CSPCWG8-08.6A

8th CSPCWG Meeting
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Paper for Consideration by CSPCWG

Major lights: any change required to definitions/symbols

Submitted by:	UK
Executive Summary:	Lights of nominal range 10 miles and greater are now classed as major lights for ENCs; what are the consequences for paper charts?
Related Documents:	TSMAD22/DIPWG3-08.3A rev 1 (CSPCWG8-08.6B), S-4, S-12, S-32, S-57, S-100, INT1
Related Projects:	None

Introduction / Background.

1. DIPWG3 (Digital Information Portrayal Working Group meeting 3) discussed major lights with all round arcs of visibility. These features are not always immediately evident on the ECDIS display. Relatively insignificant sectored lights may be more prominent in the display and give the impression they are more important than major lights.
2. To determine which light would fall within the category 'major light', DIPWG looked at Lighthouses, Light Vessels, and other Non-Sectored Lights with a nominal range of 10M or more, including:
    1. Harbour Approaches
    2. Meteorological Masts (associated with Wind Farms)
    3. Offshore Production Areas
    4. Air [Navigation] Lights

       (Note: DIPWG has confused air navigation and air obstruction lights; the latter are not relevant to a discussion about 'major' lights)
    5. Super Buoys.
3. DIPWG's recommendations for ECDIS presentation were as follows:
    - Harbour Lights of 10M or more are, in the context of their surroundings, significant aids to navigation and fall within the category 'major lights'
    - Meteorological Masts were excluded from the category of 'major light', even though they exhibit lights with a nominal range of 10M or more. They display Morse light characteristics (flashing Morse code U).
    - Offshore Production Areas display ranges between 10M and 15M, but as they are often closely grouped in large numbers, it would not be appropriate to display them as 'major light'.
    - Air [Navigation] Lights are not designed for marine navigation and are subject to changes which Hydrographic Offices are not always notified of. Therefore they were not classed as 'major light'.
    - Super Buoys attributed with a nominal range of 10M or greater should be

treated as major light within the ECDIS display.

DIPWG/TSMAD conclusion: 'It is considered that lights with nominal range of 10 Nautical Miles or greater be considered major lights'.

Analysis / Discussion.

4. In consideration of this topic, we should note that on paper charts the light characteristics are clearly displayed and visible in contrast to ECDIS. Paper charts state the range of the light and will give the mariner a better understanding of the importance of the light, in contrast to ECDIS which will not show light characteristics in a very user friendly way (sometimes even illegible because of the way ECDIS displays descriptions). Also, symbols become more dominant because of the way they display rather than because of their importance.

5. Relevant extracts from IHO documents which may help to distinguish major/minor lights follow. Note that there is no current definition of a major (or minor) light in the Hydrographic Dictionary (S-32):

INT1 P1: 

Major light, minor light ‡, light, lighthouse

S-4 B-457.3 Lighthouses, ie structures built to house major marine navigational lights…

S-4 B-470 LIGHTS: GENERAL

These specifications include lights of all types other than those on buoys and minor light floats. Major floating lights (light vessels, major light floats and Large Automatic Navigation Buoys (LANBY) have functions similar to those of major lights on land; see B-474.

S-4 B-470.4 Colours of lights a. **General rules on 'multicoloured' charts:**

- Coloured sector arcs (or circles for all-round lights) should be used on all major lights. Leading lights (with narrow sectors) and minor lateral lights should usually be shown by flares.

S-4 B-470.5 Position of lights. The position of a light (including lighthouses) should normally be shown by a five-pointed star in one of two sizes (ie as P1 above). The larger star should be used for the majority of lights. The smaller star may be used where there are numerous minor lights, eg the corners of quays and dolphins in a harbour.

S-4 B-470.7 Names of major lights are very important, as stated in B-450.3 and B-470.1.

S-4 B-472.1 Major lights (ie lights intended for use at sea, usually with a range of 15 miles or more, and in outer approaches to harbours)...

S-4 B-474.1 Major floating lights are generally classed as those with a nominal range in excess of 10 nautical miles. Special circumstances, eg an isolated location, may mean that a floating light of lower range is given this status. The structure on which the light is fixed will be a light vessel, a major light float or a LANBY (Large Automatic Navigational Buoy, which is a type of superbuoy; see B-460.4).

S-4 C-414 AIDS TO NAVIGATION C-414.1 Significant lights (ie those within range of which navigation on the particular chart is possible) shall be shown, by

symbology only - see INT 1. Names of lights are important for cross reference to the Lights List. See B-470.1.

S-12 4.2 states:

The typographic elements employed allow the following distinctions to be made:

…**lowercase upright and bold:** land based lights with nominal range of at least 15 nautical miles

S-12 4.6 Column 6 – Range states:

Ranges of lights are given in nautical miles (M): in **bold type** if equal to or greater than 15 M, in normal type if less.

6. Should the definition of a major light be standardized for all products, or can it be different? If different, will this cause problems where different products are produced from one database?
7. If a definition of a feature is product independent, then the definition of 'major' lights should apply equally to paper charts and ENCs. Therefore, the DIPWG/TSMAD conclusion that lights with a nominal range of 10M or greater be considered major lights should also be used for paper charts.
8. S-4 B-472.1 defines major lights as lights intended for use at sea, usually with a range of 15 miles or more, and in outer approaches to harbours. For standardization of terms and consistency, this definition will need to be amended. This would have a consequence for charting such lights on multicoloured charts, as B-470.4a (bullet 7) states:

   - Coloured sector arcs (or circles for all-round lights) should be used on all major lights' *and lights with lesser ranges where appropriate*.

   Note: the italic is a suggested clarification to this bullet.
9. S-4 B-474.1 already states that major floating lights are those with a nominal range in excess of 10 nautical miles. The DIPWG/TSMAD conclusion would not lead to any changes here.
10. S-4 B-470.5 does not stipulate the range for using the larger star. Therefore, there is unlikely to be any charting consequence for light stars if the definition of major lights is changed, as the practice is to use the symbol for all except 'minor' lights.(also undefined at present). INT1 may need amending.
11. S-12 4.2 and S-12 4.6 would ideally be amended and the relevant lights in Lights List Volumes updated.
12. There is no definition for major (or minor) light in the IALA dictionary. The following may be helpful:

    Landfall mark (or buoy): A mark (or buoy) intended to be the first to be seen during an approach from the open sea to a part of the coast. By extension, a mark (or buoy) that indicates the approach to a harbour, river or estuary.

    All round light: A signal light that shows the same character all over the horizon. This term is still applicable even if the light is not shown over an arc of the horizon of no interest to marine navigation.

    Main light: The principal signal light at a station where two or more signal lights are shown.

Conclusions.

13. At present, the nearest to a formal definition of major light appears to be a

parenthesis in S-4 B-472.1.

14. A consistent definition for ‘major’ light (and possibly ‘minor’ light) should be made explicit in S-32, S-4 and other relevant IHO publications (S-12, S-57, S-100?).
15. There may be charting consequences (for multicoloured charts) of a change from the generally accepted 15M to 10M.
16. The definition of lighthouse (B-457.3) may need to be reconsidered; see DIPWG paper under ‘Analysis of Light Features and Functions’. (IALA defines a lighthouse as ‘A tower, or substantial building or structure, erected at a designated geographical location to carry a light signal and to assist marine navigation’; this may be more useful than the existing S-4 definition)
17. It may be necessary to change INT1 P1, as the larger light star is used more widely than those lights which will fall within a definition of major lights..

Recommendations.

18. Amend B-457.3 to:

    A Lighthouse is a tower, or substantial building or structure, erected at a designated geographical location to carry a navigation light and to assist marine navigation. It must be shown as a light star (see B-470)….

    (Note: this proposed change will impact on the planned change to include specifications for disused lighthouses - WG7 Action 13 Letter 7/11 refers)

19. Insert a new paragraph at B-470.2:

    ‘In these specifications, certain marine navigation lights are defined as:

    - **Major light**. A light, generally with a nominal range of 10 Nautical Miles or greater, intended to be the first to be seen during an approach from the open sea to a part of the coast or that indicates the approach to a harbour, river or estuary. Air navigation lights and lights marking energy production structures (eg platforms, turbines) are excluded from this definition.

    This does not imply that all other lights are minor lights’.

    Note: it does not seem necessary to define minor light, nor is there any obvious criteria to use.

20. Amend B-472.1 to:

    Major lights (see B-470.2). When reducing….

21. Amend INT1 P1 term to:

    Navigation light, Lighthouse

Justification and Impacts.

22. Consistency in definitions across IHO publications.
23. Possible additions or amendments to definitions in S-4, S-12, S-32, S-57, S-100.
24. Changes to existing chart depiction, in particular multicoloured charts.

Action required of CSPCWG.

The CSPCWG is invited to:

Discuss the above subject and advise on action.