Paper for Consideration by the < Transfer Standard Maintenance and Applications Development Working Group (TSMAD) and/or Digital Information Portrayal Working Group (DIPWG) >

<Holes in Data Coverage >

Submitted by:	IC-ENC
Executive Summary:	"Holes" in data coverage within the body of a cell.
Related Documents:	S57 Appendix B1, Annex A, Chapter 2.8.1, and S4 – B-404
Related Projects:	None

Introduction / Background

IC-ENC have received a number of ENC's which have contained "holes" in the centre of the data coverage where other larger scale ENC's are available.

Past activities: Previous discussion regarding this issue had taken place in June 2013 at an IC-ENC Technical Experts Working Group (TEWG). It was at that meeting that an action was made by the participants for IC-ENC to raise this issue for discussion at TSMAD.

Analysis/Discussion/Conclusions

In the past IC-ENC distributed ENCs in "Units" and this issue would not have been so apparent, because a small scaled cell would have been purchased in a batch which also included the larger scaled cells.
However, Units today are obsolete and ENCs are sold individually. This means that it is possible for a mariner to buy a single, stand-alone cell containing "holes", and not the larger-scaled cells which would fill those holes.

As long as ECDIS users can continue to purchase singular cells, an inclusion of a hole in ENC cell data coverage will continue to provide a potential navigational risk to the mariner, and in turn a loss of user confidence in the ENC-product. It has been reported to IC-ENC that some ECDIS do not detect these holes in the early stages of route planning when utilising the check route tools, resulting in the user being unaware of a lack of coverage for the planned route.

Current specifications attempt to deter producing authorities from this practice, but holes in data are not described as a mandatory fix.

S57 Appendix B1, Annex A, Chapter 2.8.1 states:-

"Areas of a data set which contain no data must be covered using the meta object **M_COVR**, with attribute CATCOV = *2* (no coverage available). Note that ENC cells must be completely covered by **M_COVR** objects. The areas that contain data must be covered by **M_COVR** with CATCOV = *1* (coverage available). The spatial extent of the **M_COVR** objects comprising an ENC data set should be restricted to the spatial extent of the minimum bounding rectangle formed by the area of the cell covered by data (**M_COVR** with CATCOV = *1* (coverage available)).

Producing Authorities should not leave "holes" (i.e. areas covered by **M_COVR** with attribute CATCOV = *2* (no coverage available)) in smaller scale coverage, under the assumption that the ECDIS user will have the larger scale data available."

An Option for resolving the issue.

- Generalised information should be inserted within the holes to allow safe passage. SCAMIN must be applied consistently with the main data set and the generalised 'filler' data.

A recommendation for how and who should do this.

TSMAD Should discuss the issue of Data Holes in cell coverage to ascertain if a promotion of a “should” to a “must” requirement in S57 Appendix B1, Annex A, Chapter 2.8.1 can be made.

A recommendation for how this should be done.

An adjustment to the content of S57 Appendix B1, Annex A, Chapter 2.8.1 should be made.

“2.8.1 Wide blank areas
Areas of a data set which contain no data must be covered using the meta object **M_COVR**, with attribute CATCOV = *2* (no coverage available). Note that ENC cells must be completely covered by **M_COVR** objects. The areas that contain data must be covered by **M_COVR** with CATCOV = *1* (coverage available). The spatial extent of the **M_COVR** objects comprising an ENC data set should be restricted to the spatial extent of the minimum bounding rectangle formed by the area of the cell covered by data (**M_COVR** with CATCOV = *1* (coverage available)).

Producing Authorities ~~should~~ must not leave “holes” (i.e. areas covered by **M_COVR** with attribute CATCOV = *2* (no coverage available)) in smaller scale coverage (unless the hole is captured solely over LNDARE), under the assumption that the ECDIS user will have the larger scale data available.”

Justification and Impacts

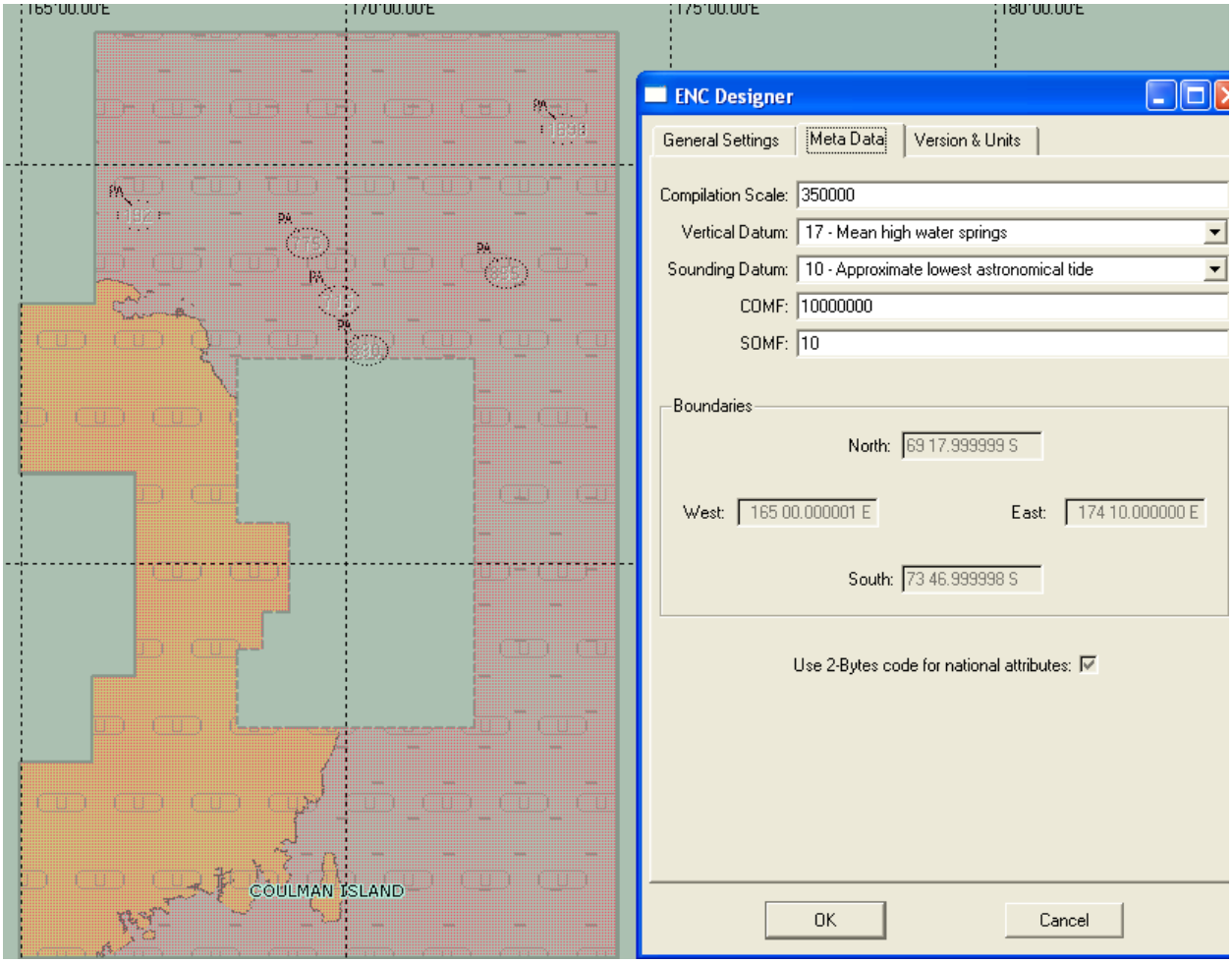
Implementation of the above recommendation will ensure that the mariner will have data available on their ECDIS at all times when using an ENC.

Action Required of TSMAD

TSMAD is requested to discuss this new policy recommendation with a view to its endorsement.

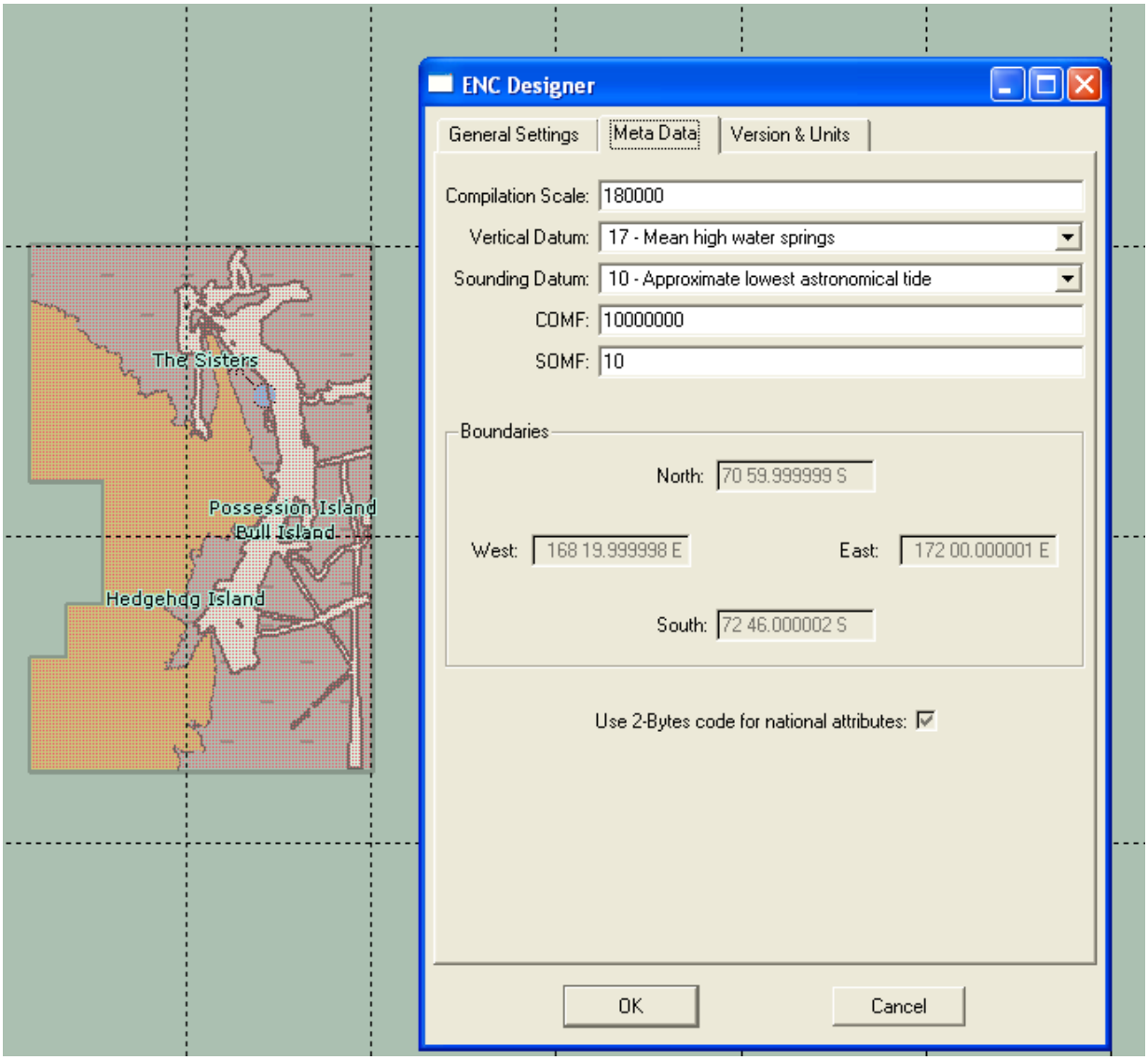
Annex A **<Example 1 >**

Hole within band 3 (1:350000) ENC where a larger scale (1:180000) band 3 is available



Smaller Scale band 3 Cell (1: 350 000).

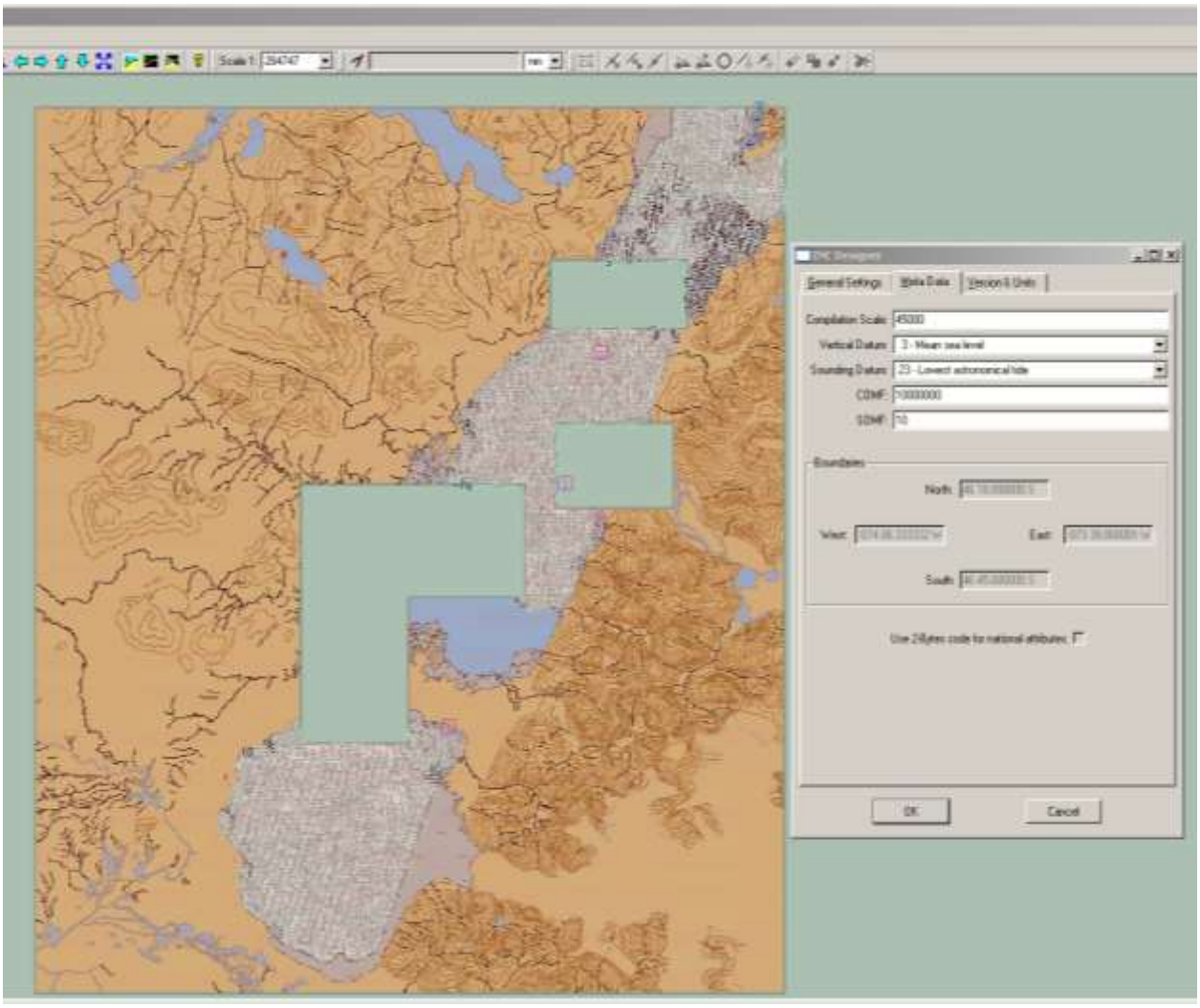
(Note the hole in the centre where larger scale coverage exists)



Larger Scale band 3 Cell contained within area of smaller scale coverage

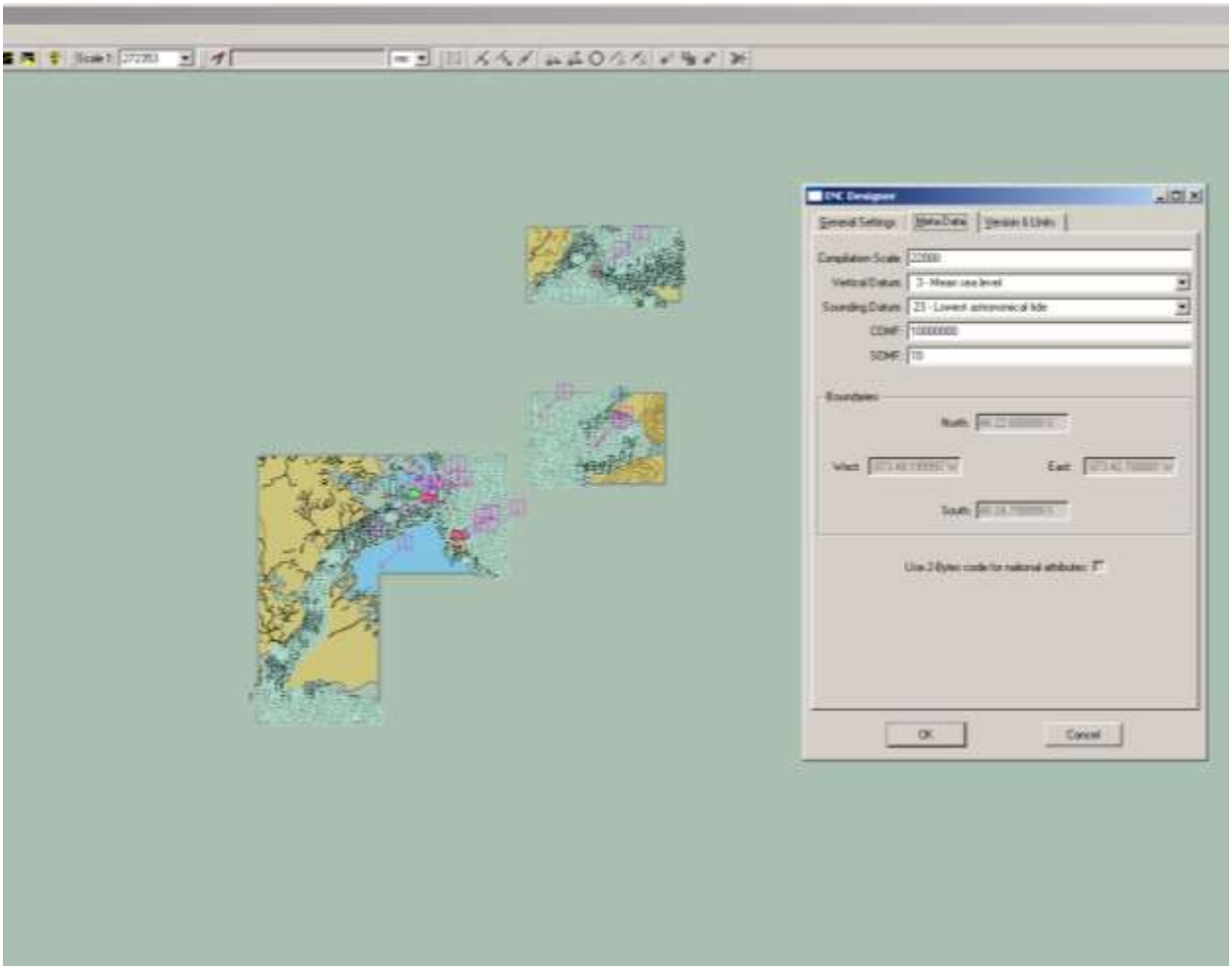
<Example 2 >

Hole within band 3 (1:45000) ENC where larger scale ENC's (1:22000) band 4 are available



Smaller Scale Cell (1: 45 000).

(Note the holes in the where larger scale band 4 ENCs exist)



3 Larger Scale(1:22 000) band 4 Cells contained within band 3 coverage