

Start 07/07/2015 9am

Antti Castren (AC) welcomed everyone to DQWG10 and thanked SHOM for hosting the meeting.

Round table introductions were held.

Gael Morvan (GM) went through administrative arrangements. SHOM provided free wifi and lunch at the SHOM restaurant.

### 3. Review of agenda

AC went through the agenda and his plans for executing the agenda and the various papers. Agenda was approved as presented.

### 4. Review of the ToR

AC went through the ToR and for the benefit of the new members, reiterating how the group has worked in the past. Yves Guillam (YG) reminded the group on the action from HSSC (HSSC5/25) to form a joint task group with NIPWG and NCWG to develop non-bathymetry portrayal.

Action DQWG10 4; AC to liaison with chairs of NIPWG, NCWG and S-100WG to work on non-bathymetry data quality and portrayal, with focus on S-122 (Marine Protected Areas).

YG pointed out that the work items should be more tangible and re-focus high priority to a narrower focus, in order to better show result of work from the working group. Karen Cove (KC) suggested that the work plan also include what is the deliverable to consider the task done.

Mike Prince (MP) pointed out there was an IHO circular letter on the need to set up a new hydrographic survey working group to review S-44. YG stated the replies to the circular letter was mixed.

YG pointed out that IRCC decided to set up a crowd source data working group, and that this working group would need data quality indicators.

### 5. Review/approval of Minutes from DQWG9

It was pointed out that the actions on Chris Howlett were transferred to AC. Actions were reviewed and status updated as per Table 1.

Action DQWG10-5; YG to put latest data quality model to be posted on the DQWG web page.

Minutes were approved without further comments.

Action ID	Action	Work Plan Item	Status (July 2015)
DQWG6-5A:	CH to inform the DIPWG chair of the DQWG intentions.	H.1	DIPWG has ended, therefore action closed.
DQWG6-5B	SH and EM will produce first draft portrayal,	E	Closed, effort being moved to

	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.		actions following NIPWG paper (DQWG10-09A).
<b>DQWG6-10B</b>	<i>SNPWG on data quality</i> : EM to liaise with SNPWG on data quality.	H.1	Closed
<b>DQWG7-4.6C</b>	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	Closed, was proposed to TSMAD29 and accepted as input to S-101 DCEG.
<b>DQWG7-4.7</b>	EM to report on any progress made by SNPWG on the data quality model at DQWG8	H.1	Closed.
<b>DQWG8-4A</b>	HICUP subWG to evaluate the visualization of adjacent areas which show the same level of data quality but due to difference reasons.	E	Done and closed, but the item of visualization of stacked areas will move to the overall portrayal discussion.
<b>DQWG8-4B</b>	Group to review relevant sections of the S-101 DCEG, when it is more finalized.	H	Ongoing.
<b>DQWG8-5A</b>	MP to draft a standard DQWG presentation.	C.4	Ongoing. AC to draft as part of report to HSSC7.
<b>DQWG8-7B</b>	SL to discuss with DIPWG chair about portrayal methods for data quality.	E	Closed, and moved to the general portrayal discussion.
<b>DQWG8-8A</b>	CH to maintain liaison to TWLWG on quality issues.	H.1	Closed, and moved to a general liaison action.
	<p>Actions from the joint DQWG/TSMAD-DCEG meeting held the day after DQWG8:</p> <p><b>Action:</b> TSMAD vice-chair to send DQWG chair a request of actions needed from DQWG regarding review of DCEG.</p>	H.1	Closed
<b>DQWG9-4a</b>	SL to draft/update DCEG data quality items	B	Done, paper submitted to TSMAD29
<b>DQWG9-4b</b>	EM to update data model and distribute.	B	Done, distributed

<b>DQWG9-4c</b>	BH to communicate any additional incidents to RB.	C.4	Whitney Anderson (to follow up with Brian Heap).
<b>DQWG9-5a</b>	EM to update the feature/attribute definition submission and distribute with the data model and decision tree to all DQWG members.	B	Ongoing, waiting outcome of DQWG10.
<b>DQWG9-5b</b>	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	Done
<b>DQWF9-5c</b>	SL will draft S-101 DCEG data quality parts.	B	Done, paper submitted to TSMAD29
<b>DQWG9-5d</b>	CH to submit screen mock-up, data model and decision tree to DIPWG chair for portrayal development.	B.4	Closed, and moved to a general liaison action.
<b>DQWG9-5e</b>	All to consider visualization of stacked areas and report back at next DQWG.	E.1	Ongoing
<b>DQWG9-6a</b>	CH to send to mapping documents to S-101 work item leader.	B.4	Done, included in latest version of the S-57 to S-101 convertor.
<b>DQWG9-6b</b>	MP to update 'quality of sounding measurement and quality of position' document and distribute to DQWG membership and CSPCWG for comment.	B.4	Ongoing, AC to ask chair NCWG for update.
<b>DQWG9-8</b>	CH to coordinate the data quality document sub group and draft a document for next DQWG meeting.	C.4	Ongoing, action moved to AC.
<b>DQWG9-9</b>	CH to update the work program.	I	Done
<b>HICUP</b>	<ul style="list-style-type: none"> <li>- Submission for TSMAD to ask if we can layer unsurveyed and depth area features. (Mike Prince)</li> <li>- Get updated document and then suggest revisions, if needed, to doc TSMAD28 –DCG5 re technology driven encoding and wording around unsurveyed areas. (Sean)</li> <li>- Start writing a working group letter with the finished decision tree,</li> </ul>		Done

	<p>stacking, data model. (Mike, Karen)</p> <ul style="list-style-type: none"> <li>- Start writing guidance for using the data quality model. (Mike)</li> <li>- 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)</li> <li>- Data model and decision tree need to be updated based on HICUP meeting. (Eivind)</li> </ul>		
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Table 1.

## 6. Review of Data Quality Related Events and Papers since DQWG9

AC presented the report from the NCWG1 meeting and highlighted the items relevant to DQWG. Satellite derived bathymetry (SDB) was mentioned in particular. Group feels no special portrayal considerations need to be done, as mariners are less concerned with where the data is from, versus how good the data is.

Eivind Mong (EM) presented report from S-100WG on behalf of the working group chair. Question was raised if the work with S-102 and S-112 should be within the zone of interest of DQWG, the answer was definitely yes. AC noted that the report was very useful and well-structured and hopes to reciprocate.

EM presented the S-101 Release for testing cover letter to show the items that were included in the most recent release of S-101. The various notes specific to data quality was particularly noted.

KC showed the CARIS S-57 composer with S-100 module to demonstrate the creation of S-100 data. It was noted that not all S-57 objects would map automatically into S-101 features, thus requiring user intervention.

### 7-a. Working Methods of DQWG

AC introduced the agenda item by going over the events since last meeting and how there had been very little activity in between the meetings. He also informed the meeting that there had been a request from HSSC chair group that the working group work more by correspondence in order to further progress the actions on the working group.

YG pointed out that the level of activity within the group isn't exceptional. However, reiterated that there is a need to improve. In particular he requested that the action list is reviewed more regularly and that deadlines are followed up between meetings, and not just during the review of the minutes. He

also pointed out that there are 21 member states that are members of the working group, but only 7 member states are participating at this meeting.

Action DQWG10-7-b; EM to update action list quarterly and distribute to members.

MP suggested that there be an effort to break down work by smaller focused work items that will allow for discussion by correspondence.

EH suggested that there be a limit of how late papers can be submitted for a meeting.

AC agreed with this, but stated that there would be exceptions, such as when other working groups meet shortly before a DQWG meeting.

YG suggested that a draft agenda be created two months before a meeting, with participants being able to comment and create papers towards the agenda. Subsequently a revised agenda should be published one month before, and a final limit of three weeks before a meeting for papers. This was agreed by the meeting.

There was a request to have an estimate of how much time each participant can spend on DQWG activities to allow for better planning and execution of actions. This would be to allow the working group to ensure the critical items be followed up properly.

Action DQWG10-7-a; YG to contact member states to request updated participant contact details, and to request estimated contribution available to the working group.

### **8-a. Swept areas - Changes to S-101 DCEG**

Christian Mouden (CM) presented a paper with response from S-100WG to DQWG on the proposals for data quality in S-101 DCEG. In particular the proposal of allowing for overlapping unsurveyed area and depth area was addressed. The discussion concluded that there was agreement with the input from S-100WG. Therefore there it was agreed that there must be two stacked quality of bathymetric data features to address situations where an area is swept (e.g. by mechanical sweep or LIDAR) to a certain depth, and less is known about the seabed below.

Action DQWG8-a; RB to draft a paper with guidance on stacked quality of bathymetric data to S-100WG.

### **8-b. Three Tier Bathymetric Data Quality Classification of S-101**

MP went through his review of the decision tree and his attempts to try the use the decision tree in simulator and user scenarios. He went through user feedback received, and reported that the latest version of the decision tree resulted in classifying 98% of the world waters to the poor category. In responds to these findings, MP has made 4 proposals for DQWG to review. YG thanked MP for the paper, and reminded all that any HSSC proposal must be accompanied with an impact assessment. Sean Legeer (SL) stated that in discussions with pilots on the east coast of the US, the feedback received was that the pilots don't need the CATZOC on the ENC in the harbours because they felt they know better through local knowledge. And that he concluded the same as MP that building quality on perfect surveys

in ports are not very constructive. Rogier Broekman (RB) disagreed with the statement that ships going into port do not look at paper charts, but relies only on pilot. He also questions why the relationship between quality of survey and quality of data wasn't addressed. MP responded there wasn't time. MP continued by pointing out the lack of consistency between producer nations results in many of the issues that have been pointed out in DQWG discussion, and therefore there need to be more guidance to improve consistency. Edward Hosken (EH) brought up the issue of liability with regard to data quality, and how CATZOC is a best estimate by the hydrographic office. AC stated that the liability issue is not an issue if the rules are followed, regardless of how the data quality is tiered.

Following a day to think over the discussions AC asked if there were any strong objections to opening up the decision tree to include more tiers. There were no objections. AC suggested there then be 5 tiers to match what is in S-57 CATZOC.

There was a discussion on the relationship between quality of survey and quality of bathymetric data. It was concluded that quality of survey impact quality of bathymetric data, but other factors like temporal variation also has a significant impact.

The group discussed and agreed that data quality should not be used as the sole factor to decide on a go/no-go factor for a route, but that data quality is an important factor to consider.

MP suggested that full feature detection is an aspect of quality of survey that should be carried through to quality of bathymetric data.

A sub group consisting of AC, RB, GM and EM using the discussion inputs, developed a new proposal for a 5+2 tier (5 tier from CATZOC, unassessed and oceanic) quality output. The proposal received some criticism for not being clear in what problems it solved. The recommendations drafted during DQWG5, following the outcome of the data quality survey were then consulted as a guide to review the new proposal. The meeting concluded that the proposal addresses a number of the concerns raised by the MP paper, after a discussion of the definitions of feature detected and coverage. Feature and attribute definitions need to be updated to reflect the discussions, in particular make it clear that coverage means complete measurements. EH reminded the meeting that the portrayal issues must not be forgotten.

Action DQWG10-8c; RB to draft guidance on how to use temporal variation.

Action DQWG10-8d; AC and EM to draft a table which compare the identified data quality issues to the solutions offered by data model, decision tree and guidance.

Action DQWG10-8e; EM to draft new data model and distribute to members for comment.

Action DQWG10-8f; EM to draft new decision tree and distribute to members for comment.

Action DQWG10-8g; EM to draft new feature and attribute definitions and distribute to members for comment.

**8-c. S-101 Product Specification main part data quality text**

A request from the chair of the S-100WG had been received to review the data quality text within the S-101 PS main part. The draft text was reviewed, and it was commented by KC that this work was best done by correspondence. This was agreed to, and it was suggested that there be a review of S-101 DCEG, S-100 and ISO TC211 documents to ensure compliance.

Action DQWG10-8b; SL to lead review of S-101 DCEG, S-100 and ISO TC211 with assistance from KC, WA, RB and GM. Deadline is set to August 31.

### **9-a. Data Quality of Non-Bathymetric Data**

Paper on S-111 Meta data attributes was presented by SL. The paper highlight the need to develop attributes of time uncertainty and speed uncertainty, and includes proposals to what these might be. During discussion it was noted that linking the unit knot to speed would be problematic for other domains, such as wind speed which is meters per second.

Action DQWG10-9a; SL to revise the proposal based on feedback, and distribute for discussion between SCPT and DQWG.

### **9-b. Data Quality Model Harmonization**

Paper on Data Quality Model Harmonization was presented by EM. The meeting discussed the various parts, and noted that the data model additions were reasonable, and that the concepts of layers of data quality, or scopes, should be proposed for inclusion to S-100 to ensure S-1xx data model harmonization. The meeting further noted that the work to develop a decision tree for non-bathymetric data quality is yet to be done, and that this will be added to the roadmap.

Action DQWG10-9b; AC to communicate feedback to NIPWG chair.

## **10. Satellite Derived Bathymetry and Data Quality**

Paper by UKHO and presented by EH. Paper review SDB technology, and consider its potential use for hydrography. Some work remains in establishing validation processes, but results show that with ground truthed about 90% of the data can be made to meet CATZOC C. Paper first went to NCWG, and was forwarded from them to DQWG for input to the need of any amendments to S-4. Member states shared their different experiences with SDB, and it was found that the results UKHO had obtained were exceptionally good, but not necessarily representative for most SDB cases. Furthermore, it was clear that those using the SDB data, mark this data on the paper chart, but only some mark it on ENC. It also became clear that there were differences in use of the SDB data; one to fill gaps and another to augment existing data. KC noted that the current quality of survey model is geared towards the traditional means of survey, and there might be a need to review the model for its compatibility with SDB.

The meeting concluded that though there are many interesting sides to SDB, there is no need for any special considerations over other techniques of survey. Therefore the meeting concluded that the use of SDB data should be up to the discretion of the hydrographic offices, and that the current means to

express uncertainty (position approximate, dashed iso lines, etc) can be used to communicate this to the user.

Action DQWG10-10-a; YG to liaison to the chair of NCWG with the DQWG feedback.

### 11. Shipping Incidents and Data Quality

YG reported concerns from the IHB Directing Committee about the list of shipping incidents, and suggested that NCWG, NIPWG and IHO member states both be consulted on the specifications of the list. It was noted that resources would be necessary to maintain this list. The usefulness of attempting to maintain the list was questioned, given the overhead and the likelihood that a proper analysis will not be done due to resource issues. However, it was considered useful to have a list of incidents as a repository to learn from with the aim to improve IHO standards. The concerns over resources prevailed, and it was suggested that hydrographic offices that have concerns from incidents that may require change to an IHO standard be communicated through the means of IHO circular letters.

Action DQWG10-11; Action YG to remove the list from the IHO-DQWG website.

### 12-a. Road Map of Data Quality Topics within S-10x

AC opened the discussion with stating that a number of working groups and project teams have approached DQWG with requests for assistance with data quality. The following table was created to help the group get an overview of work in progress and where DQWG assistance might be needed. KC suggested that DQWG draft a guidance document for anyone using S-100 to define a product specification, to guide them to the questions that need to be asked when determining what level of data quality is needed.

PS #	Status and actions needed	S-100 actions needed
S-101	Data model, decision tree and guidance work in progress.	
S-102	New project team under S-100WG set up to develop new S-102. Request for data quality assistance is expected for DQWG11. KC will keep DQWG updated on S-102 activities.	Layer de-confliction for data quality.
S-10x	Tidal product for surface navigation, unknown if there is any development or who is responsible.	
S-103	Data quality concepts will likely be very similar to the concepts in S-101 and S-102. Not known who is responsible.	
S-111	Paper from project team received and feedback is being generated. SL, KC and EM follow the work.	
S-112	An initial draft product specification has been produced. There are quality issues that need to be addressed.	



S-121	There might be a need for data quality classifiers. MP to contact Matt MacGregor.	
S-122	Dialogue with NIPWG in underway. AC to contact chair of NIPWG to give DQWG feedback.	Data quality scope concept should be added to S-100.
S-123	Alain Rouault (NIPWG) leads the work. AC to contact chair of NIPWG	
S-124	GM to contact Yves Le Franc for update and offer DQWG assistance with data quality issues.	
S-125 to S-127 to S-1xx	All still in planning stage.	
S-201	EH to communicate with team which develop to consider data quality and to discuss with DQWG for assistance.	
S-401	Should use very similar data quality model as S-101. EM to liaison with chairs of IEHG.	

Table 2

Action DQWG10-12a; AC to start liaison with various working groups and project teams on data quality issues.

### **12-b. e-Navigation Quality Assurance**

EM presented a paper on IMO e-Navigation Strategic Implementation Plan, which pointed out some tasks that DQWG should be aware of. Discussion followed where it was pointed out that by developing S-100 IHO is in part addressing the issues, but it was also suggested that not all parts of the data lifecycle is addressed by S-100. YG pointed out that the IHB Directing Committee has a standing task to track e-Navigation development. The meeting discussed the issues raised, but found that there wasn't sufficient knowledge regarding e-Navigation and the IHO position within the group to take any specific action at present.

Action DQWG10-12b; YG will raise the question to HSSC7 of how the e-Navigation SIP items will be addressed and tasked to the various bodies within IHO.

### **13-a. Election of vice-chair**

After a vote, Sean Legeer was elected vice chair.

### **13-b. Next meeting**

Tentatively scheduled for May 10-12, 2016 in Silver Springs, USA.

Meeting closed 09/07/2015 15:15.

Participant list

Country	Organization	Name
Australia	Australian Hydrographic Service	Mike Prince
Finland	Finnish Transportation Agency	Antti Castrén
France	SHOM	Gaël Morvan
France	SHOM	Christian Mouden
France	SHOM	Geoffroy Scrive
France	SHOM	Laurent Louvart
Mexico	Mexican Navy	Manuel Ricardo Lopez Cruz
Mexico	Mexican Navy	Juan José Villanueva Hernandez
Netherlands	Netherlands Hydrographic Office	Rogier Broekman
UK	UKHO	Edward Hosken
US	NOAA	Sean Legeer
US	NGA	Withney Anderson
Monaco	IHB	Yves Guillam
Canada	Caris	Karen Cove
Canada	Jeppesen	Eivind Mong