**AHO input to a ‘Proposal for a new method to display quality information’ - DQWG14-08C**

Introduction:

The AHO is of the idea that any new ENC quality data display methods and/or ECDIS functionalities should be developed to influence S-101 portrayal and S-101 ECDIS only. Successfully negotiating a new version of S-52 with OEM’s and other industry stakeholders would be extremely difficult if not impossible.

DQWG14-08C
**Proposal 1: show depth contours with low accuracy during execution of voyage:**

1. **S-57\_S-52**
2. The current version of S-52 already manages the display of DEPCNT with QUAPOS different than 1, 10 or 11 as approximate contours (dashed line).
3. The AHO does not support the use of CSP that could encourage people navigating an ENC at a viewing scale larger than the compilation scale set by the producer. When an ENC is overscaled the resulting "overscale pattern" AP(OVERSC01) ‘OVERSCALE’ symbology is, in essence, alerting mariners to ‘use extreme caution as they are now using the product at a scale it has not been designed for’. It does not seem logical to only emphasize depth contours in ZOC D/Unassessed areas.

*Recommendation:* Instead of modifying the existing S-52’s CSP DEPCNT03 (as recommended in this proposal) the AHO would prefer to amend the content in S-57 Appendix B.1 Annex A UOC Ed 4.1.0 (section 5.2) to mandate (or strongly recommend) the use of QUAPOS=3 or 4 in DEPCNTs within ZOC D (any depth) or ZOC C areas (depth =<30m). This proposal would make all DEPCNTs in ZOC D and ‘shoal’ ZOC C areas always display as approximate. At DQWG’s discretion, this proposal may be presented as a paper at the next NCWG meeting (NCWG5).

1. **S-101**
	1. Include in the DCEG the same recommendations made for S-57 AUOC (use of QUAPOS to trigger ‘approximate’ symbology). This may not be necessary if future S101 Navigation Systems become smart enough as to perform geospatial analysis on the fly and automatically change the display of a section of a DEPCNT when it overlaps a QualityOfBathymetricData feature that is unassessed or contains certain combination of attributes.

DQWG14-08C
**Proposal 2: display a circle of uncertainty around isolated dangers and under water rocks:**

1. **S-57\_S-52**

The AHO supports the general idea of using POSSAC as an additional tool for mariners to have at both, route planning and route monitoring stages. The AHO has the following considerations:

1. This functionality should be developed, tested and matured with the main objective of implementing it in S-101 only.
Considering that this functionality (uncertainty radius) would use the worst case scenario based on the values in the S-57 ZOC table (i.e. 500m for CATZOC C), the overall result could be misleading and potentially catastrophic because it would close many passages due to ‘overlapping’ uncertainty areas. This functionality makes sense only if HOs populate meaningful values of POSSAC.
The AHO thinks HO’s will need a significantly amount of time to improve the way they encode POSSAC on M\_QUALs and on individual hydrographic features (UWTROC, WRECK, SOUNDG) when they happen to have better accuracy than the overarching Meta object. The sooner the DQWG, NCWG and the ENCWG/S101PT agree on this approach the better as new encoding guidance will have to be promulgated in the S-57 UOC and S-101 DCEG ASAP.
The use of strong ‘Test cases’ at the ‘proof of concept’ phase is paramount.
2. A similar functionality should be implemented using SOUACC. For example, the safety contour CSP (DEPCNT03) should, at mariners request, use SOUACC to come up with the ‘worst case scenario’ when determining the least depth over a feature containing VALSOU. For example, **WRECKS**; VALSOU=7.3; SOUACC=0.5. Although the charted depth over this wreck is 7.3m, the CSP should use 6.8m because SOUACC is 0.5m. In this scenario the wreck would be highlighted as a ‘potential’ danger to navigation if the SC is set to 7m.
3. At mariner’s request, these ‘extended’ breaches to the ‘safety parameters’ should be reported by the ‘route check’ functionality at the route planning stage and should be highlighted (yellow or red) when triggered by the safety framework around the ship during route monitoring.

**Additional input regarding the display of data quality information on ENCs:**

Although Australia was not able to attend the NCWG3 meeting, an alternative way of managing the display of M\_QUAL using Germany’s proposal (NCWG3-08.4A) was submitted for MS’s consideration. Our feedback was sent directly to the NCWG chair as part of the AHO’s overall input to each of the NCWG3 papers (not sure how that was managed at the meeting though). Below is an updated version of the AHO’s input to this paper and we would like it to be considered by the DQWG at this meeting. Please note that the new methodology to display DQIs (Data Quality Indicators) was assessed and modified by the AHO to work using an updated (new) S-52 version. The CATZOC concept does not apply to S-101 and therefore more research is needed to adapt our proposal to the new QualityOfBathymetricData feature attribute values.

NCWG3-08.4A *- The AHO thanks Germany for their research project and would like to contribute with the following comments:*

* *The AHO agrees with the idea of being able to set up a “corridor” for the display of the DQI pattern during route planning (for the display of ZOCs within see next bullet point regarding the use of ‘indhlt’ and ‘dnghlt’). The ‘check route’ functionality should be extended to report breaches to a pre-set ZOC category (a lower CATZOC intersects the safety corridor).*
* *The AHO agrees with the possibility of displaying the DQI pattern in a circle which moves with the ship during route monitoring but:*
	+ *Instead of showing all the different patterns (ZOC categories) inside the “guard zone” we’d prefer the mariner being able to set up a CATZOC value (e.g. B) and let the software highlight any overlap with a lower ZOC area on the fly. This could be done using a modified version (dashed) of the new Mariner Object ‘indhlt’(one ZOC category off) or ‘dnghlt’ (more than one ZOC category off). This approach reduces clutter, as the guard zone around the ship will not show any pattern unless it gets in contact with an M\_QUAL that breaches the settings (e.g C or D). If the mariner wants to know more about the M\_QUAL it can do pick report and, for example, clarify if it’s a ZOC C or ZOC D area.*
	+ *Instead of the “mouse hover” option, we’d prefer a “full screen” option which would only display M\_QUALs breaching the CATZOC settings previously set up by the mariner. A full screen option provides a better picture of the surroundings and would help mariners come up with a new course faster in case of an emergency.
	Mariners would switch to ‘full screen’ mode only when they want to ‘look ahead’ or if an unplanned change of course needs to be made.*
	+ *We think there should be only 3 display options:*
		- ***ZOC = Unassessed*** *- A pattern made of U letters in grey colour (displays always irrespective of the settings)*
		- ***ZOC worse than settings*** *- Circle with exclamation mark within (grey colour)*
		- ***ZOC equal or better than settings*** *- No pattern at all*

*In the future development of S-100 compatible ECDIS, it would be useful to include an “ON/OFF” button called “DQI”. When selected mariners would be able to set up the radius and the ZOC value of a “Data quality guard zone”. This would affect the DQI pattern display. Another two buttons should also exist: one called “F” for full screen display of M\_QUALs and the other “R” (radius) to activate the “guard zone” display only. Both buttons would use the settings in force.*