**Minutes of DQWG9**

On behalf of host organization, UKHO, Chris Howlett (CH) welcomed all to Poole, UK, and the Royal National Lifeboat Institution (RNLI) facilities. Introductions were made, and the group specifically welcomed Rogier Broekman (RB), replacing the previous vice-chair, Leendert Dorst, as the representative of the Netherlands hydrographic office.

The minutes are collected in the order of discussion, which did not follow the order of the agenda.

**Review of agenda**

The paper, Data quality indicators for NPubs was added under agenda item 4. HSSC reorganization being brought forward due to the possibility that members be leaving before noon Friday

Review of DQWG8 Minutes and actions.

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| --- | --- | --- | --- |
| **Action ID** | **Action** | **Work Plan Item** | **Status (November 2014)** |
| **DQWG3-8A**: | *Education of mariners and cartographers*; CH has started preliminary discussions with UK maritime colleges. Work continues as the S-101 ENC Prod Spec is evolving. UKHO is working on a course for mariners in the use of ENC  | C.4 | Ongoing. Nautical Institute has been engaged in helping with educating the mariner. Remove since the action has been merged into work item C.4. |
| **DQWG6-5A**: | CH to inform the DIPWG chair of the DQWG intentions. | H.1 | Ongoing. CH has been in continuous liaison with DIPWG chair. |
| **DQWG6-5B** | SH and EM will produce first draft portrayal, and further input may be gained from the USM work. S-52 review did not have the scope to provide data quality display changes. S-100 Part 9 is still being developed. | E | Ongoing. SPAWAR presenting results of testing S-100 portrayal during HSSC6. CH and MP will report on the paper next DQWG meeting. Karen will contact Hugh Astle for update on portrayal catalogue builder. |
| **DQWG6-10B** | *SNPWG on data quality*: EM to liaise with SNPWG on data quality. | H.1 | Ongoing. SNPWG paper for DQWG9. |
| **DQWG7-4.6C** | MP to propose a revision to the enumerated lists of QUAPOS and QUASOU, which reduce the number of similar items to the bare minimum. Proposal will be circulated to DQWG for comment, and then submitted to TSMAD-DCEG by SL. | E.1 | Ongoing. MP has produced a paper to review QUASOU/QUAPOS. |
| **DQWG7-4.7** | EM to report on any progress made by SNPWG on the data quality model at DQWG8 | H.1 | Ongoing. SNPWG paper for DQWG9. |
| **DQWG7-5** | All to collect examples of past accidents and incidents, and send to LD, who will combine all to a list for future use as examples to run tests against. | C.4 | Closed. List is on IHO website and will be maintained by RB. |
| **DQWG8-4A** | HICUP subWG to evaluate the visualization of adjacent areas which show the same level of data quality but due to difference reasons. | E | MP and CH will add to the data quality paper that Good has no internal boundaries. Fair and Poor/Low have boundaries to allow the mariner to see that there are different areas. Visualization of stacked areas need to be considered. |
| **DQWG8-4B** | SL to follow up the discussions within TSMAD/DCEG on the outcomes of the CSPCWG change to the term maintained depth. | H | Ongoing. Group to review when the S-101 DCEG encoding is more finalized. |
| **DQWG8-5A** | MP to draft a standard DQWG presentation ~~by June-2014.~~ | C.4 | Ongoing. MP to complete by Jan-2015. |
| **DQWG8-5B** | SH to contact IHB Capacity Building Assistant Director for help with access to capacity building funds for the increased distribution of DQWG materials. | C.4 | Closed. SH discussed with IHB; submissions must come from a regional hydrographic commission. However, such a submission would be so different from usual submissions that processing the request would be challenging. Brian Heap (BH) reported on ECDIS training in the US, and that the data quality was only 15min. MP mentioned that the Australian publication Seafarers Handbook has a good chapter on data quality.  |
| **DQWG8-7A** | EM to incorporate decisions of the HICUP subWG into the modelling.  | E | Done |
| **DQWG8-7B** | SL to discuss with DIPWG chair about portrayal methods for data quality. | E | Ongoing |
| **DQWG8-7C** | EM to complete the decision tree draft and distribute via mail. | E | Done |
| **DQWG8-8A** | CH to maintain liaison to TWLWG on quality issues. | H.1 | Ongoing. |
| **DQWG8-9** | CH to update work plan. |  | Done |
| **DQWG8-11A** | CH to review feedback from CL51/2013 and report back at DQWG9. | C.4 | Done. Got 20 replies and 30ish documents. Item to discuss during DQWG9. |
| **DQWG8-11B** | SH to draft paper to IHB to highlight the concerns regarding misuse of CATZOC. Especially where it was intended to be used in C-55. | C.4 | Closed. Not done due to inappropriate timing and format, thus considered to be ineffective. Overtaken by developments in the HICUP group and the paper to be drafted. |
|  | Actions from the joint DQWG/TSMAD-DCEG meeting held the day after DQWG8: | H.1 |  |
| **Action:** TSMAD vice-chair to send DQWG chair a request of actions needed from DQWG regarding review of DCEG. |  | Ongoing, CH has not received anything. |
| **Action:** DQWG to review the enumeration list of techniqueOfVerticalMeasurement and add as needed at DQWG9. |  | closed |
| **Action:** DQWG to review what needs to be encoded in an ENC when an area is truly unsurveyed during DQWG9. Consider the encoding and how it may affect the data model and decision tree. |  | Covered during the HICUP group, specifically asking TSMAD for stacking depth areas. |
| **Action:** DQWG to review DCEG and S-101 for data quality relevant parts at DQWG9. |  | done |

Minutes were accepted with minor spelling corrections.

**Agenda item 4 - Evaluation of Events since DQWG-8 / List of Ship Incidents**

**Review of techniqueOfVerticalMeasurement**

DQWG9 found use of the attribute is considered not useful as a data quality indicator for a mariner. Additionally the wording of the enumerations in techniqueOfVerticalMeasurement is in many instances wrong and ambiguous. For example ‘found by echo-sounder’ is defined broad enough that ‘found by multi-beam’ fit the same definition. DQWG recommend that the definitions be reviewed and updated. DQWG also noted that the list will likely always be out of date and lagging behind new measurement techniques.

**Review of S-101 DCEG**

Definition of Quality of non-bathymetric data should be reverted to the definition given in paper to TSMAD 23. The meeting reviewed the data model and confirmed its continued correctness.

Quality of bathymetric data should have technique of vertical measurement removed. Survey date range sub attribute data types should be truncated date, and sub attribute survey start is mandatory. Survey date range is retained for backwards compatibility to survey dates, and it must be clear that its use is only for expressing the range of dates of surveys that are used to generate the overall expression of data quality.

Quality of survey must have curve primitive to remain backwards compatible. Survey date range sub attribute data types should be truncated date. Survey date range must be mandatory.

Swept area should also be permitted over unsurveyed areas. Statements that say no depth or accuracy information under swept areas must be removed.

Dredged area must have an added comment to say that the whole water column must be covered by bathymetric data quality.

**Action** **DQWG9-4a:** Sean Legeer (SL) to draft/update DCEG data quality items

**Paper from BSH/Jeppesen**

The group reviewed the paper, but had short notice and therefore concluded that further discussion was needed. In general the principle of a joint data model is good, but the implications of having everything available in all product specifications needed further consideration. The group reviewed the documents overnight and came back the next day for further deliberation. It was then considered that a common harmonized data quality model would be advantageous in the future when several data streams like ENC, Surface Current, Nautical Pubs could be overlaid one another and a data quality representation of the image on the screen would be generated. DQWG therefore decided to accept the proposal and include this in the data model. It was noted that the definitions of categoryOfTemporalVariation should be amended, and that it might be stated for ENCs that the level attributes should not be used.

**Action DQWG9-4b:** Eivind Mong (EM) to update data model and distribute.

**List of Ship Incidents**

It was noted from IHB that the coordinating work on the shipping incident data base with Hydro International should have gone out to all member states for comment before it was started. DQWG chair clarified that this was actually more of an initiative of one member of DQWG, rather than a dedicated effort of the working group.

Brian Heap (BH) offered to do a comparison of the MITEC ECDIS course material on shipping incidents.

**Action DQWG9-4c:** BH to communicate any additional incidents to RB.

Rogier Broekman (RB) has taken over the maintenance of the shipping incidence data base from Lendeert Dorst (LD). The work with maintaining the data base depends on the HSSC reorganization.

**Agenda item 10**

Review of HSSC-6 plans to reorganise the working groups.

The change from the original re-organization scope where DQWG was kept outside of scope, to the newest re-organization scope where DQWG is included and proposed merged with the CSPCWG+SNPWG group, has caught all DQWG members by surprise. There is strong opposition within the working group to including DQWG, as it is felt that it is of great value to HSSC working groups in need of data quality indicators. DQWG forms a standing group of data quality experts that currently work on S-101, S-111, tides and water level and all NPubs data quality indicators.

The group drafted a statement of reply for the working group to the proposed reorganization of HSSC working groups.

**Agenda item 5 - Review of HICUP Sub Group Discussions**

The group is reviewing the HICUP sub group meeting outcomes. The portrayal guidance for DIPWG was reviewed and found reasonable, but it was noted that it must be easy to turn off. Intended use is primarily during planning, but it should be possible to call up during passage if the situation so warrant.

The decision tree and encoding decisions will make most of the oceans have the poor/low data quality label. It was stressed that poor/low data quality does not mean do not navigate here, but rather that it is a factor that the mariner must consider when deciding to navigate in an area.

An overall guiding principle was that it does not matter how good the survey is, the quality statement is about how good the data quality is when on the product (ENC).

Limiting the application of bathymetric data quality to scale bands or depth bands was discussed, but it was agreed that nothing was gained by that. The South China Sea was used as an example, where it is deep water, but sufficient reports are available to indicate that there are significant hazards to shipping, and this should be shown.

See annex A for HICUP meeting minutes

**Action DQWG9-5a:** EM to update the feature/attribute definition submission and distribute with the data model and decision tree to all DQWG members.

**Action DQWG9-5b:** MP to draft a write up of HICUP outcomes. Write up will include data model, decision tree, screen mock up etc.

**Action DQWF9-5c:** SL will draft S-101 DCEG data quality parts.

**Action DQWG9-5d:** CH to submit screen mock-up, data model and decision tree to DIPWG chair for portrayal development.

**Action DQWG9-5e:** All to consider visualization of stacked areas and report back at next DQWG.

**Agenda Item 6 - Finalise mapping of S-57 / S-101 attributes**

The mapping from M\_QUAL to QualityOfBathymetricData and M\_SREL to QualityOfSurvey was reviewed and updated based on the amended data model vDQWG9.

**Action DQWG9-6a:** CH to send to mapping documents to S-101 work item leader.

MP has completed a review of quality of sounding measurement and quality of position according to action **DQWG7-4.6C**. It was also discovered that a similar action was on CSPCWG chair Jeff Wootton (JW), and the two efforts were therefore merged. The meeting reviewed the draft and largely agreed with the exception of “precisely known” in qualityOfHorizontalPositionMeasurement (QUAPOS).

**Action DQWG9-6b:** MP to update ‘quality of sounding measurement and quality of position’ document and distribute to DQWG membership and CSPCWG for comment.

**Agenda Item 7 - Review of Educating the Mariner**

CH welcomed Harry Gale (HG) of Nautical Institute. CH explained the aspirations of DQWG to develop training material in data quality and welcomed the input from the Nautical Institute on these efforts. HG stated that the training in today’s ECDIS era is more difficult due to the flexibility over paper charts, which are WYSIWYG. Mariners today are often brought up with computers, and have a tendency to put too much trust in what they see. The mock up demonstrating a shading of darker = poor/low, light = fair and no shading = good was shown to HG and feedback was that it was better than the current stars system, and he asked if it was possible to “drill down” to the detailed information that showed why the data quality was as such. HG also asked about the possibility to revert back to something similar to the source diagrams used on paper charts. Furthermore, HG cautioned that it is difficult to educating users and ship management companies to the importance of any data quality information. There will always be the “bad guys” who will be next to impossible to reach. But that should not dissuade DQWG from making data quality awareness a continued effort. HG also recommended that Navigator magazine targeting junior officers would be a good channel to promulgate information on data quality. Language was another item to consider, avoiding making it too technical to appeal to more readers. GlobalMet is another portal to distribute information regarding understanding data quality. HG will be in contact with CH on the topic of the next editions of Navigator magazine. HG mentioned that there is the Nautical Institute Web page and their LinkedIn page are venues where data quality can be promulgated.

The discussion concluded that there is little point in spending the effort in lobbying IMO, but rather directly approach the navigation colleges.

**Agenda Item 8 - Devise IHO Standard Text on Data Quality**

There were about 20 responses with about 30 documents that responded to CL51/2013. A correspondence group will be stoop up to review the documents and use these to draft a standard document to become an IHO document on data quality, which then will be used to approach the training colleges. CH will lead with the assistance of BH, Gael Morvan (GM) will help with French documents, Antti Castren (AC) will help with any Swedish, Finnish or Estonian documents, RB will help with Dutch and German.

**Action DQWG9-8:** CH to coordinate the data quality document sub group and draft a document for next DQWG meeting.

**Agenda Item 9 - Prepare next year’s work plan**

B.4 change milestone to TSMAD29(feb 2015)

C.4 change to permanent and remove end date. Notes to include getting data quality information materials in the Nautical Institute publication Navigator. CH to communicate with HG by end of 2014.

C.5 add item. Develop standard IHO wording on data quality. Priority high, DQWG10. Start 2014, end 2015. DQWG. Note: produce standard wording from responses to CL51/2013.

Work item E description should have “and/or improvement” removed.

E.1 should all be moved to B.5. Change note to TSMAD29

E.2 should all be moved to B.6 Change to pending and remove start and end date.

E.3 should all be moved to B.7 remove and report to HSSC6

F.1 Change note to Common data quality model agreed upon for ENC and NPubs

H.1 Add note: CH in contact with the TWLWG group. SL in contact with TSMAD/DCEG. EM in contact with surface current working group, KC in contact with the S-102 correspondence group.

**Action DQWG9-9:** CH to update the work program.

**Agenda item 11 - Any Other Business**

No other business was tabled.

**Agenda item 13**

SHOM (France) is a candidate to host in tentatively the week of September 21, 2015.

**Annex A - HICUP group meeting minutes**

Mike Prince (chair), Chris Howlett, Antti Castren, Sam Harper, Gael Morvan, Sean Legeer, Eivind Mong, Karen Cove

1 - Brought scenarios through the decision tree to ensure we got the expected quality rating. We did in all cases. The categorization of existing CATZOC into the new categories will generally foolow as: special order and A1 to Good, A2 into Fair (accepting that some surveys could move into Good), B into Fair or Poor and C, D into Poor. For surveys to move up the ladder into a better category the component attributes will have to be enumerated.

2 - We will not include description of size of detected features and just refer to S-44 standards on the subject.

3 - Much discussion around how to handle swept areas (laser, sdb, bar sweep) with stacks of skin of the earth features and quality of bathymetric data feature.

4 – Discussion around adding Unassessed as a category of quality alongside Good, Fair, Poor. Needs to be added to the decision tree and the data model.

5 - Antti proposed that in cases where no DRVAL2 exists then a value of 30m is used to determine vertical uncertainty (fixed and variable). This would allow both sensors with a low fixed but high variable and vice versa to move into fair or good categories when one uncertainty component may otherwise force it into a lower quality category. We agreed that 30m is conservative enough value based on current and expected drafts over the next 30 years.

6 - Discussion around whether the terminology of Good, Fair, Poor is appropriate. We discussed using Good, Moderate, Low and other suggestions. We decided that we need to think about this a bit more. The words we choose matter a lot as it will drive the portrayal. Also what we come up with should be suitable for use on other S-100 products and should be in line with the way quality is described in the wider GIS environment. We think we need to suggest to DIPWG that they do not suggest Red, Amber, Green as the colour scheme for data quality because this would conflict with the final ‘go/no go’ concept. We could suggest they use a single colour scheme with different shades/textures. Need to discuss with full DQWG.

7 - Mike started discussion around future proofing our concepts to one day include tide and tide uncertainty models. Is there anything in the model that would against moving to inclusion of predicted and/or real time available water level information in the navigation system. We would need there to be an uncertainty associated with the shift value added to the bathymetric surface or contours/soundings so the quality of the bathymetric data can still be assessed using our model.

8 - Sean started discussion around communication with TSMAD …in section 11.9.1.1 in S-101 doc TSMAD28 –DCG5 talks about depth info from SDB should be shown n ENC if there is no other data available. The quality of bathymetry data should follow a certain set of criteria…is this appropriate? We will ask them to remove the comments and follow our model. We may also want to also recommend changes in wording to the Unsurveyed section above it.

9 - Sam asks that we start talking about how the component attributes will look when user wants to drill down to figure out why a particular category was selected. I.e. use of colour to show categorization.

10 - Discussed letter for DQWG membership:

* Definition of what the categories mean and appropriate reactions may be through examples.
* Description of the concept of vertical stacking in S-100 and its use n data quality.
* Describe the concept of having the fixed and variable components of the uncertainties and the use of a threshold value when DRVAL2 is not present.
* Mapping of current CATZOC categories into new data quality categories.
* Concept of overlapping swept area and unsurveyed features.
* Explain that significant features will be referred to but we will refer to S-44 for values.
* Diagram and explanation of data quality logic tree.
* Next steps (guidance doc, portrayal,

**Action items:**

* Submission for TSMAD to ask if we can layer unsurveyed and depth area features. (Mike Prince)
* Get updated document and then suggest revisions, if needed, to doc TSMAD28 –DCG5 re technology driven encoding and wording around unsurveyed areas. (Sean)
* Start writing a working group letter with the finished decision tree, stacking, data model. (Mike, Karen)
* Start writing guidance for using the data quality model. (Mike)
* Confirmation of the Good, Fair, Poor terminology for data quality layers before sending targeted information to pass to DIPWG to task them with coming up with the portrayal. Suggest they do not use the red, green, amber scheme. Suggest writing a survey. (Antti)
* Data model and decision tree need to be updated based on HICUP meeting. (Eivind)

Annex B – List of actions

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| --- | --- | --- | --- |
| **Action ID** | **Action** | **Work Plan Item** | **Status (November 2014)** |
| **DQWG6-5A**: | CH to inform the DIPWG chair of the DQWG intentions. | H.1 | Ongoing. CH has been in continuous liaison with DIPWG chair. |
| **DQWG6-5B** | SH and EM will produce first draft portrayal, and further input may be gained from the USM work. S-52 review did not have the scope to provide data quality display changes. S-100 Part 9 is still being developed. | E | Ongoing. SPAWAR presenting results of testing S-100 portrayal during HSSC6. CH and MP will report on the paper next DQWG meeting. Karen will contact Hugh Astle for update on portrayal catalogue builder. |
| **DQWG6-10B** | *SNPWG on data quality*: EM to liaise with SNPWG on data quality. | H.1 | Ongoing. SNPWG paper for DQWG9. |
| **DQWG7-4.6C** | MP to propose a revision to the enumerated lists of QUAPOS and QUASOU, which reduce the number of similar items to the bare minimum. Proposal will be circulated to DQWG for comment, and then submitted to TSMAD-DCEG by SL. | E.1 | Ongoing. MP has produced a paper to review QUASOU/QUAPOS. |
| **DQWG7-4.7** | EM to report on any progress made by SNPWG on the data quality model at DQWG8 | H.1 | Ongoing. SNPWG paper for DQWG9. |
| **DQWG8-4A** | HICUP subWG to evaluate the visualization of adjacent areas which show the same level of data quality but due to difference reasons. | E | MP and CH will add to the data quality paper that Good has no internal boundaries. Fair and Poor/Low have boundaries to allow the mariner to see that there are different areas. Visualization of stacked areas needs to be considered. |
| **DQWG8-4B** | SL to follow up the discussions within TSMAD/DCEG on the outcomes of the CSPCWG change to the term maintained depth. | H | Ongoing. Group to review when the S-101 DCEG encoding is more finalized. |
| **DQWG8-5A** | MP to draft a standard DQWG presentation. | C.4 | Ongoing. MP to complete by Jan-2015. |
| **DQWG8-7B** | SL to discuss with DIPWG chair about portrayal methods for data quality. | E | Ongoing |
| **DQWG8-8A** | CH to maintain liaison to TWLWG on quality issues. | H.1 | Ongoing. |
|  | Actions from the joint DQWG/TSMAD-DCEG meeting held the day after DQWG8:**Action:** TSMAD vice-chair to send DQWG chair a request of actions needed from DQWG regarding review of DCEG. | H.1 | Ongoing, CH has not received anything. |
| **DQWG9-4a** | SL to draft/update DCEG data quality items | B |  |
| **DQWG9-4b** | EM to update data model and distribute. | B |  |
| **DQWG9-4c** | BH to communicate any additional incidents to RB. | C.4 |  |
| **DQWG9-5a** | EM to update the feature/attribute definition submission and distribute with the data model and decision tree to all DQWG members. | B |  |
| **DQWG9-5b** | MP to draft a write up of HICUP outcomes. Write up will include data model, decision tree, screen mock up etc. | B.4, E.1 |  |
| **DQWF9-5c** | SL will draft S-101 DCEG data quality parts. | B |  |
| **DQWG9-5d** | CH to submit screen mock-up, data model and decision tree to DIPWG chair for portrayal development. | B.4 |  |
| **DQWG9-5e** | All to consider visualization of stacked areas and report back at next DQWG. | E.1 |  |
| **DQWG9-6a** | CH to send to mapping documents to S-101 work item leader. | B.4 |  |
| **DQWG9-6b** | MP to update ‘quality of sounding measurement and quality of position’ document and distribute to DQWG membership and CSPCWG for comment. | B.4 |  |
| **DQWG9-8** | CH to coordinate the data quality document sub group and draft a document for next DQWG meeting. | C.4 |  |
| **DQWG9-9** | CH to update the work program. | I |  |

**Annex C - List of Participants**

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| --- | --- | --- |
| **Country / Service** | **Name** | **Email** |
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