

Minutes of DQWG meeting 12 13-15 June 2017 The Hague, Netherlands

Present: Mr. Antti Castren (FI, Chair), Mr. Mike Prince (AUS, acting secretary), Mr. Brian Heap (USA - NGA), Mr. Sean Legeer (USA - NOAA, Vice-Chair), Mr. Rogier Broekman (NL, Chair-Elect), Mr. Yves Guillam (IHO-Secretariat)

Not present with notice: Mr. Gael Morvan (FR), Mr. Edward Hosken (UK), Mrs. Whitney Anderson (USA-NGA), Mrs. Karen Cove (Expert), Mr. Eiving Mong (Expert)

Correspondence members: Mr. Adriano Vieira de Souza (BR), Mr. Julierme Gonçalves Pinheiro (BR), Mr. Carlo Marchi (IT), Mr. Juan José Villaneuva Hernández (ME), Mr. Kennet Swahn (NO)

FINAL MINUTES

1a. OPENING AND ADMINSTRATIVE ARRANGEMENTS

Docs	DQWG12-01.A	List of Documents
	DQWG12-01.B	List of Participants, DQWG Membership

The Chair opened the meeting and welcomed everyone to the 12th meeting of the Data Quality Working Group at the Netherlands Hydrographic Office in The Hague.

The Chair noted that election of Office Bearers was required at the first meeting after the IHO Assembly. The Chair has taken a new position within the Finnish HO and informed the group he would be unable to act as Chair of DQWG in the future. The former secretary of DQWG is no longer present as his involvement to IHO has changed due to job rotation. AUS (*Prince*) volunteered to take notes during this meeting.

Mr. *Guillam* is to be re-tasked in IHO Secretariat to assume broader duties so will not be available in future to act as Secretary. Had initially thought there was a clear path towards disbandment, but based upon papers submitted to DQWG12 now sees there would be some merit in the activities continuing, even if redistributed to other WG. Both FI (*Castren*) and IHB (*Guillam*) noted reluctance by other IHO WG (particularly S-100) to supervise a Project Team.

Chair suggested we go through the papers and note actions to be taken, along with existing open tasks, resolve those that can be during DQWG12, and those that must be actioned out of session. Proposed Netherlands as incoming Chair, supported by USA – NOAA as ongoing Vice Chair. IHB noted that there were no volunteers as office bearers from among correspondence members.

Election of Chair of Vice Chair was proposed. The current Vice-Chair is willing to continue in his role. A vote took place on the position of Chair and NL was selected as new Chair.

IHB proposed an action on the new Chair to survey participating and correspondence members on plans going forward. If any members answer Yes, they should also be required to expand upon why and what role they envisage. Action supported by current Chair.

IHB (*Guillam*) noted that it appears the DQWG cannot work by correspondence due to a variety of factors, but only appears able to progress matters in session. Noted that participating and correspondence members require time to review papers. New Chair will post papers 1 month prior to life-meeting on www.iho.int so members have time to review and prepare comments. Working by correspondence will be promoted by the new Chair.

Outcome: NL is elected as new Chair of DQWG. Chair will invite all listed members on plans going forward and their intended participation. -> **Action** [DQWG12/01](#)

1b. APPROVAL OF AGENDA

Docs:	DQWG12-01.3A	Agenda and Timetable
	DQWG12-01.4A	DQWG TORs

The members noted there are outstanding tasks from DQWG11 meeting, review of tasks arising from HSSC-8, the DQWG work plan, papers submitted by members and papers submitted by other Working Groups. All tasks within the DQWG Work Plan refer to IHO Tasks 2.5.2 (*Investigate ways of ensuring that ECDIS displays provide a clear warning or indication to the mariner on the quality of the underlying survey data, through appropriate use of the attribute CATZOC and/or improvement of the existing display capabilities*). However, the IHO 2017 Strategic Plan contains no strategic item for DQWG. Members concluded that DQWG work plan requires updating. Lengthy discussions took place to check alignment of individual DQWG actions contributing to DQWG work items, as well as reviewing papers submitted to DQWG12 in order to determine whether they contribute to an existing work item, or have identified an issue that should be formally proposed as a new work item.

General discussions indicated that there is an ongoing role for managing and coordinating the quality aspects of many attributes. However, this is not clear within the current Terms of Reference. Netherlands (*Broekman*) proposed that DQWG should submit a Paper to HSSC on options to address future data quality issues across multiple working groups with options such as:

- Continue on as a WG - rewrite the ToR to clearly identify the role of the WG, as well as high priority items, supported by contracted technical assistance, with a program that sequentially focusses on one standard, then the next.
- Data issues to be addressed by other WG within the scope of their ToR.
- Data quality to be addressed on a case by case basis using short term projects.

After discussion the members decided to go for option1 –“Continue as a WG.” with a new proposal ToR to clearly identify the role of the Working Group to HSSC-9.

Outcome: Chair-elect will send a proposal with new ToR for the Data Quality Working Group to HSSC-9. -> **Action** [DQWG12/02](#)

The group continued the discussion on internal working group procedures. This also covered:

- Methods for circulating letters by posting to a letters section within the DQWG webpage on the IHO website. Procedure would be: letters and papers to be submitted to the Chair, posted by IHO Secretariat, Chair advises members that a letter has been posted, and individual members then send comments back to the Chair for consolidation.
- Possibility of joining by video conferencing, but not to the level of discouraging attendance in person.
- Advice of a planned meeting to be provided by circular letter at least 6 months in advance.
- Meetings can be up to five working days in length to accommodate plenary sessions and workshops.

Outcome: Chair-elect will send the proposal ToRs to IHO Secretariat by 1 July 2017 and post on website. Chair-elect will request approval or amendments from all DQWG members by 1 Aug 2017 and reminder by 1 Sep 2017. If no reply is received, request is forwarded to HSSC contact of member state to address possibility DQWG member was still on summer leave.

-> **Action** [DQWG12/03](#)

2. MATTERS RELATING TO UPPER IHO BODIES

Docs	DQWG12-02.1A	Fundamental aspects of Spatial Data Quality
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NL (*Broekman*) submitted a draft Paper "Fundamental aspects of Spatial data Quality." This Paper was made after a session at Wageningen University where data quality was addressed for multiple disciplines and providers of geo-information at land and at sea. This paper was intended for internal discussion only. IHB (*Guillam*) noted the legal aspects touched on by the paper, referencing work under European INSPIRE program. After general discussion it was agreed that the **legal aspects of data quality** (to chart or not to chart, selection of data) should be proposed back to HSSC via proposal ToR.

3. PREVIOUS DQWG MEETING AND STATUS OF ACTIONS

Docs:	DQWG12-03.1A	DQWG11-Report
	DQWG12-03.2A	Status of DQWG Actions
	DQWG12-03.3A	Action DQWG11/1 follow-on: Removing the contradictory encoding in Swept Areas and Deep Water Routes by replacing depth range minimum value with new attributes

The minutes from DQWG11 were accepted without any changes or comments. The status of DQWG Actions was checked. FR (Morvan) and UK (Hosken) were present at meeting 11 but unfortunately not this time. Chair will correspond to FR and UK if needed on action items. The list and status of Action Items is listed in Annex-E.

Discussion item DQWG12-03.3A - Removing the contradictory encoding in Swept Areas and Deep Water Routes by replacing depth range minimum value with new attributes

It was noted that use of DRVAL1 and DRVAL2 in S-57 has not been migrated logically to DRVAL minimum and maximum in all circumstances. In some circumstances DRVAL1 is the top of the water column, but in swept areas, for example, DRVAL1 is the bottom of the swept area.

Agree that changes to text in DCEG are required for swept areas and dredged areas. Minimum depth to be at or closest to sea surface, maximum to be furthest from surface for that feature. (See S-101Annex A (DCEG) version 0.0.2 March 2017 page 211 for dredged areas.)

NL (*Broekman*) raised concern that between Group 1 and Group2 objects, attributes cannot be the same (such as the attribute of 'maximum depth'). To be precise, the attributes have the same name (DRVAL1) for different classes. This is allowed in ISO19157 guidelines but it may lead to the assumption that both attributes must have the same value if two different classes are used in the same geographical domain, i.e. Group1 object and Group2 object stacked.

Outcome: USA-NOAA (*Legeer*) to revise Explanatory diagram of vertical stacking for quality of bathymetric data requires revision to include an adjacent depth range covering the full water column, as well as a top-down view of how it would appear on an S-101 ENC. (See S-101DCEG page 62 for stacking of QoBD.)

-> **Action:** [DQWG12/04](#)

USA-NOAA (*Legeer*) to revise text in DCEG for swept areas and dredged areas. Minimum depth to be at or closest to sea surface, maximum to be furthest from surface for that feature. (See S-101 Annex A (DCEG) version 0.0.2 March 2017 page 211 for dredged areas.)

-> **Action:** [DQWG12/05](#)

NL (*Broekman*) to develop proposal to NCWG to explore whether there is a requirement, and to model possible display options, for QoBD stacked layers which are slightly shallower than the vessels nominated safety depth. (For example - a vessel of 9.0m dynamic draft being aware that an area has been swept to 8.5m. If they are aware of the 8.5m maximum depth for the sweep, they may choose to slow down to reduce squat and therefore reduce their dynamic draft.)

-> **Action:** [DQWG12/06](#)

4. S-101 AND S-57 DATA QUALITY

<i>Docs</i>	<i>DQWG12-04.1A</i>	<i>Adding a new attribute to Category of temporal variation for Quality of Non Bathymetric Data</i>
	<i>DQWG12-04.3A</i>	<i>S-101 Data Quality Model and S-101 DCEG</i>
	<i>DQWG12-04.4A</i>	<i>NOAA's internal guidance on the use of CATZOC on S-57 ENCs</i>
	<i>DQWG12-04.5A Rev1</i>	<i>Proposal to refine and clarify the existing S-57 Zones of Confidence system for cartographers</i>
	<i>DQWG12-04.6A</i>	<i>Proposal to improve alignment between S-44 and the existing S-57 Zones of Confidence system</i>
	<i>DQWG12-04.7A</i>	<i>S-101 and Quality of horizontal measurement</i>

Discussion item – DQWG12-04.1A – Adding a new attribute to Category of temporal variation for Quality of Non Bathymetric Data

Should this be mandatory for all non-bathymetric data? Discussion concluded it does not add value to most features, therefore should not be mandatory. In attempting to identify a circumstance where a generalized attribute of 'likely to change' would be of value, it was agreed, after much discussion, that the concept of a permanent update, temporary update, or a specifically forecast change, covered all reasonably conceivable features and events.

Outcome: USA-NOAA (*Legeer*) Advise S-101PT that in DCEG version March 2017 the Metadata Feature "Quality of non bathymetric data" should be non-mandatory. Encoding value 3 "likely to change but significant shoaling not expected" should be removed from the allowable encoding value, as it should only apply to bathymetric data. (see DCEG March 2017, page 56). -> **Action:** [DQWG12/10](#)

Discussion item - DQWG12-04.4A - NOAA's internal guidance on the use of CATZOC on ENC's

NOAA presented a paper on their practices of depicting CATZOC in their ENC. Key observations were:

- The project has been running for three years, with another two years forecast.
- Small scale ENC do not have CATZOC populated
- Within 4m depths and shoaler each object has an attribute that it is unassessed.
- Surveys 1990 and later each have an individual CATZOC polygon, with the survey date populated – these are not merged. The ENC are being used as the CATZOC database.

Outcome: DQWG Chair-elect to propose to HSSC to invite within the DQWG report to invite sharing of national guidance and best practices on populating CATZOC. -> **Action:** [DQWG12/09](#)

Discussion item - DQWG12-04.5A Rev1 - Proposal to refine and clarify the existing S-57 Zones Of Confidence system for cartographers

S-57 ZOC tables revised in accordance with DQWG12 discussion. Changes limited to clarification in “Seafloor Coverage”, “Typical Survey Characteristics” and associated Notes. No changes to be made to threshold values in ZOC A1 (proposed to better align with survey standard in these areas), or in the definition of significant feature size (large step change at 40m depth). Major focus is in clarifying that ‘unassessed’ appears in both ZOC D and ZOC U.

Outcome: Australia (*Prince*) to develop paper for ENCWG and forward to Chair by 1 August. Chair to seek comments by 1 September, then forward as amended to ENCWG.

-> **Action:** [DQWG12/08](#)

Discussion item DQWG12-04.6A – Proposal to improve alignment between S-44 and the existing S-57 Zones Of Confidence system alignment of S-44 and ZOC

Noted. Discussion reached the conclusion that the benefits of improving the alignment between S-44 and S-57 by revising any horizontal or vertical uncertainty thresholds would not be sufficient to justify the risks of no longer being able to directly map from S-57 CATZOC to population of information used in the future Quality Of Bathymetric Data.

Outcome: HSPT to be informed of this discussion. Chair will inform HSPT of this issue.

-> **Action:** [DQWG12/11](#)

Discussion item – DQWG12-04.7A – S-101 and Quality of horizontal measurement

Discussion agreed that the issues raised within the paper highlight that there are different terms that can mean the same thing, driven by loose definitions within S-32. The recommendation in the paper “to undertake a global review of Quality of horizontal measurement values and their definitions by the DQWG” was agreed.

Outcome: DQWG to create a work item to undertake a global review of Quality of horizontal measurement values and their definitions by the DQWG and consider a workshop to address the issue. -> **Action:** [DQWG12/12](#)

Australia to initiate, based upon DQWG9 paper, dated October 2014.

5. GENERAL GUIDELINES REGARDING DATA QUALITY WITHIN IHO

Docs:	DQWG12-05.1A	No associated documents
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6. CROWD SOURCED BATHYMETRY AND DATA QUALITY

Docs:	DQWG12-06.1A	No associated documents
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7. MARINER EDUCATION

Docs:	DQWG12-07.1A	Mariners guide to accuracy of ENC
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Discussion item DQWG12-07.1A – Mariners guide to accuracy of ENC

Paper was introduced by AUS (Prince). Considered the draft “S-67” publication. Comments made regarding a number of minor additions and revisions, subsequently incorporated into draft version 0.5. Draft version 0.5 to be circulated to correspondence members for comment then, as amended, to be submitted to HSSC.

Outcome: Australia (Prince) to update draft based on comments at DQWG12 by 1 July and forward to DQWG Chair for circulation to both participating and correspondence members. Prepare a submission paper to HSSC9 seeking in principle endorsement, and to prepare an impact paper for submission at HSSC10. Impact paper to include alignment to S-4, S-57, methods for publicizing the publication, consideration of impact upon hydrographic offices to populate meaningful ZOC values in all usage bands. -> **Action:** [DQWG12/07](#)

8. PORTRAYAL

Docs:	DQWG12-08.1A	Data Quality Indicators for bathymetric data on ECDIS chart display
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Discussion item NCWG3-08.4A - Paper for Consideration by NCWG - Data Quality Indicators for bathymetric data on ECDIS chart display.

Information paper. Comments include:

- The suggestion that mariners should be consulted to determine whether close cross hatching, or open cross hatching should represent the high quality or low quality end of the spectrum. DQWG view was that the natural response would be that closer cross hatching represents areas to avoid;
- Whether a system of lines, versus a tint, would possibly hide linear features, but acknowledging that this may be difficult with alternate day / night colour palates;
- Suggestion that data quality should be a component of the safety depth contour, such that it shows areas considered too shallow, and also those where the data quality is too low for the vessel's preferred data quality areas. This could be an operator set preference in the same way as other vessel parameters (including under-keel margin) can be entered into the ECDIS vessel setup.

Outcome: IHO (Guillam) to report feedback to next NCWG. Chair to invite Fraunhofer IGD (visualization developers) to next DQWG meeting. -> **Action:** [DQWG12/13](#) and [12/14](#)

9. DATA SUPPLY CHAIN CERTIFICATION

Docs:	DQWG12-09.1A	No associated documents
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10. RELATIONS WITH OTHER WORKING GROUPS

Docs:	DQWG12-10.1A	Review S-100 section 4C and ISO and INSPIRE standards
	DQWG12-10.2A	Report from ENCWG: no associated documents
	DQWG12-10.3A	Report from NIPWG: no associated documents
	DQWG12-10.4A	Report from NCWG: no associated documents
	DQWG12-10.5A	Report from TWCWG: S-111 and S-126

Discussion item DQWG12-10.1A – Review of S-100 Appendix 4C Hydrographic Quality metadata profile.

NL (*Broekman*) reviewed the section of S-100 in relation to ISO 19157. Observations and recommendations agreed.

Outcome: Netherlands (*Broekman*) to refine paper to submit to S-100 WG as a list of recommended revisions to S-100. Paper to include recommendations on whether or not the components of the ISO standard should be entirely optional, noting that they are currently optional. This may be assisted by highlighting which particular attributes are used or recommended, such as 95% confidence versus 99% for certain classes. -> **Action:** [DQWG12/15](#)

Discussion item – DQWG12-10.5a – S-111 and S-126 – surface currents and the physical environment

Noted. No action at this stage. The example of tidal streams changing direction and strength over time prompted discussion that there should be scope to include levels of uncertainty in both speed and direction.

Outcome: No action for DQWG at this time.

Discussion item – Data quality model (UML diagram) – see DQWG web page

Noted. Discussed need to establish version control following departure of Eivind Mong.

Outcome: USA-NOAA (*Legeer*) to forward August 2016 draft versions of data model and hierarchical decision tree to IHO (Guillam) for posting on the DQWG web page to establish clear version control. -> **Action:** [DQWG12/16](#)

Australia (*Prince*) to update explanatory guidance to support the decision tree that will drive display, and the mapping from S-57 CATZOC to QOBD. Guidance to be in the form of a paper containing content for inclusion in DCEG (see DCEG March 2017, page 61). Guidance must emphasise that, after mapping from S-57 CATZOC to a QOBD, the hydrographic office should address temporal variation. If they do not, the converter will default to “not likely to change” and will be inappropriate for areas of mobile seabed. -> **Action:** [DQWG12/17](#)

11. CLOSING OF MEETING

The outgoing Chair thanked all members present for the time spent within the DQWG. In his office he took on a new position and is now less involved in Hydrographic Data. He noted that he had been a member of DQWG since meeting 4 and good progress has been made during the last years on the Data Quality Model. He has good memories on the time spent both professionally and personally within the DQWG.

Mr. Brian Heap reported this will be his last live meeting of DQWG. Other staff of NGA will be present at the next meeting. The Chair thanked Mr. Heap for his contribution to the group.

After some discussion, IHO offered to host the next meeting at Monaco from 15th to 19th of January, including a two-day workshop. Chair and IHO Secretariat will investigate if Mr. Eivind Mong may be contracted to act as Secretary due to his long involvement and experience.

ANNEX A to DQWG12 Minutes

Terms of Reference

Ref: 1st HSSC Meeting (Singapore, October 2009)

1. Objective

To develop appropriate methods of classifying and depicting the quality of digital hydrographic data.

2. Authority

This WG is a subsidiary of the Hydrographic Services and Standards Committee (HSSC). Its work is subject to HSSC approval.

3. Procedures

a. The WG should:

- i. Review ISO 19113 Geographic Information-Quality Principles, ISO 19114 Geographic Information-Quality Evaluation Procedures, and ISO 19115 Geographic Information - Metadata and propose relevant enhancements and amendments for incorporation in S-100;
- ii. Monitor and further develop quality indicators for hydrographic data;
- iii. Review and revise as needed existing S-57 quality indicators, including the education of both the mariner and the cartographer, and the development of documentation;
- iv. Review and revise as needed the presentation of data quality, as provided in S-52 and its Presentation Library;
- v. Investigate ways of ensuring that ECDIS displays provide a clear warning or indication to the mariner on the quality of the underlying survey data, through appropriate use of the attribute CATZOC and/or improvement of the existing display capabilities, and;
- vi. Propose new data quality topics and other applications for consideration by HSSC.

b. The WG should work by correspondence, group meetings, workshops or symposia.

Permanent or temporary sub-working groups may be created by the WG to undertake detailed work on specific topics such as: quality indicators for hydrographic data, tidal information, etc. The WG should meet as necessary. When meetings are scheduled, and in order to allow any WG submissions and reports to be submitted to HSSC on time, WG meetings should not normally occur later than nine weeks before a meeting of the HSSC.

c. The WG should liaise with other relevant HSSC WG's and other IHO bodies, such as S-44 WG, and international bodies as appropriate and as instructed by HSSC.

4. Composition and Chairmanship

- a. The WG shall comprise representatives of IHO Member States (M/S), Expert Contributors and Accredited NGO Observers.
- b. Decisions should generally be made by consensus. If votes are required on issues or to endorse proposals presented to the WG, only M/S may cast a vote. Votes shall be on the basis of one vote per M/S represented.
- c. Expert Contributor membership is open to entities and organisations that can provide a relevant and constructive contribution to the work of the WG.
- d. The Chair and Vice-Chair shall be a representative of a Member State. The election of the Chair and Vice-Chair shall be decided at the first meeting after each ordinary

session of the Conference (Conference to be replaced by Assembly when the revised IHO Convention enters force) and shall be determined by vote of the Member States present and voting.

- e. If the Chair is unable to carry out the duties of the office, the Vice-Chair shall act as the Chair with the same powers and duties.
- f. Expert Contributors shall seek approval of membership from the Chairman.
- g. Expert Contributor membership may be withdrawn in the event that a majority of the M/S represented in the WG agree that an Expert Contributor's continued participation is irrelevant or unconstructive to the work of the WG.
- h. All members shall inform the Chairman in advance of their intention to attend meetings of the WG.
- i. In the event that a large number of Expert Contributor members seek to attend a meeting, the Chairman may restrict attendance by inviting Expert Contributors to act through one or more collective representatives.

ANNEX B to DQWG12 Minutes

Terms of Reference

Ref: To be proposed at HSSC-9 meeting in Ottawa, Canada

1. Objective

To ensure that the data quality aspects are addressed in an appropriate and harmonized way for all S-100 based product specifications.

2. Authority

This WG is a subsidiary of the Hydrographic Services and Standards Committee (HSSC). Its work is subject to HSSC approval.

3. Procedures

- a. HSSC requires all WG and PT developing S-100 based product specifications to refer the data quality aspects to DQWG for advice and endorsement
- b. The WG should:
 - i. Provide WG and PT a checklist aiming to develop, when appropriate, data quality components within product specifications;
 - ii. Periodically review S-100 based product specifications to ensure the data quality aspects have been referred to DQWG;
 - iii. Monitor new developments of ISO and other international standards, check against S-100 based product specifications and advise accordingly;
 - iv. Provide guidance on data quality aspects to hydrographic offices, in particular to ensure harmonized implementation;
 - v. Provide data quality educational material for the use of mariners;
 - vi. Advise on the ways ECDIS displays data quality information of product specifications;
 - vii. Investigate and advise on possible legal aspects of data quality in product specifications, and
 - viii. Propose new data quality topics for consideration by HSSC.
- c. The WG should work by correspondence, group meetings, workshops or symposia. Permanent or temporary sub-working groups may be created by the WG to undertake detailed work on specific topics such as: quality indicators for hydrographic data, tidal information, etc. The WG should meet as necessary. When meetings are scheduled, and in order to allow any WG submissions and reports to be submitted to HSSC on time, WG meetings should not normally occur later than nine weeks before a meeting of the HSSC.
- d. The WG should liaise with other relevant HSSC WG's and other IHO bodies, and international bodies as appropriate and as instructed by HSSC.

4. Composition and Chairmanship

- a. The WG shall comprise representatives of IHO Member States (M/S), Expert Contributors and Accredited NGIO Observers.
- b. Decisions should generally be made by consensus. If votes are required on issues or to endorse proposals presented to the WG, only M/S may cast a vote. Votes shall be on the basis of one vote per M/S represented.
- c. Expert Contributor membership is open to entities and organisations that can provide a relevant and constructive contribution to the work of the WG.

- d. The Chair and Vice-Chair shall be a representative of a Member State. The election of the Chair and Vice-Chair shall be decided at the first meeting after each ordinary session of the Conference (Conference to be replaced by Assembly when the revised IHO Convention enters force) and shall be determined by vote of the Member States present and voting.
- e. If the Chair is unable to carry out the duties of the office, the Vice-Chair shall act as the Chair with the same powers and duties.
- f. Expert Contributors shall seek approval of membership from the Chairman.
- g. Expert Contributor membership may be withdrawn in the event that a majority of the M/S represented in the WG agree that an Expert Contributor's continued participation is irrelevant or unconstructive to the work of the WG.
- h. All members shall inform the Chairman in advance of their intention to attend meetings of the WG.

In the event that a large number of Expert Contributor members seek to attend a meeting, the Chairman may restrict attendance by inviting Expert Contributors to act through one or more collective representatives.

ANNEX C to DQWG12 Minutes

LIST OF DECISIONS & ACTIONS ARISING FROM DQWG12

Agenda item	Subject	Action No. (ref, HSSC-tasks)	Actions (in bold, action by)	Target Date/Event	Status (at 19 Jun. 2017)
1a. OPENING AND ADMINISTRATIVE ARRANGEMENTS					
	Membership of DQWG	DQWG12/01 (I)	Chair will invite all listed members on plans going forward and their intended participation	31 July 2017	To be done
1b. APPROVAL OF AGENDA					
	Terms of Reference	DQWG12/02 (I)	Chair will send a proposal with new ToR for the Data Quality Working Group to HSSC-9.	15 Sep 2017	To be done
	Terms of Reference	DQWG12/03 (I)	Chair will publish ToR on website>DQWG Letters and request input from members + reminders.	01 July 2017	To be done
3. PREVIOUS DQWG MEETING AND STATUS OF ACTIONS					
	DQWG12-03.3A	DQWG12/04 (H)	USA-NOAA (Legeer) to revise Explanatory diagram of vertical stacking for quality of bathymetric data requires revision to include an adjacent depth range covering the full water column, as well as a top-down view of how it would appear on an S-101 ENC.	31 July 2017	To be done
	DQWG12-03.3A	DQWG12/05 (H)	USA-NOAA (Legeer) to revise text in DCEG for swept areas and dredged areas.	31 July 2017	To be done
	DQWG12-03.3A	DQWG12/06 (H)	NL (Broekman) to develop proposal to NCWG to explore whether there is a requirement, and to model possible display options, for QoBD stacked layers which are slightly shallower than the vessels nominated safety depth.	30 Nov 2017	To be done
4. S-101 AND S-57 DATA QUALITY					

	DQWG12-04.1A	DQWG12/10 (H)	USA-NOAA (Legeer) Advise S-101PT that in DCEG version March 2017 the Metadata Feature "Quality of non bathymetric data" should be non-mandatory. Encoding value 3 "likely to change but significant shoaling not expected" should be removed from the allowable encoding value, as it should only apply to bathymetric data.	31 July 2017	To be done
	DQWG12-04.4A	DQWG12/09 (E)	Chair to propose to HSSC to invite within the DQWG report to invite sharing of national guidance and best practices on populating CATZOC	15 Sep 2017	To be done
	DQWG12-04.5A	DQWG12/08 (H)	Australia (Prince) to develop paper for ENCWG and forward to Chair by 1 August. Chair to seek comments by 1 September, then forward as amended to ENCWG.	15 Sep 2017	To be done
	DQWG12-04.6A	DQWG12/11 (H)	Discussion reached the conclusion that the benefits of improving the alignment between S-44 and S-57 by revising any horizontal or vertical uncertainty thresholds would not be sufficient to justify the risks of no longer being able to directly map from S-57 CATZOC to population of information used in the future Quality Of Bathymetric Data. Chair to inform HSPT	15 Sep 2017	To be done
	DQWG12-04.7A	DQWG12/12 (H)	DQWG to create a work item to undertake a global review of Quality of horizontal measurement values and their definitions by the DQWG and consider a workshop to address the issue. Chair to make recommendation to HSSC-9	15 Sep 2017	To be done
7. MARINER EDUCATION					

	DQWG12-07.1A	DQWG12/07 (C)	Australia (Prince) to update draft based on comments at DQWG12 by 1 July and forward to DQWG Chair for circulation to both participating and correspondence members. Chair to prepare a submission paper to HSSC9 seeking in principle endorsement, and to prepare an impact paper for submission at HSSC10. Impact paper to include alignment to S-4, S-57, methods for publicizing the publication, consideration of impact upon hydrographic offices to populate meaningful ZOC values in all usage bands.	15 Sep 2017	To be done
8. PORTRAYAL					
	DQWG12-08.1A	DQWG12/13 (D,E)	IHO (Guillam) to report feedback to next NCWG	01 July 2017	To be done
	DQWG12-08.1A	DQWG12/14 (D,E)	Chair to invite Fraunhofer IGD (visualization developers) to next DQWG meeting	30 Nov 2017	to be done
10. RELATIONS WITH OTHER WORKING GROUPS					
	DQWG12-10.1A	DQWG12/15 (A)	Netherlands (Broekman) to refine paper to submit to S-100 WG as a list of recommended revisions to S-100.	15 Sep 2017	To be done
	Data Quality Model	DQWG12/16 (H)	USA-NOAA (Legeer) to forward August 2016 draft versions of data model and hierarchical decision tree to IHO (Guillam) for posting on the DQWG web page to establish clear version control.	15 Sep 2017	To be done
	Data Quality Model	DQWG12/17 (E)	Australia (Prince) to update explanatory guidance to support the decision tree that will drive display, and the mapping from S-57 CATZOC to QOBD.	31 Aug 2017	To be done
11. CLOSING OF MEETING					

		DQWG12/18	Chair to invite Mr.Eivind Mong as Secretary	30 Nov 2017	To be done
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ANNEX D to DQWG12 Minutes

DQWG Workplan 2017-2018

Ref: HSSC-8

Tasks:

A	Review ISO 19113, Geographic Information-Quality Principles, ISO 19114, Geographic Information-Quality Evaluation Procedures, and ISO 19115, Geographic Information - Metadata and propose relevant enhancements and amendments for incorporation in S-100 "IHO Universal Hydrographic Data Model" (IHO Task 2.5.2)
B	Monitor and further develop quality indicators for hydrographic data (IHO Task 2.5.2)
C	Maintain and extend as needed existing quality indicators in S-57 "IHO Transfer Standard for Digital Hydrographic Data", including the education of both the mariner and the cartographer, and the development of documentation (IHO Task 2.5.2)
D	Maintain and extend as needed the presentation of data quality, as provided in S-52 "Specifications for Chart Content and Display Aspects of ECDIS" and its Presentation Library (IHO Task 2.5.2)
E	Investigate ways of ensuring that ECDIS displays provide a clear warning or indication to the mariner on the quality of the underlying survey data, through appropriate use of the attribute CATZOC and/or improvement of the existing display capabilities (IHO Task 2.5.2)
F	Propose new data quality topics and other applications for consideration by HSSC (IHO Task 2.5.2)
G	Maintain and extend data quality related elements of S-100 "IHO Universal Hydrographic Data Model" (IHO Task 2.5.2)
H	Maintain and extend data quality related elements of S-101 "ENC Product Specification" and other S-100-based Product Specifications (IHO Task 2.5.2)
I	Conduct the annual meetings of DQWG (IHO Task 2.5.1)

ANNEX E to DQWG 12 Minutes

List of outstanding action items from meeting 11

Act ion	W P	Item	Deliverable	Delivery Date	Person/Status
1	H.1	Suggest new attributes to S-100 registry and S-101 DCEG to clarify deep water routes and swept areas	Paper	1 July 2017	Legeer , DQWG12/04
2	H.1	Include temporal variation guidance to DCEG and make the DCEG text consistent	DCEG text on temporal variation	1 July 2017	Broekman , to be verified.
3	H.1	Fuzzy areas	Response	1 Oct 2016	Hosken to NIPWG, to be verified.
5	H.1	Review S-101 DCEG DQ section	Comments on DCEG DQ section	31 Dec 2017	Broekman , to be done.
7	H.1	Add dataset level attributes and time and speed unc. to data model and review	Data model	31 Dec 2017	Broekman , to be done.
8	B.4	Check hierarchy and decision tree	Decision tree	15 July 2017	Castren , to be done.
12	H.1	RB rewrite stacked DQ guidance for S-101 DCEG and add mobile seafloor perspective	DCEG text	31 Dec 2017	Not assigned, to be done.
18	I.1	Update roadmap of DQ in S-10x	Road map	01 July 2017	Broekman , to be done.