DQWG11-04.5A

11th DQWG MEETING
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Paper for consideration by the S-100 Working Group (S-100WG)

Proposal on how to implement Category of Temporal Variation

Submitted by:	NL
Executive summary:	Proposal how to implement Quality of Bathymetric Data (M_QUAL) attribute Category of Temporal Variation
Related documents:	HSSC7_Minutes_Final20160406, ISO-TC_N3521_ISO-FDIS_19157_Geographic_information, S-101PT01-03A_S-101_DCEG_Draft_201601a
Related projects:	S-101
Date	09 June 2016

Introduction / background

HSSC7 has requested the Data Quality Working Group (DQWG) to complete the draft data quality UML model in liaison with the relevant working groups. The DQWG has created the Data Quality UML model to enable the producing agency of an ENC to provide information about the quality and usage of the ENC. This paper addresses quality of time in relation to an ENC.

Quality of Bathymetric Data

The meta feature Quality of Bathymetric Data defines areas within which uniform assessment exists of the quality of bathymetric data, and is used to provide an assessment of the overall quality of bathymetric data to the mariner. Areas of a dataset at maximum display scale 1:700.000 and larger containing depth data or bathymetry must be covered by one or more Quality of Bathymetric Data features, which may overlap vertically. At maximum display scales smaller than 1:700.000, Quality of Bathymetric Data features must be encoded were no larger maximum display scale ENC data is available.

Time reference

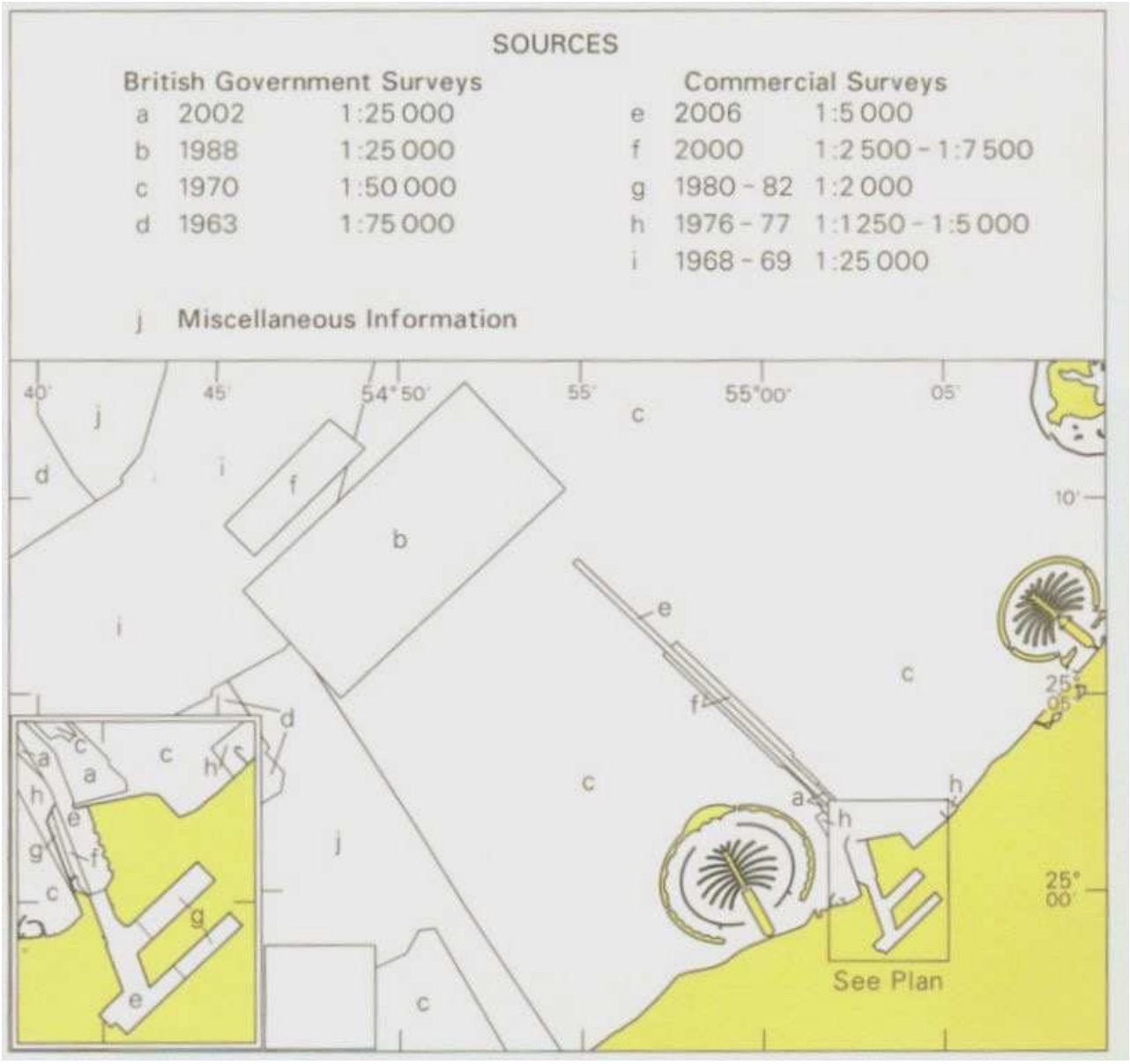
A Dataset is a grouping of features, attributes, geometry and metadata which comprises a specific coverage. Four types of ENC datasets may be produced and contained within an exchange set:

- Update: Changing some information in an existing dataset.
- Re-issue of a dataset: Including all the Updates applied to the original dataset up to the date of the re-issue. A Re-issue does not contain any new information additional to that previously issued by Updates
- New dataset and New Edition of a dataset: Including new information which has not been previously distributed by Updates. Each New Edition of a dataset must have the same name as the dataset it replaces. A New Edition can also be ENC data that has previously been produced for this area and at the same maximum display scale.

The Update information metadata feature is used to represent a change to the information shown. The attribute Update description is a text field which allows the producing agency to write a brief textual information on the changes made to the Dataset.

Source diagram

Paper charts may have a source diagram. This diagram optionally shows when an area was surveyed and the quality of depth data. This means there is a mixture of old and new depth data within the same paper chart. When an ENC is produced from the same set of surveys, the same mixture exists within the ENC but the ENC has no source diagram. However, the S-101 Data Classification and Encoding Guide has a Metadata feature “Quality of Bathymetric Data” (M_QUAL). This feature has an attribute “Survey date range” with elements Date End (SUREND) and Date Start (SURSTA).



Example of a source diagram showing year and scale of survey usage
(source google images)

Quality of Bathymetric Data attributes with respect to time

Quality of Bathymetric Data holds the following attributes which are time related:

S-101 attribute	S-57 Acronym	Allowable Encoding Value
Category of temporal variation	None	1: unassessed 2: event 3: likely to change 4: likely to change but significant shoaling unlikely 5: unlikely to change
Survey date range		
Date end	SUREND	ISO8601:2004
Date start	SURSTA	ISO8601:2004

Category of temporal variation

Temporal variation becomes important to the mariner if over time since the survey was acquired, the seabed may have changed and some parts of the ENC may not reflect the real world phenomena to its accuracy as when it was recorded.

Allowable Encoding Value	Cause	Direct consequence	Final consequence
unassessed	No known information about seabed unstability	Seabed may change over (a long period of) time	Increased risk of grounding when a vessel enters a marginal depth area
event	Seabed is likely to have changed due to a rare (extreme) event which was recorded (visually, seismic etc).	The current ENC may not reflect the real world phenomena with respect to depth for safe navigation	Great risk of grounding in the area where the event took place
likely to change	Seabed dynamics are present and known in the area	The seabed is likely to change which may have a negative effect on safe navigation	Mariner should proceed with caution when entering this area
likely to change but significant shoaling unlikely	Seabed dynamics are such that the area does not become shallower but only moves horizontally	Minimum depth in the area is not affected	Adjacent areas may become shallower over a long period of time
unlikely to change	Seabed is known to have a stable structure or area is re-surveyed before significant change has occurred	No direct consequences for safe navigation related to depth	Area is known for safe navigation related to depth

The combination of Survey Date Range (especially Date End) and Category of Temporal Variation provides a good quality indicator for ENC's that partially cover areas of unstable seabed. With this quality information, the mariner can make a better judgement where he should proceed with caution for grounding.

Recommendations

S-100 WG is recommended to maintain the present status of Category of Temporal Variation being a mandatory attribute.

S-100 WG is recommended to make Survey Date Range with element Date End a mandatory attribute.

Action required of S-100WG

The S-100WG is invited to:

- to note this report
- to discuss the proposal
- to provide feedback to the DQWG if the suggested approach can be adopted in S-101 DCEG standard.