

**IHO Colours & Symbols Maintenance Working Group (C&SMWG)
15th Meeting, BSH, Rostock, Germany, 2-4 May 2005**

LOST OWN SHIP PROBLEM (See also file "Plot OWNSHP.doc ")

Note by M. Eaton, 6 Aug '04

In the last (off-topic) contribution to the 2004 OEF discussion on Cursor Picking, Glen Spaan complains about the "lost ship icon" problem of S-52, among other complaints.

This problem has been around for some time, and is serious. It can be very difficult to find the own-ship on the night display at large scale of a situation such as the approach to locks where the shoreline and depth contours and outline of the ship are all parallel.

We thought of filling the scaled own-ship symbol with red, colour token ISDNG, but were blocked when we found out the Hannu had apparently unilaterally adopted that to colour-fill shoal water and special areas (IMO 10.5.3, 10.5.4). Then the problem dropped out of sight. A test plot for colouring own-ship red is provided in separate file "Plot OWNSHP.doc "

Perhaps orange fill, colour token NINFO, would be appropriate, but simulator tests of orange-filled ships on a chart background are needed before adopting that. Another solution might be to use a red outline for both the own ship symbols. Filling the large scale symbol with a pattern would mask information underneath the ship symbol. It would be helpful to know how 7Cs and Transas solve the difficulty.

Any solution should have a thorough test on a simulator using various chart back grounds. However a preliminary plot of a red-filled own-ship symbol is shown in separate file "Plot OWNSHP.doc". And because the solution of changing the own-ship symbol is better than changing chart colours (see immediately below), the situation is complicated by the shared responsibility with IEC.

I have copied below some notes resulting from the sea-trial on which the problem first came to our notice in March 2000, and an abstract from the minutes of C&S 14 where the problem was again discussed.

Mike Eaton

5 Aug. 2004

NOTES FROM SEA TEST ON THE ST. LAWRENCE SEAWAY, MARCH 2000:

Note for next meeting of IEC TC80/MT1 Draft by M. Eaton, CHS retd., 27 March '00

PROPOSAL TO MODIFY IEC 61174 ANNEX E - OWN SHIP SYMBOL AND SCALED REPRESENTATION OF OWN SHIP.

Sea tests on a ship passing through the Seaway at night showed that in narrow channels and locks the scaled Own Ship symbol is hard to pick out from the depth contours and shoreline because all of these are near-parallel grey lines.

It is essential that the mariner be able to pick out the Own Ship symbol immediately, at a glance.

It is therefore proposed that the scaled representation of the Own Ship (IEC 61174 Annexe E symbol 1b) be filled with 75% transparent red, colour token DNGHL. For consistency the double circle Own Ship symbol, IEC symbol 1a, should also be filled with the same transparent red. The transparent red allows some, if not all, underlying information to show through the symbols.

Mariners who have seen preliminary sea demonstrations agreed that this change improves the situation.

The following give further details:

- Abstract from sea-test report (attached),
- Trial plots to evaluate appropriate symbolization (see file " Plot OWNSHP.doc")

Note by M. Eaton, CHS retd.

rev. 27 March '00

ABSTRACT FROM A REPORT ON SEA TESTS OF THE IHO COLOURS & SYMBOLS ON THE 'CANADIAN PROGRESS' OCTOBER '99

2.1 Own-ship symbol. The Captain (Ross Armstrong) complained that at night when in a narrow channel the white, ship-shape, scaled own-ship symbol gets lost amongst white chart features such as contours and dock/lock walls. Own-ship is often hard to find because of this. The fact that the heading line and own-ship vector are also white, and the past track grey, compound the confusion particularly at night.

The same problem applies by day, with black and grey lines, but is less confusing then.

An ECS on the bridge avoided the problem by using blue for depth contours, yellow for coastline/ dock walls, and an own-ship outline tinged with magenta. Although this looked OK on the night display which we saw, the soundings, which were also blue, were hard to read.

This problem was obvious to all concerned (P. Brunet of Q-Mar, G. Fenn and M. Eaton of CHS) and requires action. Own-ship and its heading line and vector are IEC symbols, and the chart features are IHO, and so joint action is necessary, since IEC 61174 is currently being reviewed.

The solution discussed onboard was to use the fact that red, the strongest colour on the display, is allocated to "Mariners Objects" and could be used to distinguish own ship, either by using a red outline, a red centreline, or a transparent red fill. To maintain consistency, a similar change should be made to the own-ship concentric circles symbol. These are IEC 61174 annex F symbols 1a and 1b.

Some might suggest that the IHO change to blue contours and yellow coastline. However that particular change is not an option because the blue and yellow of the ECS black background display would be poor colours for foreground features on a white background display. A white background display is mandatory for IHO (a) because C&SWG instructions from the IHO COE were to produce a display as near

to the paper chart as possible and equally importantly (b) because a white background display is more effective in combatting bright sun washout.

Patrick Brunet of Q-Mar, who is a member of the Canadian IEC review group, agreed to look at possible solutions.

Later note

24 March '00

CHS tests ashore indicate that a 75% transparent fill of the red DNGHL colour would distinguish the ship while allowing most features to show through, and Patrick Brunet of Q-Mar reports that mariners who saw preliminary sea-tests of this solution agreed that it improves the situation.

Other use of Transparent red fill by IEC

27 March '00

Hannu Peiponen of ASPO has pointed out that there could be a conflict between this proposal to red-fill the Own Ship and an IEC 61174 addendum which uses transparent red to identify the features affected by IMO Appendix 5 "Alarm or indication".

[Note by RME 5-08-04: The July 2000 edition of IEC 61174 describes Annex E, symbol 9 as "Transparent red danger arcs drawn by the operator" (in fact it is an area fill, not an arc). It says nothing about use to identify IMO App.5 areas. But there may be a later addendum which I do not possess.)

The colour-fill with red colour DNGHL was originally intended for use by the mariner to identify small danger areas (C&S Specs table 3). It was never intended for a general area fill of areas selected by the ECDIS as covered by IMO 10.5.3 and 10.5.4]

At first sight, the use of a transparent red fill for "Alarm or indication" areas could cause problems. The three conditions that call for "Alarm or indication" in IMO Appendix 5 are:

(a.) IMO Section 10.3, which in effect says : "the largest scale chart info available is to be used for GENERATING alarms". This is not in itself an alarm situation or feature, and it therefore should not appear at all in the list of IMO App.5

(b.) IMO Section 10.5.4: "Area with special conditions", i.e. everything on the list of IMO App 4. This would mean that a large part of the display would be coloured red, or would turn red when the ship entered, including all TRAFFIC LANES, FAIRWAYS and CHANNELS, plus virtually all RESTRICTED AREAS, plus many other areas that have a RESTRICTION attribute applied.

OUR EXPERIENCE HAS BEEN THAT THE MARINERS DO NOT WANT COLOUR FILLS IN THEIR WORKING AREA, but this is exactly what they would get.

(c.) IMO Section 13.2: "Malfunction of ECDIS". The whole screen would presumably be covered. ECDIS would be suspect anyway, but this would further reduce its usefulness.

Perhaps some other less damaging visual indication than a red area fill could be found. An amber indicator light?

If this conflict means the Own Ship symbol cannot be highlighted with red fill, the alternative of giving the ship symbols a black on red or a red on black outline should be considered.

ABSTRACT FROM THE MINUTES OF MEETING C&S14 IN MAY 2003:

" 5.15 Lost own-ship problem (reference C&S14/3A "Minutes C&S13 5.27")
"may need to be re-visited (w/ IEC TC80/WG7 or WG13). C&SWG members suggest WG 13 to allow a more detailed own-ship true-to-scale outline which may be more prominent and consequently better to recognise in narrow channels. Bethke reported about discussion of this topic within WG7 leading in this direction. Chairman will monitor activities of WG7/WG13". (5.27 Minutes).
(See also 10 below. Liaison matters with IEC(Jonas).

MJ: dealt with at a number of earlier meetings and agreed to advise IEC to make a more distinguishable outline of the ship. Could be two forms for small and larger scales. Real problem in narrow channels as many parallel lines. Make vessel ~~shape~~ pattern more than a pointy box. OSL already does this. Semi transparent colour such as red would be nice.
Outcomes: Chairman to draft minor paper and raise issue at WG 13 "