CSPCWG8-08.13A

8th CSPCWG Meeting
Turku, Finland, 29 November – 2 December 2011
Paper for Consideration by CSPCWG

Contouring by Automatic Generation tools

Submitted by:	Canada
Executive Summary:	New tools are available for the generation of depth contours which can result in a different presentation than the past
Related Documents:	S-4 B-411.5
Related Projects:	None

Introduction / Background.

IHO chart specification B-411.5 discusses in general terms the amount of smoothing required when generating depth contours, where we "remove intricacies which would confuse mariners" yet the "fact that the intricacy of contours gives some guidance on the adequacy of the survey in areas of irregular depths should be taken into account". With multibeam survey being made ever more available, and with automatic generation tools within CARIS software, the possibility of generating various versions of contours is dependant on the philosophy used by the HO

Analysis / Discussion.

The Canada is now generating gridded surfaces as the output from multibeam surveys. These are loaded into the Caris Bathy Database. From there a cartographer would extract a de-conflicted surface from which to generate contours through an automated process. There are basically two ways of doing this, one being to generalize the surface first and create relatively smooth contours, the other being to generate the contours from the un-generalized surface and then smooth the resulting contours. There are many variable options you can set within the software, each creating a different presentation of the resulting contours.

In order to have the most accurate soundings, those are chosen from an un-generalized surface. We have found that the contours generated from this surface agree with the soundings, where as using contours generated from a generalized surface do not always agree with the sounding from the un-generalized surface, which results in the necessity to alter contours manually.

The question is how much generalization is necessary? The IHO Spec B-411.5 is somewhat vague on this to allow for national preferences based on the source data available. Canada's concern is reducing the work of having to alter (smooth) contours that are automatically generated for the paper chart, where the ENC has the capacity to show relatively un-smoothed contours.

Conclusions.

CA will be moving towards more automation in the production process, where we will show more detail in contours on the paper chart and the ENC

Recommendations.

Other HO's consider the benefits of the use of automated tools for the generation of bathy contours.

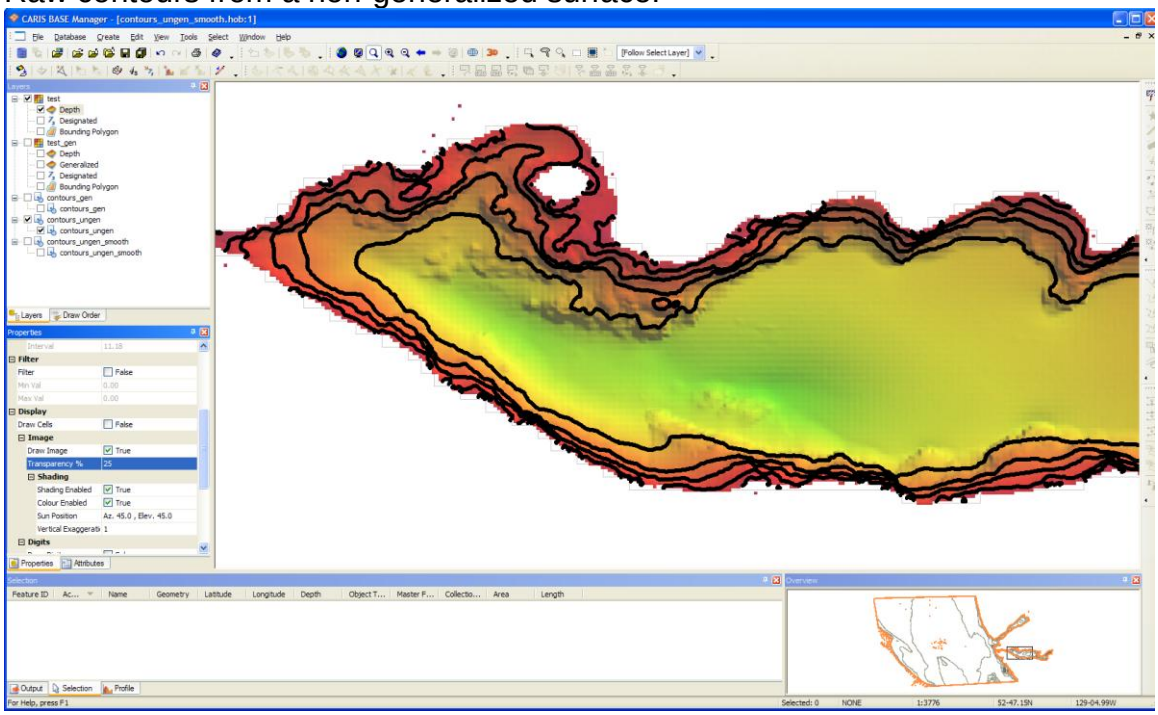
Justification and Impacts.

Consideration need to be made in terms of the confluence of creating ENCs and paper charts. If both ENCs and paper charts are made from the same source data at the same time, how can we amend standards to meet the requirements of both product lines, reducing the time and effort spent on creating these products? TSMAD may have direction on what the future of ENCs will look like, and we need to align our thinking towards those emerging standards. Contour presentation is just one example.

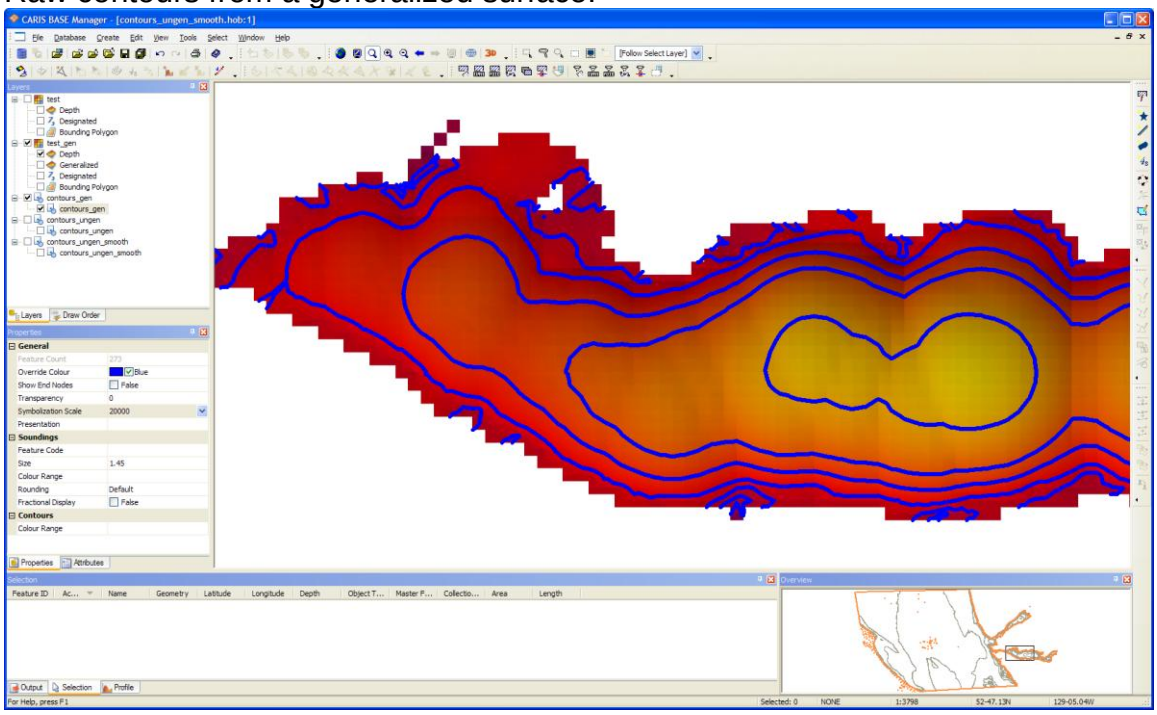
Action required of CSPCWG.

The CSPCWG is invited to review the following CA examples and discuss the possible direction paper charts may go in terms of showing more detail which results from automated processes.

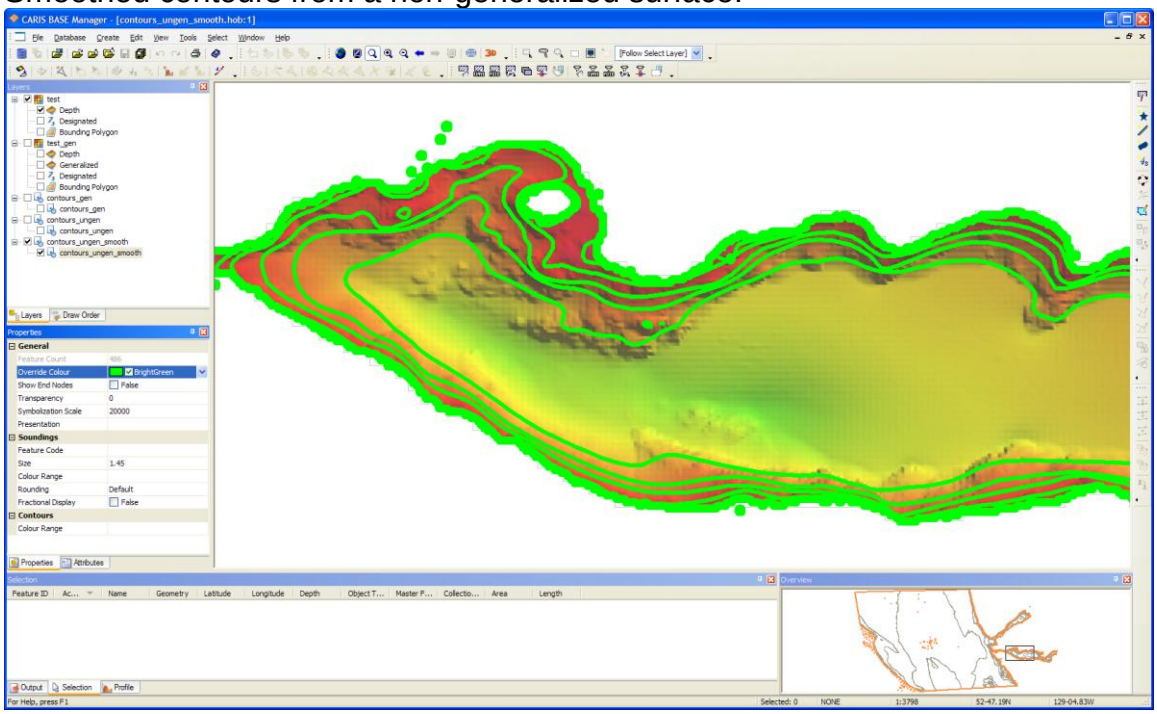
Raw contours from a non-generalized surface.



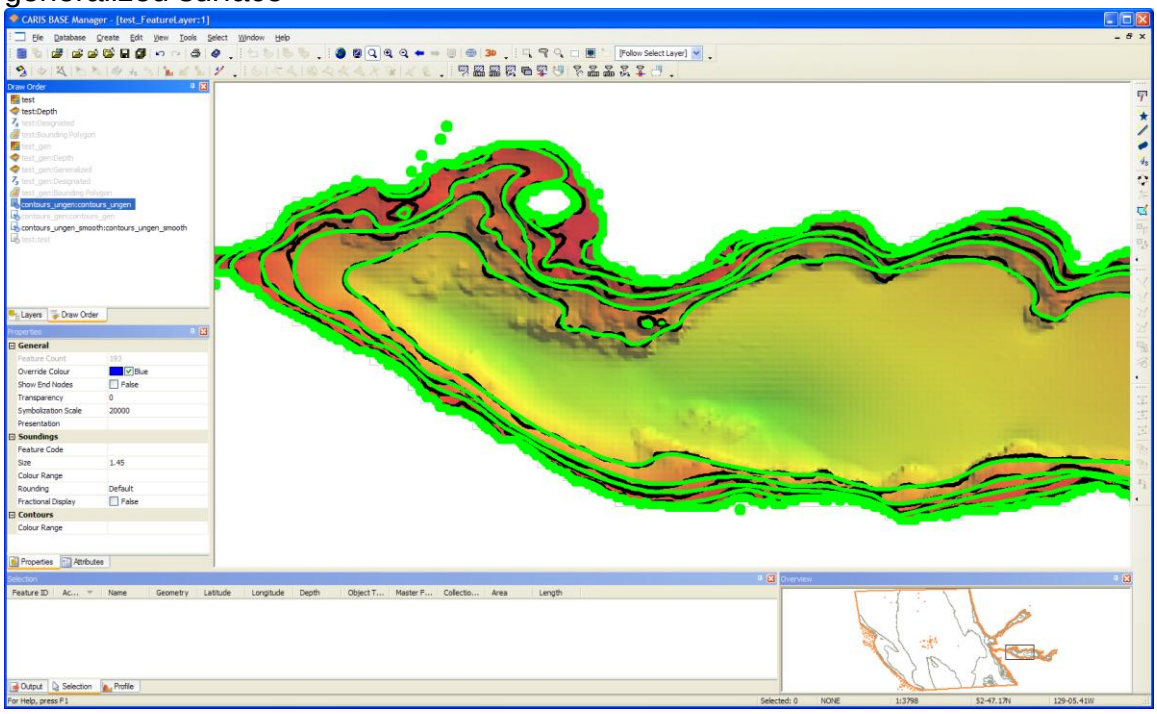
Raw contours from a generalized surface.



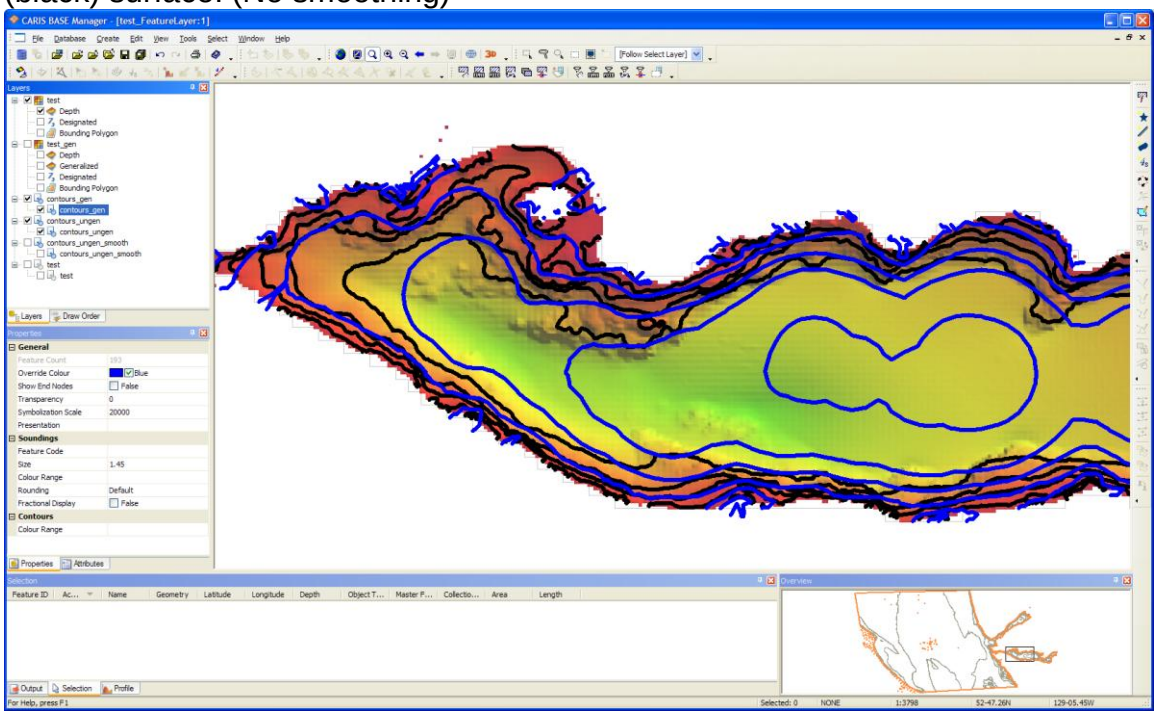
Smoothed contours from a non-generalized surface.



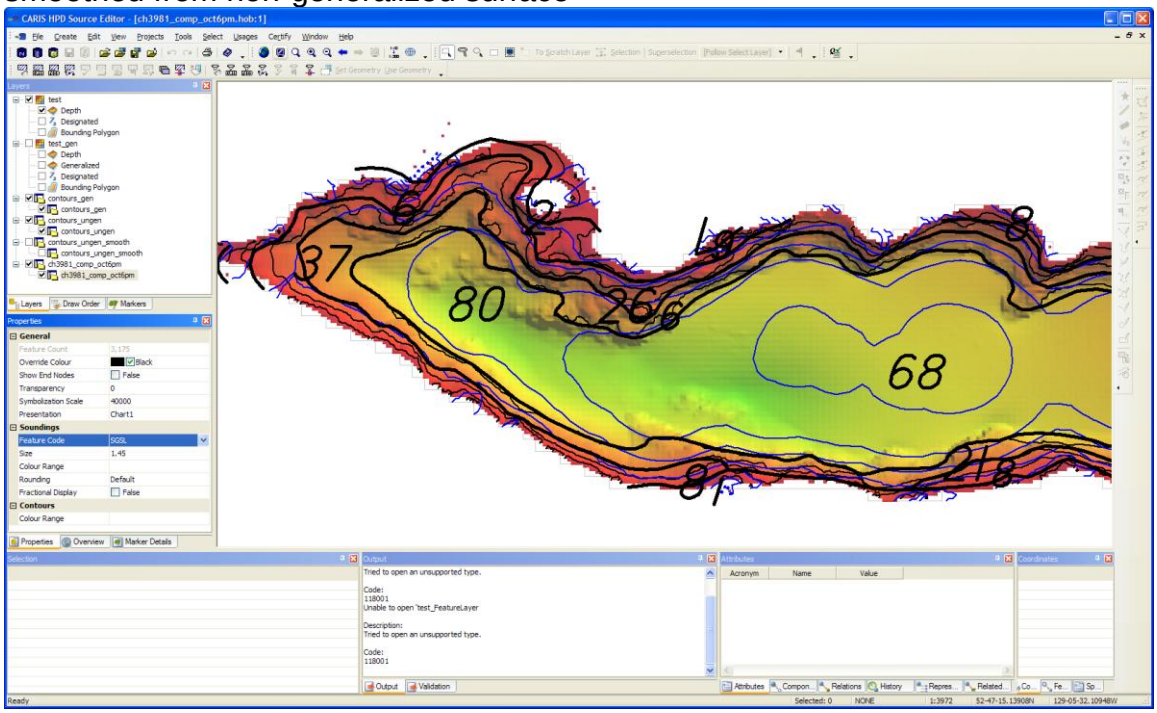
Comparison of raw contours (black) and smooth contours (green) from a non-generalized surface



Comparison of contours from a generalized (blue) and non-generalized (black) surface. (No smoothing)



Soundings added to get a sense of scale. Black contours have been smoothed from non-generalized surface



Completed product