**TSMAD20/DIPWG2-04.1A**

**TSMAD20 / DIPWG2**
**3 to 7 May 2010 (Rostock, Germany)**

**Paper for Consideration by TSMAD/DIPWG**

**Possible alternative colors (other than orange) for Mariner Objects**

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| ***Submitted by:*** | Action No. 56 from DIPWG1 by Hannu Peiponen / Furuno Finland Oy |
| ***Executive Summary:*** | In practical ECDIS systems there exists a big need to draw additional geo-referenced things together with the chart. Such things are called as mariner objects. Currently mariner objects are mainly specified to use orange color (NINFO). This makes it difficult to distinguish different mariner objects from each other. There is a practical need that IHO define other suitable colors used in addition to orange for the mariner objects. |
| ***Related Documents:*** | Base is current S-52, target of the proposal is S-101 8and maybe also S-52) |
| ***Related Projects:*** | N/A |

# Introduction

In the current S-52 IHO has defined 7 colors which are used for drawing non-charted items in top of the chart (Note that although there are 7 used x,y,L color values, these colors are available from 12 separate color tokens):

- Black in DAY, White in DUSK + NIGHT
  - Own ship symbol, own ship speed vector, own ship heading line (SHIPS)
  - Past track (PSTRK)
- Gray
  - Secondary past track (SYTRK)
- Orange
  - Cursor (CURSR)
  - Scale bar (SCLBR)
  - EBL, VRM, Range rings, Parallel index lines (NINFO)
  - Alternative Planned Route (APLRT), Wheel over line (NINFO)
  - Own ship position fix, Line of position (NINFO)
  - Mariner event, MOB event (NINFO)
  - Mariner information note, Mariner caution note (NINFO)
  - Clearing line (NINFO)
  - Predicted tidal stream or current, Actual tidal stream or current (NINFO)
- Red
  - Monitored route (PLRTE)
- Dark yellow
  - Reserved color for manufacturer own features (ADINF)
- Green
  - TT targets from radar, AIS targets (ARPAT)
- Green
  - Radar echo overlay (RADHI, RADLO)

In practice there has been need to have more colors available for drawing in top of the chart to make it easier to understand what is what. First practical case is orange color used for many object classes. Second practical case is two shades of green available both for targets and radar echo overlay. Third practical case is that all measurement tools (multiple available EBL, multiple available VRM, multiple available Parallel index lines, Range rings) use a single color. Additionally it is also difficult to distinguish Line of position and Clearing lines from the measurement tools.

# Proposal

Following 4 additional colors could be made available as alternative colors for non-charted items.

| Palette | New color alternative | x,y,L | Smallest dE against chart area colors |
|---|---|---|---|
| **DAY** | **Blue** (MARBL) | **0.145, 0.140, 20.0** | **22.6** (RESBL) |
| | **Cyan** (MARCY) | **0.200, 0.355, 20.0** | **25.4** (DEPIT) |
| | **Magenta** (MARMG) | **0.360, 0.220, 20.0** | **46.0** (CHMGD, ISDNG, TRFCD) |
| | **White** (MARWH) | **0.305, 0.344, 20.0** | **19.1** (CHGRF, SNDG1, DEPCN, RESGR, SYTRK) |
| **DUSK** | **Blue** (MARBL) | **0.145, 0.140, 17.0** | **61.5** (RESBL) |
| | **Cyan** (MARCY) | **0.200, 0.355, 17.0** | **41.4** (ARPAT) |
| | **Magenta** (MARMG) | **0.360, 0.220, 17.0** | **52,6** (CHMGF, TRFCF) |
| | **White** (MARWH) | **0.305, 0.344, 17.0** | **23,6** (CHGRF, SNDG1, DEPCN, SYTRK) |
| **NIGHT** | **Blue** (MARBL) | **0.145, 0.140, 1.75** | **45.3** (RESBL) |
| | **Cyan** (MARCY) | **0.200, 0.355, 1.75** | **36.6** (ARPAT) |
| | **Magenta** (MARMG) | **0.360, 0.220, 1.75** | **57.7** (CHMGD, CHMGF, ISDNG, TRFCD, TRFCF) |
| | **White** (MARWH) | **0.305, 0.344, 1.75** | **19.4** (CHGRF, SNDG1, DEPCN, RESGR, SYTRK) |

As comparison the smallest dE between existing charted colors are

- DAY: **13.9** between NODTA, CHGRF, SNDG1, DEPCN, RESGR and SYTRK
- DUSK: **8.8** between NODTA, CHGRF, SNDG1, DEPCN and SYTRK
- NIGHT: **1.0** between NODTA, CHGRF, SNDG1, DEPCN, RESGR and SYTRK

The S-52 standard itself specify that in the color verification the dE should be more than **10** units for color pairs which originally have more separation than **20** units.

It is proposed that the 4 additional colors are left for manufactures to be used as they like to replace or not to replace any use of CURSR, NINFO, APLRT and ARPAT. Reason to leave the use of the colors for manufacturers is the current IEC 62288 Navigation Presentation standard, which specifies the exact shape of mariner objects, but leaves final selection of the color for the manufacturer. It is proposed that IHO will publish the x,y,L color coordinates for additional suitable colors for mariner objects. In this case the end result is that IHO has control of the colors used together with charted objects, but manufacturers have enough freedom to implement this as they like.

# Conclusion

All proposed colors are as easy to discriminate as the original charted colors. Acceptance of this proposal is a way forward for flexibility.