

Paper for Consideration by S-101PT4

Quality of horizontal measurement

Submitted by:	France
Executive Summary:	Proposal for a global revision of S-101 attribute "Quality of horizontal measurement" (S-100WG2 action 50)
Related Documents:	S-101 Feature Catalogue and DCEG
Related Projects:	S-101; S-100

Introduction / Background

During S-100WG2 meeting, Australia made a proposal to change the S-101 DCEG in order to encode QUAPOS="Inadequately surveyed" in place of "Position approximate" on approximate depth contours (INT1 symbol I31). The result of the subsequent discussion was action 50 (for France): "Submit a paper to the DQWG to discuss the definition of the enumerated values for attribute Quality of Horizontal Measurement".

After some work on this action, it seems that there needs to have an agreement within the S-101PT on the extent of the review before submitting a proposal to the DQWG.

Analysis/Discussion

According to the S-101 DCEG (Version 1.0.0 – December 2018), the attribute **Quality of horizontal measurement** may be applied to any spatial type, in order to qualify the location of a feature. **Quality of horizontal measurement** gives qualitative information, whereas Horizontal position uncertainty gives quantitative information.

This attribute allows 11 possible values (which are the same than S-57 attribute QUAPOS):

- 1= Surveyed
- 2= Unsurveyed
- 3=Inadequately surveyed
- 4=Approximate
- 5=Position doubtful
- 6=Unreliable
- 7=Reported (not surveyed)
- 8=Reported (not confirmed)
- 9=Estimated
- 10=Precisely known
- 11=Calculated

(Values 7 and 8 are currently not allowed for Special Quality).

A first general remark on this attribute values is that the above values do not all provide the same information. Values 4, 5, 6 and 10 are indicators on the quality of the position, whereas values 1, 2, 3, 7, 8, 9 and 11 give information on the method or the origin of the position. The latter values could then be removed from attribute **Quality of horizontal measurement** and possibly transferred into another enumeration attribute like "**Method of measurement**".

Looking more closely at values 4, 5, 6, 10 and their definitions:

4=Approximate

- S-32 definition: "Position approximate": A position that is considered to be less than third-order accuracy, but is generally considered to be within 30.5 metres of its correct geographic location. Also may apply to a feature whose position does not remain fixed.
- S-57 Attribute catalogue definition: a position that is considered to be less than third-order accuracy, but is generally considered to be within 30.5 metres of its correct geographic location. Also may apply to an object whose position does not remain fixed. (adapted from IHO Dictionary, S-32, 213, 3967, & IHO Specifications, M-4, 424.1)
- S-4 definition (B-424.1): the position of a shoal, wreck, etc, either has not been accurately determined or does not remain fixed.

The issue with this value is the inconsistency between the definitions. There is no mention of 30.5 metres in S-4. This makes sense as legend "PA" on charts is used when the uncertainty of the position is at least a couple of mm. 30.5 metres on the ground is 3 mm at 1:10.000 scale. If cartographers would stick to this definition, they would hardly ever use "PA". Definitions should be aligned.

5=Position doubtful

- S-32 definition: Of uncertain position. The expression is used principally on charts to indicate that a wreck, shoal, etc., has been reported in various positions and not definitely determined in any. Usually shown by the abbreviation 'PD'.
- S-57 attribute catalogue definition: an object whose position has been reported but which is considered to be doubtful.
- S-4 definition (B-424.2): must be used to indicate a wreck, shoal, etc, has been reported in various positions and not confirmed in any of them.

Definitions should be aligned.

Note: although PA and PD have distinct definitions in S-4, is there a difference for the mariner?

6=Unreliable

- No S-32 definition
- S-57 attribute catalogue definition: A feature's position obtained from questionable or unreliable data.

This value is not used in the S-57 UOC (QUAPOS=4 – Approximate is preferred). This value could be deleted.

10=Precisely known

- No S-32 definition
- S-57 attribute catalogue definition: A position that is of a known value, such as the position of an anchor berth or other defined feature.

What is the point of saying that a position is precise? The mariner probably assumes that positions on the chart are precise, unless told otherwise.

As shown above, there are some arguments in favour of a global review of the allowable values for **Quality of horizontal measurement**. It is suggested not to start from the existing values, but from the mariner's need and what is useful on the ENC/ECDIS. It should be recommended to populate the quantitative attribute **Horizontal position uncertainty** as much as possible for it could be used by the ECDIS, drawing an uncertainty circle around the object. If **Horizontal position uncertainty** is not known, then **Quality of horizontal measurement** can be populated, but with only one value meaning that the position is not accurate (eg. "Unreliable" or "Approximate").

Conclusions

Current allowable values for S-101 attribute **Quality of horizontal measurement** (copy of S-57 values) are not pragmatic nor adapted to the mariner's need. There is time to conduct a review of this attribute before edition 2 of S-101.

Recommendations

The S-101PT is invited to:

- Decide of the extent of the revision of attribute **Quality of horizontal measurement**
- Identify volunteers to work on a proposal to submit to DQWG15 (February 2020)

Justification and Impacts

A global review will probably have impacts on S-32 and possibly S-4. Attention should also be paid to possible needs of other S-10x products.

Action Required of S-101PT

The S-101PT is invited to:

- a. discuss the paper
- b. agree with the recommendations
- c. decide of any necessary additional action