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Dear Mustafa,

**RE: CALL FOR COMMENTS ON THE DRAFT EDITION 1.0.0 OF NEW IHO PUBLICATION
B-12 - CROWDSOURCED BATHYMETRY GUIDANCE DOCUMENT**

In response to the above Circular Letter, please find attached the UK response, comments and recommendations to the draft guidance document on the first draft edition 1.0.0 of B-12 as requested.

Yours sincerely

UK comments on Draft Edition 1.0.0 of the new publication B-12 Crowdsourced Bathymetry Guidance Document

UK concerns

- The considerable legal considerations in the document are not sufficiently prominent or not described in adequate detail to address the complexity of the potential legal positions of coastal States as well as the implications with regards to the interpretation of collecting bathymetry within the waters of another State. There is a danger that an unsuspecting mariner may not understand what is and is not permitted under UNCLOS with regards to the collection of bathymetric data within another States' coastal waters.
- The paper refers to the merchant fleet as an "untapped source of depth measurement"; many coastal States will consider depth measurements, recording and submission to be "hydrographic survey" by another name which under UNCLOS is considered as Marine Scientific Research requiring the permission of the Coastal State.
- Customary practice (which needs legal opinion as to the extent and definition of customary) is to tacitly accept that mariners report depths and dangers through "Hydrographic Notes" as a means of supporting Safety of Life at Sea (SOLAS). The Crowdsourced Bathymetry Guidance Document takes this to a different degree, which potentially contradicts the tacit acceptance of this good practice.

General comments

The document is a good first draft and covers most of the important information in detail.

- With the exception of the concerns expressed above, UK fully supports the draft edition of B-12.
- The document meets the requirement of not being prescriptive, as it is generic in nature and does not propose any specific equipment. Any mention of equipment is only for example purposes and references only standard Commercial Off-The-Shelf (COTS) equipment.
- The document includes important subjects such as; metadata and verification of data, which are key in maintaining any reasonable level of quality and usability of CSB data.
- The document discusses the flow of crowdsourced bathymetry data from collection to a database and subsequent discovery and distribution from the IHO DCDB. It is aimed mainly at those collecting CSB data and does not discuss specifically how this data should be used, though it provides a good background for anyone interested in CSB.

Editorial comments

During the UK review several figure numbering errors were identified. These are listed below along with several additional corrections/suggestions.

1. Contents (Page 8):

- Figure 3. Illustration of the flow of data acquired from individual data contributor's vessels, and packaged in a consistent manner and format for submission to the DCDB. **Error! Bookmark not defined.**
- List of figures are numbered incorrectly on page 8 and throughout the document, figure numbers and references to figures are also mostly incorrect.

Recommendation: Amend the document for the corrections above. Further figure corrections are included below, however a full check of the figure numbers and references to figures throughout the document is required.

2. Chapter 1: How does a contributor find out who the trusted nodes are and therefore know who to send their data to?

Recommendation: Some examples would be good.

3. Chapter 2:

2.2.4 Data Transfer - "... could also be as simple as mailing a USB to the Trusted Node".

Recommendation: Amend "USB" to read "USB stick/drive", as USB can also refer to cables and other devices.

2.2.5 Continuity of Electrical power - UPS stands for "Uninterruptable Power Supply" not "universal power supply"

Recommendation: Amend "universal power supply" to read "Uninterruptable Power Supply".

2.3.1 Sensor Offsets - figure 3 needs moving to 2.3.2 as it does not make sense having it in 2.3.1.

Recommendation: Move figure 3 to 2.3.2

2.3.1 Sensor Offsets - the convention for measuring offsets could be made clearer by stating they are always measured from the GNSS antenna to the transducer and are positive forwards and to starboard. Figure 2 does show this but stating in the text would make it clearer.

Figure 2 incorrectly named, should be figure 4.

Recommendation: Include in the text for 2.3.1 the additional information above on the convention for measuring offsets.

Note: in order to apply sensor offsets to the data, heading information is also required. This can be taken from the "course made good (CMG)" of the positions but this is not as accurate as using gyro compass information due to potential vessel crabbing. It would be useful to include heading information (if available) with the logged data.

4. Chapter 3:

Tide is not mentioned in the metadata. It is likely that a trusted node would correct data for tide in some way and it would be good to know how this has been done, e.g. predicted or real tide values, from a single location or a weighted average from several locations or a model.

Recommendation: Include tide in the metadata.

5. Chapter 4:

4.1 Introduction to Uncertainty - figure 8 and figure 4 incorrectly referenced.

4.2.2 Sources of Uncertainty - figure 5 incorrectly numbered and referenced to.

4.2.4.3 - figures 10 and 11 incorrectly referred to in the text.

Other figures within the chapter are incorrectly numbered and referenced.

6. Annex A - Acronyms

“UPS Universal power supply” should read: “UPS Uninterruptable Power Supply”

Recommendation: Amend “UPS Universal power supply” to read “UPS Uninterruptable Power Supply”.