Minutes of the Data Quality Working Group
May 10, 2009
Norfolk, Virginia, USA

Attendees:

CDR Shepard Smith, NOAA (chair)
Mikko Hovi, Finnish Maritime Administration
Julia Powell, NOAA (arrived 1300)
Brian Heap, NGA
Mark Opdyke, Caris.
Eivind Mong, Jeppesen
Don Ventura, Fugro Pelagos

Meeting called to order at 0915.

Opening

Introductions were made around the room, with each participant describing their own organization's interest and status with hydrographic data quality issues.

Smith, speaking for NOAA, noted that NOAA is pleased with the recent changes to the CATZOC definitions, and plans to begin populating CATZOC after the completion of the current production line overhaul in a year or two.

Mong-industrial analyst with Jeppesen, member of various HSSC working groups. Mentioned aeronautical group for data standards, DO200A which might be of use to maritime groups for supply chain certification.

Brian Heap NGA, brief overview of DNC and the DQY concept.

Hovi, representing the Nordic Hydrographic Commission Data Quality Working Group,

Opdyke, Caris, here to monitor data quality changes to insure Caris products are compliant.

Chair reviewed committee background, and mandate.

New Business

1. The chair announced to the group that his imminent posting to a sea command will preclude his continued service as the chair. He announced his nomination of Chris Howlett, UKHO, as chair, who, though not present, has consented to be nominated. In the absence of further nominations and with great confidence in Mr. Howlett, *the working group endorsed this recommendation. The chair was instructed to contact HSSC to recommend Mr. Howlett be appointed as chair at the conclusion of the current meeting.*

2. **Review of M3, TR B1.2 Correction of echo-soundings for their insertion on charts and bathymetric plotting sheets.**

The working group reviewed the referenced Technical Resolution at the request of HSSC.

IHO M3, TR B1.2 was reviewed for interpretation and discussion. The first instance of this TR was in 1929. The WG discussed the role of this TR in the context of other HSSC publications. The WG understands the purpose of this TR to provide a standard for echosounder correction and to provide a minimum standard to be used when deciding if a sounding should be included on a chart. The first part of this purpose has been fully superseded by S-44. The second purpose is understood to apply today only to data that is from sources other than a hydrographic survey. The WG deems the issue of a minimum standard for charting data from data sources not subject to the guidance of S-44 to be one of national HO policy, and does not wish to promulgate guidance that may have the effect of discouraging the use of the best available data. Consequently, the WG recommends that the entire TR be deleted, as it is fully superseded. *The chair is instructed to make the recommendation to HSSC to strike M3 TR B1.2 in its entirety.*

3. Review of changes to CATZOC adopted by HSSC, fall 2008.

   The committee report to CHRIS was read. Hovi pointed out some issues with some of the new definitions:

   a. The function defining the object detection size is discontinuous at 40m, and is undefined at precisely 40m.
   b. Because the horizontal error grows with depth for CATZOC A1 but not for A2, in depths greater than 300m A2 is more stringent in this regard than A1.
   c. There is no CATZOC that corresponds to S-44 Special Order.

   The chair, on behalf of earlier constituted working groups, acknowledged these weaknesses, but noted that the WG felt itself constrained by a strong disinclination by the HSSC to making any large changes to S-57 and wished to limit the scope of the WG recommendation to aligning CATZOC to S-44 ed 5, and to resolving the controversial issue of the definition of object detection in the CATZOC A definitions.

   No action proposed.

Break for lunch

4. Julia Powell, NOAA, representing TSMAD (among others in the room), presented an update on the progress of development and approval of S-100 and S-101. It is now anticipated that member states may have an opportunity to approve S-100 in coming years, and work is continuing on the development of S101. In addition, it is expected that S-57 ENCs will continue to be produced for a period of time in parallel to new S-101 charts in development.

5. The WG reviewed the work of previous meetings of the DQWG. The WG continues to be committed to the vision outlined previously of providing clearly actionable data quality information that can feed an algorithm to provide a "stoplight" view. The output of this system is understood to be similar to the traditional practice of highlighting dangerous areas of the chart, thereby creating a customized safe operating area. The inputs into this process, which may often be found in a ship's standing orders, might be a depth limit, a buffer zone around known hazards, and instructions on how to handle features with incomplete information, such as wreck PA with no surveyed depth. It is expected that the navigation software would combine

components of data quality indicators into a composite view of safe water, caution areas, and areas of certain danger in the route planning phase, and the results would be presented to the user in a manner deemed appropriate by the software provider.

However, given the length of time it is expected to take for S-101 to phase out S-57, the WG decided to make further efforts to use existing quality indicators to support such a stoplight system. The DQWG will sponsor a project as follows:

a. Two sample ENCs will be developed, with all possible quality indicators on all features populated with realistic, but arbitrary values. One will be the sample ENC of Micklefirth, and NOAA will provide a second in Cheasapeake Bay, with assistance from Jeppesen. The examples will be available by August, 2009.
b. The DQWG will encourage the navigation software community to use these two examples to demonstrate or develop tools to created stoplight areas, warnings, and optimal safe routes. It is expected that some proprietary approaches may be developed that will not be made available publicly. Participants are asked to consider and report:
    i. Which data quality indicators (DQI) have the greatest effect on the analysis.
    ii. Which DQI are inadequately defined for actionable use in an algorithm.
    iii. Which DQI are missing but important to the analysis.
    iv. Which DQI may benefit from additional guidance to permit consistent use.

    Jeppesen has volunteered, resources permitting, to be one such participant, and it is hoped that their participation will encourage others to participate as well.

c. The observations and outputs will be presented to the DQWG and compiled into a report by the DQWG. This is expected to be in the winter of 2010.
d. The DQWG will use the results of this project to guide a course of action, which may include:
    i. Development of additional DQI.
    ii. Additional guidance on encoding of existing DQI.
    iii. Recommendations for a standard of minimum DQI to support Quality Aware Route Planning.

The DQWG will suspend further efforts to develop a new, quantified composite quality indicator (FITUSE) until conclusions of the study are available.

6. The DQWG discussed the issue of age of data. It was noted that the age of a survey by itself does not have a data quality implication. It needs to be combined with an understanding of whether, and at what rate, the seafloor may be changing. In addition, the age of a survey is often matched against technology in use at the time as a proxy for accuracy or resolution.

   There was much discussion, but no resolution, on the responsibility of the HO for understanding the changeability of a particular area, or of the HO's responsibility for making this information known to the mariner if it is understood. We do not currently have a consistent terminology or method of quantifying rate of change.

   No action proposed.

7. Jeppesen presentation. See attached report.

Recommendation: DQWG ToR be amended to include navigational relative data issued by an HO, so that DQWG can give guidance to IHO working groups on how to give proper quality indications in upcoming product specifications.

Discussion: While the discussion of data quality has focused almost exclusively on bathymetric data quality, the WG recognizes that shoreline, navaids, seafloor features, nearshore features, and regulatory and service features also have data quality indicators and are relevant for safe navigation.

The WG endorsed this recommendation and instructs the chair to seek such a clarification in the next amendment to the DQWG TOR.

8. Nordic Subgroup

Hovi reported out on the meeting of the Nordic SubGroup of the HSSC DQWG. They have now reorganized themselves into the DQWG of the Nordic Hydrographic Commission. See attached report.

Hovi made a proposal on behalf of Sweden to define the Minimum Standard Necessary for Safe Navigation. The WG discussed this proposal and consider it to be in keeping with the general approach of the WG, especially because it neatly links together the requirements of the HOs under SOLAS with data quality indicators. The notion of MSNFSN is potentially the term we could apply to the stoplight system as well.

The proposal from Sweden is appreciated, but seemed to the WG to be premature, given the other work underway and the state of our understanding and agreement on definitions of a minimum best practices.

The WG wishes to express its appreciation for the continued work of the NHC DQWG, and would like to encourage formal membership in the HSSC DQWG for some of its members, and inclusion on the email list for all members.

1200 5/11/09 Reconvene to review action items and minutes. Minutes approved as amended. Adjourn 12:30.

Data Quality Working Group
Norfolk, VA, May10-11, 2009

PARTICIPANTS, LOGISTICS, AGENDA

Planned Attendees:

Shep Smith, NOAA, chair
Mikko Hovi, Finnish Maritime Association, representing Nordic Subgroup
Don Ventura, Fugro Pelagos
Brian Heap, NGA
Lee Alexander, UNH
Julia Powell, NOAA
Eivind Mong, Jeppesen Marine
Mark Opdyke, Caris
Chris Howlett, UKHO (cancelled)
Christian Hempstead, US Merchant Marine Academy (cancelled)

Venue:
Conference Room at the Atlantic Hydrographic Branch (lots of whiteboard space, computer access with projector, plenty of space, access to data and internet)
Address: 439 West York St, Norfolk, VA 23510. Phone in room 757-441-6746 x 110.

Agenda:

Sunday, May 10

0900-Gather, introductions, review agenda
0930-Revision of TR B1.2 (Shep)
1030-Recap of Nordic Subgroup Meeting (Mikko)
1200-Lunch
1300-Discussion of S-100 status and related DQWG issues (Julia)
1400-Future quality indicators

Options for incorporating data quality into an "alarm" or "traffic light" system.
Do we need something new (fituse) or can we adapt CATZOC, CATQUA, and M_SREL through use, convention, or amendment to meet this need?
What do we think about including seafloor dynamics, cartographic generalization, or probability of undetected seafloor objects in the quality indicator?