

INTERNATIONAL HYDROGRAPHIC  
ORGANIZATION



ORGANISATION HYDROGRAPHIQUE  
INTERNATIONALE

## CHART STANDARDIZATION & PAPER CHART WORKING GROUP (CSPCWG)

[A Working Group of the Hydrographic Services and Standards Committee (HSSC)]

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### **CSPCWG Letter: 07/2014**

UKHO ref: HA317/010/032-13  
AHS ref: fAA141929

Date 02 October 2014

Dear Colleagues

### **Subject: CSPCWG10 Action 33 – Depiction of glaciers, follow-up to Letter 03/2004**

Thank you to the 21 Working Group members who responded to Letter 03/2014. As usual, we have consolidated the responses, analysed them and added 'Chairman's comments'; see Annex A.

As you will see, we have generally good agreement on the basic proposal, but some members have raised issues particularly about the colour of the contours and the presentation in INT1. While on the basis of the 'votes' we could proceed as proposed in Letter 03/2014, there seems to be sufficient reservations to possibly justify some small changes. I have summarised these at the end of Annex A, together with a suggestion for proceeding.

We have asked some further questions at Annex B. Please consider all comments in Annex A and provide your responses by 30 October 2014.

Yours sincerely,

Jeff Wootton,  
Chairman

Annex A: Consolidated responses with Chairman's comments and summary

Annex B: Response form

**CSPCWG10 Action 33: Depiction of glaciers**  
Consolidated responses with Chairman's comments

	Question	Yes	No
1	Do you agree that topographic contours may be continued across glaciers in blue as an option? <b>Chairman: there is unanimity for allowing blue contours across glaciers as an option. However, there are also some concerns and additional views expressed below.</b>	AU, BR, CA, DE, DK, ES, ESRI, FI, FR, GR, IT, JP, LV, NL, NO, NZ, SE, TR, UK, US(NOAA), ZA	
2	Do you agree with the proposed rewording of B-353.8? <b>Chairman: while the proposed rewording is acceptable to the majority, some changes would be required if we take account of the comments mentioned above.</b>	BR, DE, DK, ES, ESRI, FI, FR, GR, IT, JP, LV, NL, NO, NZ, SE, TR, UK, ZA	AU, CA, US(NOAA)
3	Do you agree that INT1 producers should select which graphics to show in accordance with their own national practice? <b>Chairman: to some extent we have to allow the three 'official' INT1 producers freedom, recognising that they are using a national product to provide a 'pattern' for other national INT1- style products, on behalf of the IHO.</b>	AU, BR, CA, DK, ESRI, FR, GR, JP, NL, NO, NZ, SE, TR, UK, ZA	DE, ES, FI, IT, LV, US(NOAA)

Further comments:

**AUSTRALIA:**

Q2: Australia is not sure why the contours have to be changed to blue if retained. Would like to see the option to retain the colour (black or other) of the topographic contours in general. Suggest amend to read: Land tint must be omitted over the glacier. **Topographic contours may be omitted or, if retained, may be changed to blue lines.**

**Chairman's comment: The reason for specifying blue contours was to be consistent with the dashed limit (which 'should' be blue but 'may' be black) and the infill option (which is only quoted as blue). It also helps to highlight the difference between normal exposed terrain and an ice field. Blue cross lines have been associated with glaciers for a long time; when we reviewed the section, the main change was to try and select an infill that could be digitally produced in place of the old hand drawn version. However, black or blue cross lines were then given equal status. It is also noted that some Producers depict their topographic contours in colours other than black (e.g. brown).**

**CANADA:**

Q1: We are concerned that if blue is used for the land contours over glaciers is the same blue used for depth contours, there could be confusion if they were close together.

**Chairman's comment: This seems unlikely, as there should be a black ice front symbol between any depth contours and land contours if a glacier penetrates to the coast. There will also often be blue tint in the sea close to the coast.**

Q2: Where it reads: "Land tint must be omitted over the glacier **and topographic contours either omitted or changed to blue lines.**"

Propose change to: **No land tint shall be shown over the glacier. Within the area of the glacier, contour lines shall be shown as continuous lines, black or other colour (see B-351.3).**

**Chairman's comment: See comment under AUSTRALIA. Why should the contours be shown as 'continuous' lines? It is possible that the contours either side are approximate and likely to be more approximate over a glacier because of its instability. Note also that 'shall' is an obsolete term for a mandatory requirement in S-4. 'Must' is the approved term; see B-120.4.**

**GERMANY: INT1 producer should show the S-4 depiction at column 2 with the two possibilities (first blank depiction with a black legend and the second as Norway proposes). An additional national depiction at column 4 is possible. The depiction with the black dashes will be deleted.**

Chairman's comment: Agree that INT1 producers should show the S-4 depictions in column 2 with any national (and obsolescent) versions in column 4. However, there are many options here, and it would not be possible to show all combinations in S-4 or INT1. The proposal is that INT1 producers should show the basic symbol including the 'must' items (black ice front, dashed limit, no land tint) plus the selection of options (colour of dashed limit, legends, contours or scattered line infill) in accordance with their national practice (or those of any nations whose charts they adopt). Space does not allow showing all possible combinations. S-4 can show the main obvious differences (blank/contours/infill). The old 'black (or blue) dashes' symbol became obsolescent when we revised the B-300 section of S-4 (so should be retained in Column 4).

#### SPAIN:

Q3: INT-1 producers should show same graphics that in B-353.8, which are two (one for each case).

Chairman's comment: An additional graphic showing contours will be useful in S-4, but it will be an optional depiction. If an INT1 producer does not use that option, there is no need to show it in their version of INT1. In fact, it is not practicable to show every possible combination. Each INT1 producer will need to take the basic graphic and adjust in accordance with the options in the text to suit their own practice. The important outcome should be that, whatever combination of the permitted options is used, it will be obvious to any mariner, using any nation's chart and any nation's INT1, that the feature is a glacier.

A similar, but less complex, example is D13 (railway). S-4 shows three optional depictions, but the ES version of INT1 only shows one (presumably the one used on Spanish charts).

#### FINLAND:

Q3: The INT1s should use the symbols in S-4. We should try to avoid any new differences in the publications.

Chairman's comment: See comment under SPAIN.

#### ITALY:

Q3: We think that INT1 should reflect the international standard specified in S-4, therefore, to avoid confusion or ambiguity, the column named "Representation following the Chart Specifications of the IHO" should represent the same graphic examples given at B-353.8.

Chairman's comment: See comment under SPAIN. If it became a convention that INT1 should contain the same graphic examples as S-4, then there will certainly be other changes required to INT1. Perhaps this should be referred to the INT1 Sub-WG for consideration.

#### LATVIA:

Q1&2: We have no objection, but we share the US and CA concerns about the blue contours for topography, especially if the areas are vast along the waterline. Also we would suggest that the legend "Glacier", alone or together with glacier's name, be a must if showing area with contour lines in blue or black. Because areas are vast (big) and it is on non-navigable part of the chart, it could not cause a clutter, and for the legend the topographical lines could be cut with no problem.

Chairman's comment: See comment under AUSTRALIA and CANADA. I think the use of blue contours or infill lines on a white background should make it obvious that the area is a glacier, with or without a legend or name. If black (or other colour) contours are used, it may be a little less obvious. No-one else has suggested making the legend (or name) mandatory.

Other: Could Norway provide an example of ENC encoding?

Norway's reply: Normally we do not include elevation contours in Norwegian ENCs, neither elevation contours nor contours on glaciers. Our experience when testing elevation contours in ENCs are that the ENCs often will exceed the limit of 5 MB. With almost 1100 ENCs in our portfolio, we do not want to split more ENCs into smaller parts because of elevation contours. There are a few exceptions in the Northern areas and in berthing ENCs but they are not representative.

Q3: INT1 producers should show in S-4 specified and agreed graphics, and the national column can show the national representation, if such is considered. We believe that also Norwegian sailors would like to use own-Norwegian INT1 to "translate" for example US INT charts while travelling along US coasts.

Chairman's comment: See comments under SPAIN and ITALY. The point about mariners using their own language INT1 to translate charts produced by another nation is valid and a clear reason for all chart producers to use common symbols as far as possible. However, for this reason the example is

not well chosen, as US generally do not produce INT charts and use many non-INT symbols on their national charts!

## NEW ZEALAND

Q1: LINZ agrees it is valid to add contours to glaciers especially at large scale, where little navigation aids are present and Mariners may be reliant on topographic interpretation. Prior to agreeing changes to symbology, this discussion should be shared with TSMAD and DIPWG to ascertain implications for electronic display.

Chairman's comment: As customary, WG Letter 03/2014 was copied to the Chairmen of TSMAD and DIPWG; they have not commented (they rarely do). The S-52 symbol for a glacier is a pattern of short "dominant" grey lines oriented in a "random" direction designed to cause a uniform pattern over the area of the glacier (refer S-52 Presentation Library Part 1 - Addendum, symbol ICEARE04 (reference number 457, page 578)), with an underlying "lighter" grey area fill. Land contours (LNDELV objects of type line) symbolize in ECDIS as a solid "brown" line. The display priority for these symbols will result in encoded land contours displaying "on top" of the glacier area in the ECDIS (rather than being covered by the glacier area).

For ENC, glaciers (encoded as ICEARE objects of type area) must be encoded on top of a land area feature (LNDARE object) if the glacier is on land, or a land area or unsurveyed area (UNSARE object) for any part of the glacier that extends into the sea (S-57 Appendix B.1, Annex A, clause 4.7.10). Regardless as to whether the glacier area is encoded on top of land area or unsurveyed area, the glacier symbol will always display in the ECDIS, again due to S-52 display priorities. While there is no specific guidance in S-57 (or in S-4, although implied for logical reasons) that a land contour must be located within a land area, there is an S-58 (ENC Validation Checks) check - 52a (categorised as Error) - to check that all land contours are within a land area. There is no S-57 guidance or S-58 check prohibiting land contours from crossing a glacier.

Therefore, as long as the area of the glacier crossed by land contours is encoded on top of land area, there is no issue with encoding land contours across glaciers in ENC. In terms of ECDIS display, given that the display priorities result in land contours displaying 'on top' of the glacier, and the symbols are distinct in terms of symbol type (line vs area) and colour, there should be no issue with the interpretation of these symbols in ECDIS by the mariner, although this should be confirmed by the DIPWG.

In more general terms, when considering proposals for changes to the fundamental charting specifications of the IHO (S-4), the main factor in consideration must be whether the proposed change is of benefit to the chart user (regardless as to whether the chart is paper or ENC), and not any resultant deficiency in any associated Standards, such as S-57 and S-52. Where such deficiencies exist, the focus should be on applying changes to these Standards such that the benefit to the chart user is passed on in the related chart product, not compromising the benefit due to these deficiencies. This is how I see the role of the CSPCWG - as the group of experts that consider proposals for changes to the fundamental charting standards in terms of the perceived benefit to the mariner, and the nautical cartographic framework within which such benefits are provided to the mariner on chart products in an easily interpreted and consistent manner. In terms of consistency, this includes in part taking into account consistency in symbolization between the types of chart product, and this is where the consultancy process with other IHO Working Groups such as the DIPWG is important.

Q3: Due to scale, complexity and quality of topographic information in remote alpine/glacial areas, INT1 producers should be able to select which graphic they prefer to ensure the symbology chosen is representative and clear. LINZ considers the non-specific lines/hashing of C-25 as too complex. Our policy (for paper products) is to leave glacier areas as blank in an effort to simplify land detail and reduce clutter.

Chairman's comment: The infill is optional. It was chosen to be easily produced digitally and recognizably similar in form (but not colour) to that used on ENC.

## US(NOAA):

Q1&2: The U.S. does not have any objection to Norway using contour lines on glaciers as a national practice, although we do think that the blue contour lines are confusing when up against the land. S-4 already provides multiple options for showing glaciers. So far, Norway is the only H.O. reported to be using contour line symbolization on glaciers. This may beg the question whether or not national

practice needs to be included as an optional international standard in Publication S-4. We don't see where S-4 specifically addresses whether or not national practice needs to be included as an optional international standard or not. This could be clarified in S-4.

**Chairman's comment:** See comments under AUSTRALIA and CANADA on the use of blue contours. On the inclusion of national practice in S-4, in this case Norway offered their national practice to see if WG members considered it to be useful as an International symbol, i.e. of some benefit to the mariner; the consensus of the attendees at CSPCWG10 and the responses to Letter 03/2014 indicate that they do and perhaps other nations will now adopt it. If the WG members had rejected it as an International symbol, it would have remained a national symbol (for Norway); there are many similar examples. B-151.1 makes clear the distinction between national and internationally agreed (INT) symbols. Only internationally agreed symbols will appear in S-4. (This is why the US national symbol for a Safety Fairway, which was for a time included in the graphic in B-435, was omitted when we revised that section for M-4 Edition 3.004.) While it is agreed that providing multiple options as to how to portray a feature on a chart does not contribute to world-wide consistency, this in itself should not be a reason to reject a proposal. The next step should be to examine the other options for portraying the feature and determine which is the least beneficial or intuitive in terms of the end user, and consider making this option obsolescent.

Q3: Graphics shown in Column 7 of INT 1 "Representation following the Chart Specifications of the IHO" should reflect the international standards agreed to and specified in S-4. Currently, INT 1 does not show the existing B-353.8 option of a "Glacier" legend inserted within the dashed limiting lines. Graphics in accordance with "national practice" should be shown in that nation's column for "Nationally used representation" in its own national book of symbols, abbreviations and terms.

**Chairman's comment:** See comments under SPAIN, ITALY and LATVIA. S-4 does show the option of placing the legend 'glacier' within the dashed limits. However, this is an 'optional extra' (as stated in S-4), so INT1 producers will show it or not according to their national practice. This has to apply even to the three 'official' versions (as it would be impossible to show every permutation of 'optional' parts of all symbols), especially in cases of words such as 'glacier', which are not symbols and are self explanatory; they do not need to appear in INT1 at all. I think it would be better to delete the word from the S-4 graphics, just leaving it stated as an additional option in the text.

Other: It would be beneficial to hear how Norway (or any other nation using contours on glaciers) is encoding elevation contours on ice areas, what the depiction is on an ECDIS (brown contour lines on top of a grey ice area with an angled dash pattern?)

**Norway's reply:** See under LATVIA.

It is possible that coordination with TSMAD and DIPWG would be a good idea before accepting this as a charting standard as encoding and electronic display issues may be affected.

**Chairman's comment:** See comment under NEW ZEALAND.

## SOUTH AFRICA

Q3: We should try to maintain a consistent approach.

**Chairman's comment:** Agree.

**Chairman's summary:** It seems there are two main questions outstanding (with some subsidiaries):

1. Should the option of continuing black contours (or other colours of contours based on national practice) across glaciers be included? If yes:
  - a. should this be a 'less preferred' option to blue contours (consistent with the glacier limit)?
  - b. Should it be a requirement that black (or other coloured) contours are dashed (to indicate approximate, as C12, as glaciers are less stable than land and to help differentiate from normal topographic contours)?
2. Should INT1 producers be:
  - a. requested to replicate (in their own style) all the graphical options shown in S-4, whether they use them on their national charts or not? Or
  - b. should the INT1 Sub-WG be asked to consider this issue?

A possible rewrite of the guidance (ensuring all the mandatory requirements are stated first) could be:

The black ice front symbol (N60.1) must be inserted where a glacier meets the sea, with a date if considered useful (see B-449.1). The inland edges of a glacier **must** be delimited by a fine ~~blue~~ dashed line, **which should be blue but may be black. ~~but may be a fine black dashed line.~~** Land tint must be omitted over the glacier. ~~and~~**Topographic contours should be either omitted or changed to blue lines, but may be retained as black (or other colour) [in which case they should be dashed (C12)].** The legend 'Glacier', or equivalent, or the name of the glacier may be inserted in upright sans-serif black text. An infill of scattered short blue lines (similar to the ECDIS infill symbol for glaciers) may be added **if ~~blue~~ contours are not shown.**

**CSPCWG10 Action 33: Depiction of glaciers**

Response Form

(please return to CSPCWG Secretary by 30 October 2014)

[andrew.coleman@ukho.gov.uk](mailto:andrew.coleman@ukho.gov.uk)

	Question	Yes	No
1	a. Should the option of continuing black (or other coloured) contours across glaciers be included? If yes:		
	b. should this be a 'less preferred' option to blue contours (consistent with the glacier limit)?		
	c. Should it be a requirement that such contours are dashed to indicate approximate, as C12 (as glaciers are less stable than land and to help differentiate from normal topographic contours)?		
2	a. Do you agree with the proposed rewording of B-353.8? (Under Chairman's summary)		
	b. Should the phrase in square brackets be included?		
3	Should INT1 producers be: a. requested to replicate (in their own style) all the graphical options shown in S-4, whether they use them on their national charts or not? Or		
	b. should the INTsubWG be asked to consider this issue? (Please answer 'yes' to either 3a or 3b, not both).		
4	Should the word 'Glacier' be removed from the example graphics in S-4? (See comment under US NOAA – Q3)		

Further comments:

Name:

Member State: