An S-101 to S-57 conversion guide will also be published soon, this is arguably more important as most HOs will configure the HDB to work in S-101 as it is a more detailed data model. The plan remains for conversion to be almost fully automated with very minor manual intervention.
	+ Netherlands, who owns the S-101 to S-57 guidance?
	+ Secretariat, it is a specific sub-group who developed S-57 to S-101 and the intention is for the same sub-group to own S-101 to S-57 (probably S-65 Annex C).
* **4 4.5: update from NIPWG**
	+ By the beginning of Jan 2026, S-101 can/will be carriage compliant, post 2029 it is mandatory for an ECDIS to display S-100 products.
* **4 4.6: update from DQWG**
	+ The WG has been relatively dormant since Rogier Broekman vacated the chair.
	+ The new chair has been appointed who was the former vice chair, but the VC and secretary posts are currently both vacant.

**5: NCWG Administration**

* 5.1: TOR
	+ No proposals received to make any changes, any requested from the members?
	+ N/A
* 5.2: Secretary
	+ NR taking notes for this session, so the secretary will be appointed toward the end of this meeting before deciding.
	+ No volunteers from the assembled team in the room or online.

**6: Chart Content, Portrayal and General S-4 Issues**

* 6.1: UK pilot boarding areas:
	+ Note the link with a paper raised to the S-101PT which aligns with the NCWG recommendation to raise this issue to the S-101PT for discussion and resolution in the new standard.
	+ Secretariat (Jeff Wootton): there is an issue 57 in the GITHUB, this is related to pilotage district and not pilotage areas, there needs to be a clear distinction as the symbol which has been developed is an extension of the pilot boarding symbol.
	+ The known S-101 portrayal issue related to districts (8.3), not boarding places, so this issue should be revisited separately.
	+ It was suggested that an area could be differentiated using a later shade between the area and the point feature but the S-101PT chair stated that a subtle difference may not be noted by the user.
	+ NOAA: how big a problem is this, as this is similar to other issues for different features?
	+ Chair: this has also been observed in Finland and so areas were not used to encode areas for pilot boarding.
	+ In the example in paper 8.3, there is an exceptional example where the pilot boarding area with a point symbol within, the area feature will have an auto-centralising symbol which moves when the user is zoomed-in, and the point symbol will not move. Secretariat (Jeff Wootton) suggested using SCAMIN to prevent confusion is this example, this would also be an argument to include SCAMAX into S-101.
	+ Netherlands: can’t we just add text to the symbol like we would use a legend on a paper chart.
	+ Secretariat (Jeff Wootton): for S-52 we tried to limit cluttering the screen with text, so that proposal would not be supported.
	+ Suggest we await the S-101PT discussion next week discussion paper 8.3, do not use a different symbol but NCWG felt the solution should be to press the auto-centralised lighter symbol as that solution is familiar.
	+ CHS: this is a good example of automated paper charts being extracted from ENCs / HDBs will be complicated.
	+ SHOM: there is a paper coming from 7Cs next week requested no SCAMAX in S-101.
	+ UK: for the original request in 2019, NCWG were considering how features were depicted to reduce customer confusion as this feature does exist on paper charts and the ENC interpretation is causing confusion, but in 2019, S-101 was not as well developed, now the team has been able to discuss at a physical meeting, it can be argued it is time-expired.
	+ ESRI: what about a patterned line-symbol for the linear?
	+ Secretariat (Jeff Wootton): this has been raised many times relevant to ECDIS display where the problem related to technology created in the 90’s with course display screens which meant that only very simple symbols were used as the screens were not high resolution enough to display. This will not be an issue for S-101. Complex line styles tended to be avoided for S-52 in favour of auto-centralised symbols, as once you are zoomed to a point that you can’t see the edges, you need the auto-centralised symbol.
	+ Chair: in this case, the NCWG advice would be to use an established convention i.e., a lighter shade for the auto-centralised symbol. Another solution could be to use the standard symbol and use the corners of a box around that standard symbol – ECC highlighted that only the corners is already in use for a different meaning.
	+ ESRI: shouldn’t we avoid deviating too much from what people are used to seeing?
	+ SHOM: for S-101 portrayal, could it be possible that when you zoom beyond the limits of a linear pattern then an auto-centralised symbol appears?
	+ ECC: supports the standard practice of using the lighter shade of the standard colours.
	+ Secretariat (Jeff Wootton): it is early days for S-101 and display, there may be other solutions which can be considered, for example, how things display when you hover with the mouse. During the dual-fuel time, the difference between S-52 and S-101 cannot be too wide.
	+ Chair: this particular problem was raised by UK and FL as an S-52 problem, we need to ensure the same issues are not duplicated in S-101. We deliberately omitted choosing to discuss changing the S-52 symbol as it was acknowledged there would be no enthusiasm for changing S-52.
	+ AHO: agreed, this should be a task for the S-101PT and create a GIT-HUB topic for all to contribute.
	+ Close the NCWG action on this topic.
	+ Follow [THIS LINK](https://github.com/S-101-Portrayal-subWG/Working-Documents/issues) to leave comments and questions on this topic, please ensure that each member state provides a single consolidated response i.e., not multiple views from a single Member State.
* 6.2: UK Oil/Gas platform jackets:
	+ For NCWG, the proposal is to use a new legend to draw attention to the danger in S-57/paper and for something equivalent to be considered for S-101.
	+ SHOM: I do not see the need to distinguish between obstruction size.
	+ UK: dredged, trawling and submarine activity should all be considered.
	+ Secretariat (Jeff Wootton): when considering how a mariner should react, are we asking them to behave any differently to a differing symbol. Remember the discussion on submarine cables ended up being escalated to an IHO resolution.
	+ Netherlands: from a mariners POV, something potentially this high in the water column should be highlighted to the user.
	+ NOAA: support the secretariat point regarding the behaviour of the mariner, these do not present a risk to surface navigation but from a risk POV for trawling and fishing then a suitable warning could / should be relevant.
	+ Chair: a question to the mariners, what would you expect to see?
	+ Netherlands: in my POV, a legend is warranted.
	+ UK: the example in the NCWG paper is in approx. 160 metres
	+ Secretariat (Jeff Wootton): at B4 24.10 there is provision in S-4, so the legend ‘Structure’ could be included as one of the examples. This is not a foul ground / obstruction issue as features cut above the seabed should be charted as an obstruction.
	+ For S-4, if the owner HO decides a larger legend is warranted it is acceptable, there is no specific attribution for S-57.
	+ Secretariat (Jeff Wootton), without standardisation of legends for ENCs the cartographer may choose to use INFORM or another way, which will be inconsistent, it is probably better to standardise something for consistency. Also, a standardised label will support for conversion to S-101 from a consistency POV.
	+ NOAA, Ruins is a standard label and a short word which is useful for congested areas, is this appropriate?
	+ Secretariat (Jeff Wootton), plus there is a standardised abbreviation for Ruin.
	+ UK, wouldn’t that create the impression it is an old decaying/shrinking feature rather than recent remains of a potentially tall structure of twisted metal?
	+ NOAA, remains can have several interpretations…
	+ ECC, the legend structure does help describe the remain of something significant rather than a ruin, which can give the impression it is crumbling or falling apart.
	+ AHO, a specific legend is not required beyond the obstruction symbol.
	+ For S-101, there is a category of obstruction which describes the ‘distributed remains of a platform’, so an action could be to amend this to ‘remains of a platform’.
	+ Chair, should we standardise and harmonise a legend?
	+ Netherlands, use a legend for the purpose of standardising and use an abbreviation to prevent the length being too long.
	+ Secretariat (Jeff Wootton), the category of obstruction (CATOBS) is not mandatory for obstruction for S-57 or S-101, only the height or the value of sounding is mandatory, so if this data is important and it is currently not mandatory, this should be considered.
	+ Netherlands, is the reason that the CATOBS not mandatory because there are many examples where the HO will not know?
	+ Secretariat (Jeff Wootton), unknown is a valid attribute where it is not known.
	+ SHOM, we do not consider the information useful to the mariner as it won’t change their behaviour,
	+ UK, Netherlands, Secretariat (Jeff Wootton) and SHOM to discuss and consider an outcome.
	+ **ACTIONS**:
		1. *Rig (RU)*
		2. Amend S-101 to state ‘~~distributed~~ remains of a platform’

Note, it is likely that this is the first time at RU has been used for a bathymetric feature.

* + 1. In S-4 at B422.10 it states to use OBSTRN, but it also states that if additional information is required then alternate text can be used, *Platform Jacket* can be added to this example.
		2. Netherlands will draft the amendment to S-4 which will be circulated to the group by letter.
* 6.3: UK Satellite Derived Bathy (SDB):
	+ This paper was a result of different HOs charting SDB differently, in this case, UK brought together the different examples.
	+ Note, there is a related paper from Indonesia which will be also considered.
	+ Secretariat (Jeff Wootton), depth areas can be captured without a corresponding contour, this is entirely in line with S-4 B-424.7. Although current guidance does refer to using imagery and this refers to SDB *bathy*, when it comes to how the mariner interprets the data, it does not have any specific bearing as the user will refer to the CATZOC before making decisions.
	+ NZ, LINZ has been using SDB for several years who incorporated the use of SDB at Antigua by UKHO into their solution. Additional examples can be provided on request.
	+ CHS: we also use SDB for survey planning, ultimately, it was agreed that there was no requirement to advise the mariner how the data gathering was achieved.
	+ AUS: we don’t explain how gathering was achieved, only use the ZOC.
	+ Chair, is the term imprecise shoals in S-101?
	+ Secretariat (Jeff Wootton), at the moment there is no specific way to state the source information is imprecise in either the S-57 UOC or the S-101 DCEG, but you can describe that imagery has been used. A more holistic investigation may be required, as imagery is mentioned but not satellite derived bathymetry.
	+ **ACTION**: in addition to Indonesia’s recommendation, look further to improve consistency to include satellite derived imagery and/or bathymetry for the UOC and DCEG. The drafting group to include **UK, Jeff, Indo, NZ and AUS.**
	+ **ACTION**: Chair to send the Indo paper to Yves for posting on the NCWG website as 6.3b.
	+ SHOM, there is no guidance on creating approximate contours in S-4 if the data gathering was achieved by single beam, it is the CATZOC which is important. SHOM also encodes M\_SREL. It is not understood if the mariner knows how to choose between the accuracy of single-beam or SDB, they will still refer to the CATZOC.
	+ Chair, your point is understood, the point we are aiming for should be that there is a single way to achieve the depiction for the user.
	+ **OPEN – to be resolved out of session.**
* 6.4: Limit Change Region B and C1, between the MACHC and the SAtHC (IHO Secretariat)
	+ This was raised via the IRCC.
	+ The rationale for the move was to include the entire Amazon basin in one region.
	+ The proposal creates some actions which impact on NCWG in regard to S-4.
	+ **ACTION:** Update S-4 clause, A-204.8, Diagram of the international charting regions (move 1 degree south)
	+ **ACTION:** Update S-4 clause A-204.8, modify the reference i.e.

A-204.8: The following diagram illustrates the international charting regions, ~~details the countries responsible for co-ordinating the international chart schemes in those regions,~~ and lists the relevant Regional Hydrographic Commissions (if any). The list of Member States playing the role of Co-ordinators of regional charting schemes, is kept updated on the Standards and Specifications page of the IHO web site, under Publication S-11 Part B as document INT Charts/ENC Regions Coordinators. Diagram (without any Member States’ name) ~~Note: The names of Member States appearing on the diagram are the co-ordinators of the regional charting schemes.~~

* + Aus, can this diagram be moved to the In2GIS system and maintained by the secretariat?
	+ Chair, this needs to be a part of S-4 plus revise the content of A-204.
	+ Amended proposal…
	+ Update S-4 clause A-204.8, modify the reference i.e.

A-204.8: The following diagram illustrates the international charting regions, ~~details the countries responsible for co-ordinating the international chart schemes in those regions,~~ and lists the relevant Regional Hydrographic Commissions (if any). The list of Member States playing the role of Co-ordinators of regional charting schemes, as appointed by the RHC, is kept updated on the Standards and Specifications page of the IHO web site, under Publication S-11 Part B as document INT Charts/ENC Regions Coordinators. Diagram (without any Member States’ name) ~~Note: The names of Member States appearing on the diagram are the co-ordinators of the regional charting schemes.~~

The amended proposal is not required, proposal approved as proposed.

* + Agreed, closed.

**Day 2**:

**Project Team Session and Update:**

* For definitive context, the baseline means a common library and set of rules for paper chart symbols which comply with S-4 for all HOs to use.
* The scope should also include the fact that OEMs have requested a machine-readable version of S-4 as they are frequently requested to convert ENCs to paper charts, but there is currently no standard to achieve that end result as all HO paper charts have a different look.
* The PT could include scope to improve or amend a symbol but if this sufficiently varies from S-4, a proposal will be required to amend that symbol in S-4.
* Advice from the secretariat is to avoid adopting the current S-52 symbols, as they were simplified symbols which could be displayed on the 90’s tech. Technology has continued to develop and so the symbols created by the project team should reflect the higher resolution displays available today and in the future. Also, do not consider the colours for either S-52 or S-101 for the colours of paper symbols, they are different solutions to different problems, and we do not need to consider the luminosity of the ECDIS display for the paper chart equivalent.
* It is acknowledged that different versions of the same features e.g., spar buoys at different angles, this is a baseline symbology PT who should focus on a single symbol for each real-world feature, which should start with the symbols in S-4. Note that the IHO’s function is to standardise, so the PT should not include the requirement to consider variables like additional angles for buoys as they are cartographic decisions made during the compilation process so does not need to be considered for the baseline.
* NCWG are the paper chart experts, and so can focus on the best results for the paper output and at this stage, do not need to curtail their considerations for other products and standards.
* The in S-100 world, the base product will be S-101 which must contain all the information for safe navigation, so this project team does not need to go past S-101. As a result, the PT do not need to consider S-98 as those additional S-100 standards are not in scope.
* Considerations:
	+ What does ‘finished’ look like for the PT?
		- The output should include a set of SVG symbols, table of colours, line weights etc and a draft set of rules defining the display of those features. This could resemble S-52.
		- Ultimately a portrayal catalogue is required as that is what makes it machine readable but IHO would need to define that as a requirement which would be allocated by HSSC.
		- There is no requirement to create a feature catalogue as part of this PT as that is S-101 i.e., the high-level requirement to create a baseline symbology to enable paper charts to be created from S-101.
	+ How do we publish the outcome of the PT, should it be an annex to an existing standard?
* Regarding information in the registry, a machine-readable output is required, which is a portrayal catalogue which is required to control the display and should be included in the outputs of the PT. The output from this PT *could* be an S-100 standard which describes how S-101 data is converted into a paper chart.
* An option *could* be to take the S-101 symbol library and create a set of rules etc to ultimately inform a new portrayal catalogue for the paper chart as opposed to the S-101 display in an ECDIS.
* Using the S-57 symbol library for the above is not an option.
* A portrayal catalogue can’t exist without a feature catalogue.
* 1 feature catalogue cannot have 2 different portrayal catalogues.
* The PT needs to be cognisant of the fact that S-101 will change as it is in the development phase, edition 1.1 is not published yet, so the rules describing the conversion from S-101 to the paper symbols will need to be amended when changes are made to S-101.

Day 2:

* 12.1: UKHO withdrawing from paper charts by 2026
	+ AHO, stating a clear date enables meaningful conversation but of course, it is difficult UKHO can’t have all the answers to all of the questions yet. Australia started rationalising paper content recently and deleted 100 plus charts. ECS in Aus is acceptable but it has to use an S-63 chart. Are you considering all of the options including automated paper charts?
	+ UK, the declared intention is to stop producing paper charts and by stating a date the user can explain their requirement which they feel will not be met when the paper chart is withdrawn. There is a lot of work to achieve in the future which includes collaborating with many stakeholders and regulatory bodies.
	+ NOAA, the US observed a similar situation with the coastguard who were not moving forward to using ECDIS until paper charts started to be withdrawn.
	+ Netherlands, looking forward to 2026, some countries will follow suit and others will continue producing paper, for the countries that don’t follow paper withdrawal for the smaller vessels, what may/will the digital solution be for the sub-ECDIS market.
	+ UK, that is the problem we are working to tackle now for a practical and safe solution which considers the smaller vessel type, including listening to stakeholders and HOs.
	+ Netherlands, will this result in a new standard or regulations?
	+ UK, yes where there are current standard/regulations/rules states that the requirement is a paper chart, that will be re-written and changed.
	+ Netherlands, what about distribution for paper chart users?
	+ UK, paper charts are printed at distributors already, there is no paper charts printed by UKHO.
	+ ECC, regarding the phasing out of the paper charts in stages, does that include domestic i.e., home waters?
	+ UK, yes, a new solution will be provided.
	+ Aus, when AUS withdrew the paper charts of their PCA nations there was a lot of push-back, have you received similar feedback?
	+ Yes, apart from surprise UK had a similar experience and we are working with those areas to understand use-cases. UKHO will still support those areas and produce the ENCs, how those needs are satisfied is being discussed and conversations continue to develop.
	+ Netherlands, where you withdraw paper, will there be an ENC to replace/cover?
	+ Yes, the ENC is our primary product and local solutions will likely be required.
	+ SHOM, what is the future of the concept of INT charts?
	+ Note, NCWG own the concept of the INT charts.
	+ Secretariat (Jeff Wootton), there has been no discussion on the future of INT charts, there is no plan to stop the INT chart concept however it is up to individual states to determine what the charting requirements are for those waters and how that requirement is met.
	+ SHOM, does this apply to adopted charts?
	+ Secretariat, I need to take this question back to secretariat but ultimately it is up to the member states. **ACTION**
	+ AUS, potentially this could involve moving the responsibility between offices i.e., providing the existing data and handing over responsibility to produce and maintain the content.
	+ Brazil, in order to replace our paper charts, we are interested in the process you will follow, our question is how will you deliver the solution to small vessels, how will you support the Navy and that you have not yet defined what new the product which replaces the paper chart is yet?
	+ UK, the RN are officially a fully digital user, we are aware there are some smaller vessels which are not fully digital yet who use ECS and paper due to the regulations. The finalised end solution to replace paper is not defined yet, but it will be supported by the data produced by UKHO.
	+ Chair, this is an ambitious timeline, particularly without the replacement product in place, do you know when you will know more and if not, any estimate to clarify when you will know more about the solution?
	+ UK, we have started the conversation now and the inclusion of the end-date is what has enabled the conversation to progress. We must start with the UK regulators and other stakeholder regulators and UKHO wishes to be fully transparent with those solutions as they progress.

**Chart Content, Portrayal and General S-4 Issues**

* 6.5: Variable/adjustable intensity lights
	+ Deferred to NCWG 9
* 6.6: Data Quality Indicators for bathymetric data on ECDIS display
	+ Chair, noted the paper and thanked UNH for the presentation and acknowledged that this topic has been raised numerous times as a way to improve the existing and derided star based symbol.
	+ Secretariat, enquired how this work aligned with the ongoing work of the DQWG
	+ UNH, Christos confirmed that he is a member of the DQWG and has also shared his findings there and with other stakeholders including HOs.
* 6.7: Merging of PA and PD abbreviations on paper charts
	+ Previous submissions were tentatively approved that NCWG approved merging PA and PD, but the specific wording proposed was not approved.
	+ The proposal would align INT 1 symbols with S-101
	+ Aus and CHS support the proposal
	+ UK, if approved would the obsolete symbol remain in S-4?
	+ Secretariat (Jeff Wootton), not aware of a general convention but there are examples of ‘formerly charted as’ in S-4.
	+ Chair and Secretariat, retaining the fact that this is an obsolete symbol in the ‘formerly charted as’ section is a good idea
	+ UK, should this reference be removed from S-4 (note the dagger is not in the current S-4)
	+ 
	+ Secretariat, retain in S-4 and include the dagger as proposed.
	+ Proposal approved.
	+ **ACTION, amend S-4 and INT 1 to align, chair and VC to draft a letter describing the changes as a revision of S-4 as it is a change to how features are charted, to show the final version of the proposed amendment, which will be voted on by the NCWG. The letter should include the proposal was approved at NCWG – to prevent variations being proposed.**
	+ Chair and Secretariat, any indication when the next edition of INT1/NP5011 is anticipated.
	+ UK, cannot answer at this time, the latest NE was published in 2020 so it will not be imminent.
* 6.8: New abbreviations
	+ Chair, note that during a revision of S-4, numerous annotations for distance were removed, should they be reintroduced?
	+ SHOM, do you have any use-cases?
	+ AHO, not for S-101 at this stage in the maturity of the standard.
	+ Secretariat, in S-101, there are 5 attributes in the Distance Mark, it is a mandatory attribute for this feature. There is no existing use-case for those 5 units of measure, additional attribute options could be included.
	+ NOAA, the US use Statute Miles marked on river charts; this constitutes a use-case.
	+ Chair, note that Yards is listed as obsolete in the English language version of INT 1, each of the English, French and Spanish all need to be consistent. It is not currently listed in the French or the Spanish version.
	+ CHS, B130 states distance must be in miles, cables or metres, would this need to be changed also?
	+ Chair, NCWG needs to decide for S-4 and the INT 1 sub-working group (UK, France, Spain, Secretary for NCWG) for INT 1.
	+ **ACTIONS, update B-122.1 in S-4, UK to amend Man to man in INT 1, plus the registry manager will take this item up with the S-100WG**

**Day 3:**

**Baseline Symbology Project Team Update**:

* 8.1 Report from BSPT:
	+ There is a set of SVG files which was created (by Caris) using the UK Caris Paper Chart Symbol Library which can be reviewed including consideration of the line weights.
	+ A range of the colour value tables are available including the averages.
	+ BSPT, do we need to inform the Secretariat of the proposal to use the average colours, or do we have to ask?
	+ Secretariat (Jeff Wootton), the colours can be registered in the registry as a colour profile.
	+ Chair, can we define at this stage what the deliverables will be?
	+ BSPT chair, requests the chance to review proposals from NOAA and the Secretariat and more information will be provided ASAP.
	+ Secretariat (Jeff Wootton), there is a danger with managing a PT using GIBHUB which can have a result of losing the important factors which must be discussed by the focussed BSPT. It is suggested that the PT go through INT 1 and only post queries in GITHUB where there is a specific issue to raise. Also note that everyone who is watching the GITHUB will get an email each time something is posted which can create the end result that important themes and questions are lost in the noise.
	+ Secretariat (Jeff Wootton), suggest that the deliverables are discussed at the next BSPT planned for 14th of December.
	+ Chair, request to ensure that the deliverables include a timeline and list of milestones which can be shared with HSSC by the chair.
	+ **ACTIONS**: BSPT chair to provide the NCWG of the deliverables, timeline, and milestones from the project on Friday the 18th of November for review on the 14th of December.
	+ BSPT chair, what level of approval is required for the output of the project?
	+ Secretariat (Jeff Wootton), in terms of registering, the NCWG chair and approve the symbols/colours which can then go for registration in the registry and advise HSSC of the decision. The symbols should align with S-4, or the changes should be made to S-4 as well for consistency.
* 8.2 Review of BSPT Terms of Reference:
	+ No requested changes.
	+ **ACTIONS**: chair/secretary to provide the final authoritative TOR to be published on the IHO webpages.

**Chart Content, Portrayal and General S-4 Issuues**

* 6.9: WIG Craft
	+ N/A no updated at NCWG 8.
* 6.10: Non-Portrayal of Information in ENC
	+ This has been an open topic since 2007which was discussed at numerous meetings including TSMAD, the ENCWG and S-101PT.
	+ In summary there are allowable encoding options in both S-57 and S-101 that when encoded it is not displayed in the ECDIS.
	+ Meta object classes are not part of scope for this discussion as they were not intended to be displayed in ECDIS.
	+ In 2010 an ENC encoding bulletin was published describing the combinations of attributions/features which would not display in the ECDIS which included the workaround to ensure something would display. The encoding bulletin was subsequently included into the next edition of the UOC.
	+ There is no intention to change the S-52 presentation library, the intention is to resolve this in S-101, in some cases this has been achieved by removing the combinations which will not generate a depiction.
	+ **Recommendation 1 for Rapids**: state that point features for rapids should not be allowable (as it does not display in ECDIS).
	+ **Approved**, instruct the S-101PT to remove the point primitive as being allowable for rapids.
	+ **Recommendation 2 for Runways and Airport/Airfield**: (INT 1 D17/18) allow an airport as a point feature to be encoded as a Heliport, instruct the S-101PT that a new symbol is developed to display Heliport/Helipad as distinct for a point feature =
		- Helipads are encoded differently from Heliports but there is no guidance how to distinguish between the 2.
	+ **Approved**, instruct the S-101PT to develop the Helipad symbol.
	+ **Recommendation 3: Vegetation (reeds),** there is guidance in INT 1 and S-4 which states to use the same symbol for marshes however there is a marsh symbol in the S-52 symbol library, but it has not been mapped. Recommend that the S-101PT to use the marshes symbol when reed beds are captured so they display.
	+ It is also proposed that reed beds should not be allowable as being captured as a point feature.
	+ Finland: there are 32,000 reed point features captured on Finnish ENCs as they are provided to the HO as point features by the National Land Survey – albeit that they are not being displayed on the ECDIS, they are displayed on the paper chart, and it is *possible* to display the reeds on ECS used by small boats.
	+ AHO, should a paper be developed using the Finnish example as a use-case to develop a reed point symbol?
	+ Chair, agreed, a paper to the S-101PT is required to justify use of a point symbol in S-101.
	+ Note, retaining the point feature in the proposal is to either remove the symbol or include necessary guidance in the DCEG to recommend a way to capture the feature so it can be seen.
	+ **Approved**
	+ **ACTION**: Finland to create a point symbol request for reeds in the S-101 symbol library.
	+ SHOM, no objections to Finland presenting a paper, but is there any need for the mariner to see reeds if the point of this symbol was to see individual features like large trees on the coastline.
	+ Finland, we use this information as it informs smaller vessels where they can go but larger vessels cannot, the HO would prefer to chart them as area features but they are only available as point features, and it is a prohibitive cost to use cartographers to convert them. It is acknowledged that larger vessels which use ECDIS cannot see these symbols, but they are not able to navigate in the shallow areas of reeds, but the smaller vessels using paper charts or ECS can visualise the symbol.
	+ ECC, reminder that S-101 is supposed to be machine readable and supports autonomous vessels.
	+ Finland, the point is understood but removing the symbols will be a worse outcome.
	+ **Recommendation 4 Waterfalls**: which are currently captured as a rapids symbol and so cannot be displayed in an ECDIS.
	+ Recommend to the S-101PT that there are merits of charting a waterfall as a visual aid to navigation and appropriate guidance should be in S-4.
	+ UK, internal guidance is to capture these features and use a line feature, so it displays in ECDIS.
	+ SHOM, there are no use-cases in French ENCs but the proposal for a waterfall point feature is supported.
	+ AUS, could this be modelled as a landmark rather than a water feature?
	+ Secretariat (Jeff Wootton), that would require a new feature of landmark, this is a dangerous precedent as it could potentially include any feature which has an option to include an attribution of conspicuous. A waterfall is a natural feature so should be charted as such. S-4 (3-53.1) is the ‘why’ things are included on charts, therefore the how should be described in S-101.
	+ **Approved with actions**
	+ **ACTION**: secretariat to draft some wording for S-4 to make it clear that a waterfall can be used as a visual aid to navigation and so should be charted, plus an equivalent note for INT 1.
	+ **ACTION**: secretariat to escalate to the S-101PT for the need to develop a symbol for point feature waterfalls which includes the allowable attribute as conspicuous.
	+ CHS, the proposal is supported, Canada use waterfalls and they are also described as visual aids in SDs.
	+ **Recommendation 5**: Sloping Ground, cuttings and embankments.
	+ There is a disparity between S-4 and S-57 i.e., S-4 states only to chart them when they are visible from seaward for navigation, however they will only display in S-57 when they are radar conspicuous. It is difficult for any HO to know if a feature is radar conspicuous unless it is an aid to navigation, they simply don’t know and as a result the vast majority are not encoded as radar conspicuous and so do not display in ECDIS.
	+ SHOM, the proposal that S-4 is correct, HOs do not have knowledge regarding radar conspicuous features.
	+ Note, according to S-4, a feature can be prominent and used for navigation but not be visually conspicuous.
	+ AHO, shouldn’t the feature have attribution to be able to be both radar and visually conspicuous?
	+ It is recommended that the guidance in S-4 is correct and change the S-101 presentation, so the feature does not only display when the feature is a radar conspicuous.
	+ CHS, we have observed these kinds of features are becoming less necessary as we are using topographic contours to show these features rather than describing the feature like an embankment etc
	+ Chair, Pingos and Scree are not in S-4 yet, they were raised during TSMAD, but the requirement was not pushed through to S-4, but this will happen as they are included in S-101 and so a request will come to amend S-4 from the S-101PT.
	+ **Approved**
	+ These issues were raised as the end-result of specific encoding did not display in ECDIS, it is requested there is investment and ongoing work to resolve the disparities between standards i.e., S-101, S-57 and S-4.
	+ Chair, agreed, this requirement is incumbent on the NCWG.
	+ **Approved**
	+ Note, this action would also reaffirm that S-4 handles which features and why are included in charts, regardless of format.
	+ Chair, will NCWG receive submissions from those who observe discrepancies?
	+ Secretariat (Jeff Wootton), it is likely that the observations will come from the S-101PT to NCWG to resolve the issues in S-4 rather than the other way around.
	+ **ACTION**: advise the S-101PT that NCWG are ready to receive papers describing inconsistencies and to work to resolve them in S-4.
* 6.11: Synthetic AIS Aids to Navigation
	+ This follows an IALA and IHO workshop
	+ IALA would like to see an indication on charts if an AIS is synthetic or not.
	1. Real / Physical = where the transmitter is on a real-world aid to navigation
	2. Synthetic = a physical aid to navigation has an AIS signal appear to be transmitted but the signal emanates from somewhere nearby
	3. Virtual = an AIS signal is simulating a position but there is no physical aid to navigation.
	+ At present, there is no way to distinguish between real and synthetic, see S-4 17.1 and 17.2.
	+ The IALA specification G1062 shows how clearly IALA distinguishes between the 3 types.
	+ In regard to IMO, there are only 2 separated classes, between virtual and real / physical.
	+ In regard to IEC 62288, there are only 2 separated classes, between virtual and real / physical.
		- IEC 62288 generates the relevant symbols in ECDIS.
	+ In regard to S-4 and the INT 1 symbols, for paper charts this is ‘for information’ only for route planning.
	+ In regard to ENC and ECDIS it was also agreed this this is ‘for information’ only for route planning.
	+ Note that for synthetic AIS, the aid to navigation could be moved but the synthetic AIS has not moved.
	+ UK, we do not chart real / physical or synthetic AIS, only virtual on the ENC. Real / physical or synthetic legends are shown on paper charts.
	+ Aus, there was a valid use-case from a mariner to distinguish between each of the 3 kinds on an ECDIS.
	+ Chair, note that there is a decision history for this request as in the past it was decided not to differentiate for synthetic AIS which should be revisited prior to making a decision. In 2009 at CSPCWG concluded it may be a future requirement. in 2014 it was noted that there was no difference between real / physical and synthetic from a user requirement POV, so has that POV changed?
	+ Secretariat, there is a use-case which has been raised by a mariner, however, when the user is navigating on AIS, they are supposed to be following that broadcast signal, which is why it was decided that the kind of AIS is for planning only.
	+ Note, there are two kinds of synthetic AIS, monitored and predicted.
	+ AHO, as required, the use-case could be presented as a paper to the NCWG to aid decision making?
	+ Chair, previous decisions were based on the fact that we are not asking the user to behave any differently if the is a way to distinguish between real / physical and synthetic.
	+ Secretariat, in the past this was not originally an NCWG decision, IMO and IALA agreed that there is no requirement to differentiate, so it us suggested that IALA raise this to IMO.
	+ NOAA, the actual difference to the mariner in terms of synthetic AIS is if it is monitored or not, so there is a requirement to differentiate, then the additional information should be provided. Is it known how readily available this information is to each HO?
	+ CHS, there is an additional challenge in Canada where the buoy can be positioned by one body (Coastguard) and the AIS can be installed by an entirely different body, so getting the relevant information to encode and display is difficult.
	+ Chair, in Finland the AIS signals are always synthetic.
	+ SHOM, supports the idea to raise the use-case to IMO.
	+ **Outcome**: NCWG will take no action.
	+ **ACTION**: IALA raise this to IMO (supported by Antonio [originator] as required).
* 6.12: Marine Radiobeacon Clarifications
	+ There is a discrepancy between S-4 clause B-480.1 and UOC 12.9.1.
	+ There is an additional minor discrepancy in S-32 (2768) Aeromarine or Aero-Marine.
	+ SHOM, support the proposal to use option B i.e., the UOC is correct.
	+ AHO, option B i.e., the UOC is correct.
	+ **ACTION**, use the amends provided by Secretariat, amend S-4.
	+ This will be disseminated to the wider NCWG via a letter.
* 6.13: Proposal on Adding the Symbol of Differential Beidou Satellite Nav System Reference Station
	+ DCEG Lead, the better option is 2 (B122.1).
	+ SHOM, option 2.
	+ Chair, option 2 is the most sustainable, the type of system is not relevant to the user.
	+ AHO, option 2.
	+ **Option 2 is accepted**
	+ **ACTION**: amend S-4 and INT 1 plus inform ENC ECDIS Portrayal for S-57 and S-101
	+ This will be disseminated to the wider NCWG via a letter.

**7: S-4 Supplementary Publications INT1 / INT2 / INT3**

* Report from Secretary of INT1 subWG
* UK, no update from us except to confirm we remain committed to the role. UK rep has drafted an updated version of last year’s report in the absence of a secretary and has started redrafting the content of section V.
* Spain, a new edition will be finished before the end of this year 2022.

**9 S-11 Part A (INT Chart Scheming and ENC Scheming Guidance)**

* N/A

**10 S-100 Portrayal Topics**

* 10.1 Efforts for Developing Symbology for New S-1xx PS [UNH]
* Doc: NCWG8-10.1A Efforts for Developing Symbology for New S-1xx PS

**11 Lessons learned from Marine Incidents**

* 11.1 [Sinking of fishing vessel “Lummetje” in 2019](https://www.onderzoeksraad.nl/en/page/15703/capsizing-and-sinking-of-fishing-vessels---lessons-learned-from-the) [NL]
* 11.2 [Loss of containers by ms Zoe in 2019](https://www.onderzoeksraad.nl/en/page/13223/safe-container-transport-north-of-the-wadden-islands.-lessons-learned) [NL]
* 11.3 Sinking of patrol boat PV83 [FL]

**12 INF Papers**

* 12.1 UKHO withdrawing from paper charts by 2026 [UK]
* 12.2 [Report on the Auto-generation of HDENC Depth Contours](https://iho.int/uploads/user/Services%20and%20Standards/ENCWG/ENCWG7/ENCWG7-4.6_2022_EN_Report%20on%20the%20Auto-generation%20of%20HDENC%20Depth%20Contours-final.pdf) [CN], this paper will be presented at the ENCWG next week which has been generated by the HDENC depth contours sub-group , NCWG chair agreed this can also be discussed during NCWG 8.
	+ Secretariat, the scope for S-102 is now changed for it to be used in ECDIS, one of the requirements is to create an algorithm to create the safety depth contour. Potentially, the same algorithm could be used to generate bathymetric contours in cooperation with the S-102PT.
	+ CHS, observation that the auto-generated contours are good enough to require limited human intervention but the sounding selection is less visually appealing so there is more manual intervention. Even with the manual intervention, the auto-generated outputs are still saving significant amounts of time. What will the issue be to the user if S-101 and S-102 being compiled and released at different times or using different algorithms?
	+ Secretariat, it is a major unknown and one of the significant issues with multiple products being used in the same ECDIS. S-98 will help govern the display and using the same dataset (and algorithm) then the inconsistencies should be minimal. S-98 also states that bathy must be on the same vertical datum for consistency.
	+ Aus, support for the same S-98 algorithm to support production of the bathy contours. Aus use Process Designer to create their HD ENCs and production is automated using a standard sounding spacing and an algorithm to remove tiny deep patches.

13 Any Other Business

* Select a Domain Control Body representative for NCWG to join the Portrayal Register
	+ Sam Lerigo [UK]
	+ Secretariat (Jeff Wootton) to contact Sam to define how to formally join the group.
* Discrepancy in S-4
	+ Actually, a discrepancy in S-57, but that is frozen
	+ However, the S-57 CATZOC table which contains the error has also been included in S-4, footnote 5 should be amended to footnote 7.
	+ **ACTION**: amend footnote 5 should be amended to footnote 7
* Mechanical Sweeping – for info:
	+ There is a proposal pending for the S-101 which links to a paper raised by the Netherlands in 2018 at The Hague.
	+ Paper has been proposed by the Hydrographic Surveys WG.
	+ The proposal is to include the term ‘mechanical sweep’ and remove the term ‘wire sweep’ and if approved, there are numerous mentioned in S-4 which will be requested by the HSWG.
	+ Chair, requests that Secretariat raise the fact with the S-101PT that there is ongoing discussion regarding the quality of wire sweeping / wire drag in terms of being less accurate than water column information.

14 Review of Meeting Actions and remaining items

* Completed, final draft to be published to MS ASAP.
* Volunteers for Secretary, the Secretariat has confirmed there is no capacity to support NCWG. Chair and VC that NCWG will issue another letter and then go to a wider audience, Nick Rodwell to continue as *acting* secretary.

15 Date and location of next meetings

* Does the MS want to meet again? Yes
* Should we meet in 1 years’ time? Yes
* NCWG9 (2023): week starting 6th November 2023, this is already in the IHO calendar as a TBC.
* NCWG10 (2024):

16 Closure of meeting



