

**7<sup>th</sup> Meeting of the Data Quality Working Group (DQWG)  
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**Paper for Consideration by DQWG**

**Use of the attribute TECSOU on the object M\_QUAL**

<b>Submitted by:</b>	Jeppesen
<b>Executive Summary:</b>	A paper from SHOM and Jeppesen was presented at TSMAD25 highlighting discrepancies between CATZOC definitions and the UOC. TSMAD25 accepted the recommendations from the paper and additionally tasked Jeppesen to inform DQWG of the paper.
<b>Related Documents:</b>	S-57 3.1 Appendix A – Chapter 2 UOC 3.0 S-58 edition 4.2 TSMAD25-4.7.4
<b>Related Projects:</b>	S-101 Data quality UOC 4.0.0

**Introduction / Background**

The definition for CATZOC = A2 is in contradiction to the UOC 3.0, and the paper submitted jointly between SHOM and Jeppesen to TSMAD25 asked for clarification to the matter. The outcome was that the wording in the UOC and S-58 need to be improved to avoid any further misunderstanding. Furthermore, TSMAD tasked Jeppesen to inform DQWG of the events so that DQWG could evaluate and check if any modifications to the data quality work are needed.

**Analysis/Discussion**

According to the CATZOC definition (see table S-57 Appendix A – Ch2 – Attribute catalogue – p2.107), the value ZOC = A2 means "a survey using a modern survey echosounder and a sonar or a mechanical sweep system".

This is in contradiction with the UOC §2.2.3.1:

*When the M\_QUAL area contains soundings of two or more different techniques, the attribute TECSOU must not be used.*

So, while the attribute TECSOU is of type list and the definition of CATZOC specifies that an area can be surveyed using combined techniques, the UOC forbids the use more than one value for TECSOU

TSMAD decided that an amendment to the UOC was in order to allow several values for TECSOU and have drafted a new version of UOC §2.2.3.1 (Annex A).

**Conclusions**

Following the TSMAD decision, DQWG should review the drafted changes to UOC for any impacts to the data quality model.

**Recommendations**

DQWG should review the TSMAD paper and decision; evaluate any impacts and report back finding to TSMAD.

**Justification and Impacts**

DQWG has utilized the UOC and S-57 as a starting point for the development of the S-101 data quality model. Therefore the impact of changes to these documents should be reviewed and any needed reactions followed up.

**Action Required of DQWG**

The DQWG is invited to:

- a. Note this paper
- b. Review Annex A

- c. Report any needed actions to TSMAD.

### 2.2.3.1 Quality of bathymetric data

The meta object **M\_QUAL** defines areas within which uniform assessment exists for the quality of bathymetric data, and must be used to provide an assessment of the overall quality of bathymetric data to the mariner. Areas of a cell containing depth data or bathymetry must be covered by one or more **M\_QUAL**, which must not overlap.

Meta object: Quality of data (**M\_QUAL**) (A)

Attributes: ~~CATQUA~~ CATZOC DRVAL1

DRVAL2 - the maximum depth to which the quality information applies.

POSACC SOUACC SURSTA SUREND TECSOU

~~VERDAT~~ INFORM NINFOM

Remarks:

- Wherever possible, meaningful and useful values of CATZOC should be used, i.e. values other than CATZOC = 6 (data not assessed), for areas of bathymetry. For areas of unstable seafloors, the attribute SUREND may be used to indicate the date of the survey of the underlying bathymetric data.
- A CATZOC category indicates that the depths encoded within a **M\_QUAL** area meet the minimum criteria described in the CATZOC definition table. A CATZOC category may be further sub-divided by specifying depth and positional accuracy, and sounding technique, using the attributes POSACC, SOUACC and TECSOU, within separate **M\_QUAL** areas.
- DRVAL1 must not be used on a **M\_QUAL** object, unless a swept area occupies the entire **M\_QUAL** area (see clause 5.6).
- DRVAL2 must not be used on a **M\_QUAL** object, except to specify the maximum depth to which the CATZOC category applies. When DRVAL2 is specified, the CATZOC category applies only to depths equal to or shallower than DRVAL2. No quality information is provided for depths deeper than DRVAL2.
- POSACC must not be used on a **M\_QUAL** object, except to specify a higher positional accuracy of the depths than the CATZOC category indicates. When DRVAL1 is specified, POSACC must not be used - there is no positional accuracy information provided for any underlying depths in this circumstance.
- SOUACC must not be used on a **M\_QUAL** object, except to specify a higher accuracy of the depths than the CATZOC category indicates. When DRVAL1 is specified, SOUACC refers only to the accuracy of the swept depth defined by DRVAL1 - there is no depth accuracy information provided for any underlying depths in this circumstance.
- **TECSOU must not be used on a **M\_QUAL** object to specify a lower quality than the CATZOC category indicates.**
- **When the **M\_QUAL** area contains soundings from multiple surveys of two or more different techniques, the attribute TECSOU must not be used. TECSOU may be populated with multiple values only where the **M\_QUAL** area is covered by a survey or surveys that have used multiple common techniques, e.g. an area covered by multiple surveys all using a modern echosounder combined with a sonar or mechanical sweep system.**
- When the **M\_QUAL** area contains data from only one survey, the date of survey, if required, must be specified using the attribute SUREND. When the **M\_QUAL** area contains data from two or more surveys, the date of the oldest survey, if required, must be specified using the attribute SURSTA, and the date of the most recent survey, if required, must be specified using SUREND.
- Additional quality information may be given using the meta object **M\_SREL**.
- Where **M\_QUAL** areas are encoded over land, CATZOC should be set to 6 (unassessed).

Commentaire [A1]: Proposal at TSMAD25 (FR).

- **M\_QUAL** may either be encoded over wet areas only, or alternatively a single **M\_QUAL** object may be created for the whole cell over wet and dry areas, but see 1<sup>st</sup> bullet point above.
- When **M\_QUAL** and the meta object **M\_ACCY** are encoded in a cell, they should not overlap.
- When both **M\_QUAL** and **M\_ACCY** objects are used in a cell, the area covered by these objects should equal the area of data coverage for the cell.
- POSACC on the **M\_QUAL** applies to bathymetric data situated within the area, while QUAPOS or POSACC on the associated spatial objects qualifies the location of the **M\_QUAL** object itself.
- As a result of some disasters, e.g. earthquakes, tsunamis, hurricanes, it is possible that large areas of seafloor have moved and/or become cluttered with dangerous obstructions. Emergency surveys may subsequently be conducted over essential shipping routes and inside harbours. Outside these surveys, all existing detail is now suspect, whatever the quality of the previous surveys. In such cases, the CATZOC value should be reclassified to value 5 (zone of confidence D) in the affected areas outside the area covered by emergency surveys.

Commentaire [A2]: TSMAD25 action.