

Paper for consideration by ENCWG

Portrayal of light characteristics for sector lights and shorter character string

Submitted by:	Norway (NHS)
Executive Summary:	Proposal to add portrayal of light characteristics also for sectored lights on ECDIS display. Also a proposal to shorten the displayed text in order to reduce clutter.
Related documents:	S-52, S-64, ECDIS performance checks
Related projects:	S-101PT3.4 - Sector Lights - Presentation from the Norwegian Coastal Administration ENCWG1-6.2 - Depiction of Light Characters and Object Names

Light characteristics text on sectored lights

Introduction

The challenges of navigating through inner leads in Norwegian waters are the dangerous nature of narrow straits with a lot of islets and skerries. One of the important aid for navigating in such waters is sector lights. The lights are normally positioned to make it possible to navigate utilizing white sectors from consecutive sector lights throughout a lead to stay clear of dangers. The different sector lights have to be identified unambiguously by its distinct light characteristics and it is **important** that this information is presented clearly on the ECDIS screen. After the transition from IHO Preslib 3.3 to Preslib 3.4, several ECDIS anomalies occurred on numerous ECDIS's of different make. In order to help mariners and manufacturers identify and remedy the situation, the IHO test data sets with associated check instructions were published. When visualizing the light characteristics on the ECDIS screen, the check instructions described how the characteristics should be displayed for all round lights. For sectored lights, only the light sectors were shown.

In order to follow the latest IHO standards, ECDIS software and SDK's were updated. For ECDIS's with Preslib 3.4 and updated SDK, the mariner's no longer has the possibility to visualize light characteristics for sectored lights other than by the pick report.

Discussion

In earlier SW-versions of ECDIS and SDK, it was possible to select "Light Characteristics Text" of all lights to be displayed, as shown in Figure 1. This information is displayed to the right side of the object and is needed to separate the lights from each other when navigating in areas with many lights in view. Displaying light characteristics text is optional, and if problems of clutters on the screen should occur, it is easy to remove the text.

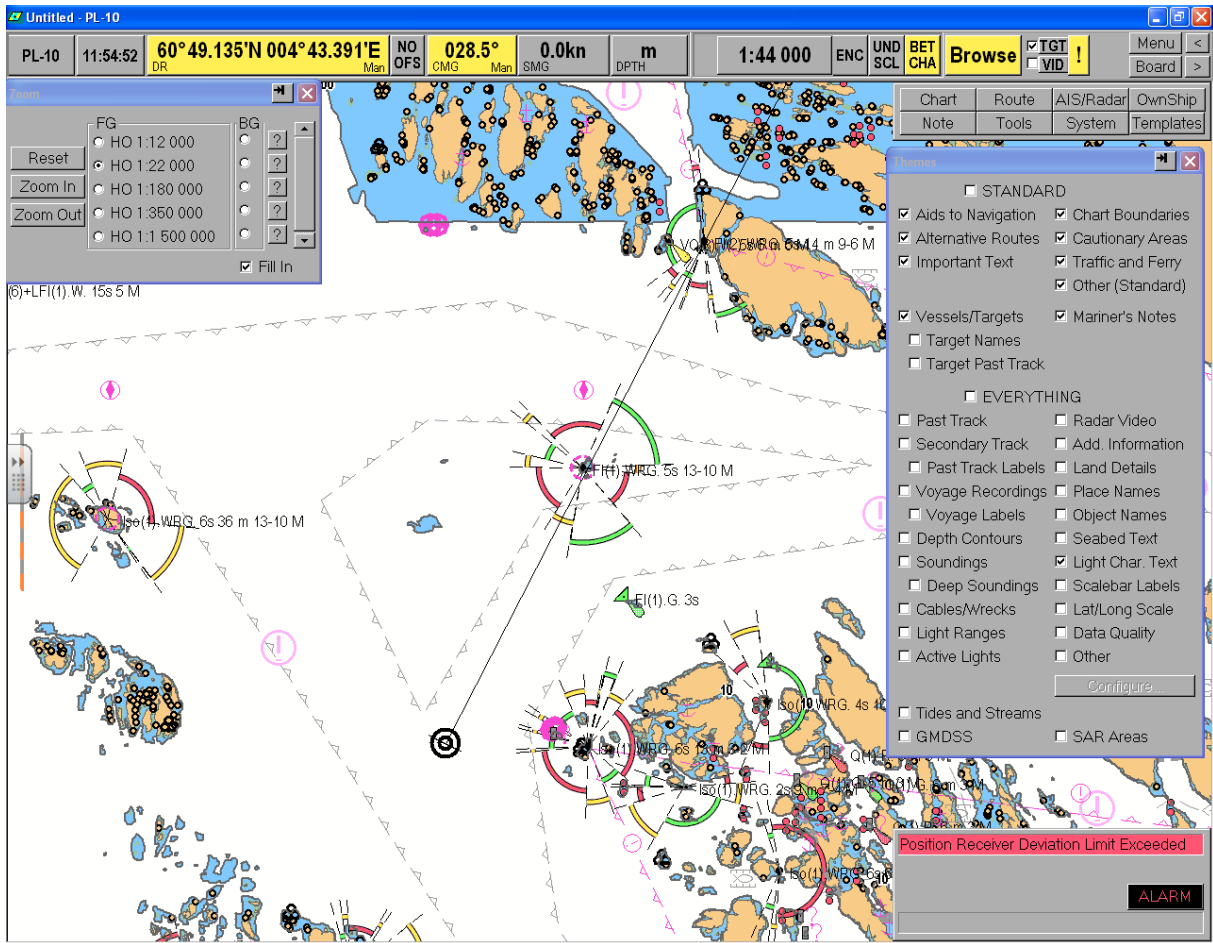


Figure 1: C-MAP SDK version 4.5.079, Preslib 3.4. Light characteristics text visualized

As an example, we can see from Figure 2 that information like “Place Names” and “Object Names” potentially could make more “clutter” on the screen than sector lights characteristics.

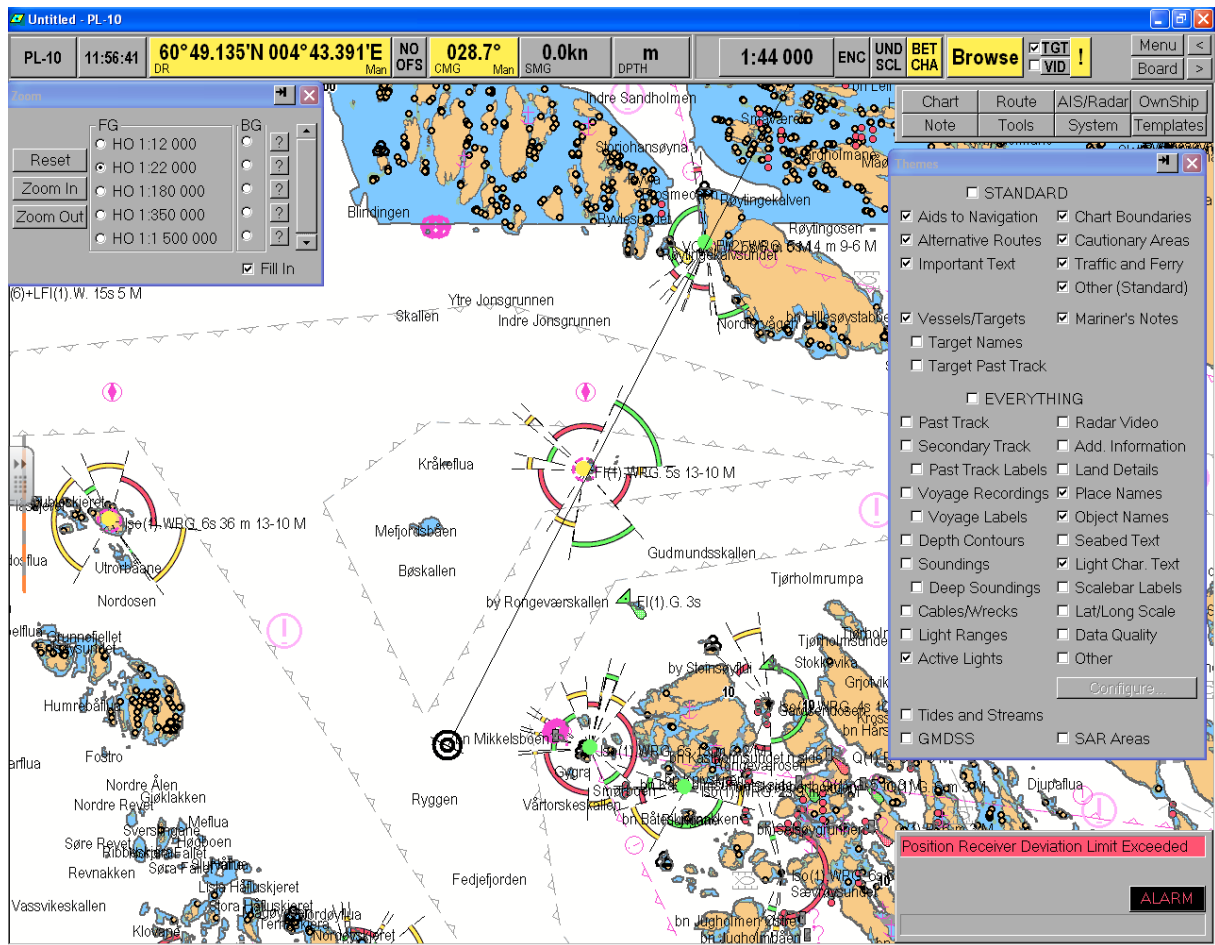


Figure 2 C-MAP SDK version 4.5.079, Preslib 3.4. Light characteristics text, place names and object names visualized

Furthermore, the text string of sector lights includes information that is not necessary for safe navigation and could preferably be shortened. The colors of the sectors are visualized, and are therefore not needed in the text. The nominal range of the lights could be optionally selected by ticking “Light ranges” and this is a more intuitive way to present it rather than in the text. The height of the light is also unnecessary information in a short text string, and all this extra information is available to the user if he conduct a query on that data object. The information that remains and is of high importance in the text are: “light characteristics”, “signal group” and “signal period”. With this information, the navigator will be able to distinguish one light from another visually without ambiguity.

It is stated in S-52 that text strings (LITDSN) are not used for sector lights because it would cause clutter. As we can see in Figure 3, which is a screenshot from an ECDIS system (SDK version 5.2.3.85, Preslib 3.4), light characteristics text string is not displayed on sector lights when selecting “Light Char. Text”.

For all other lights than sector lights, this information is displayed. As an example, we can see information of the light character of the light in the upper left corner of the screen but not on the sector lights, which is the main aid for navigation in this area.

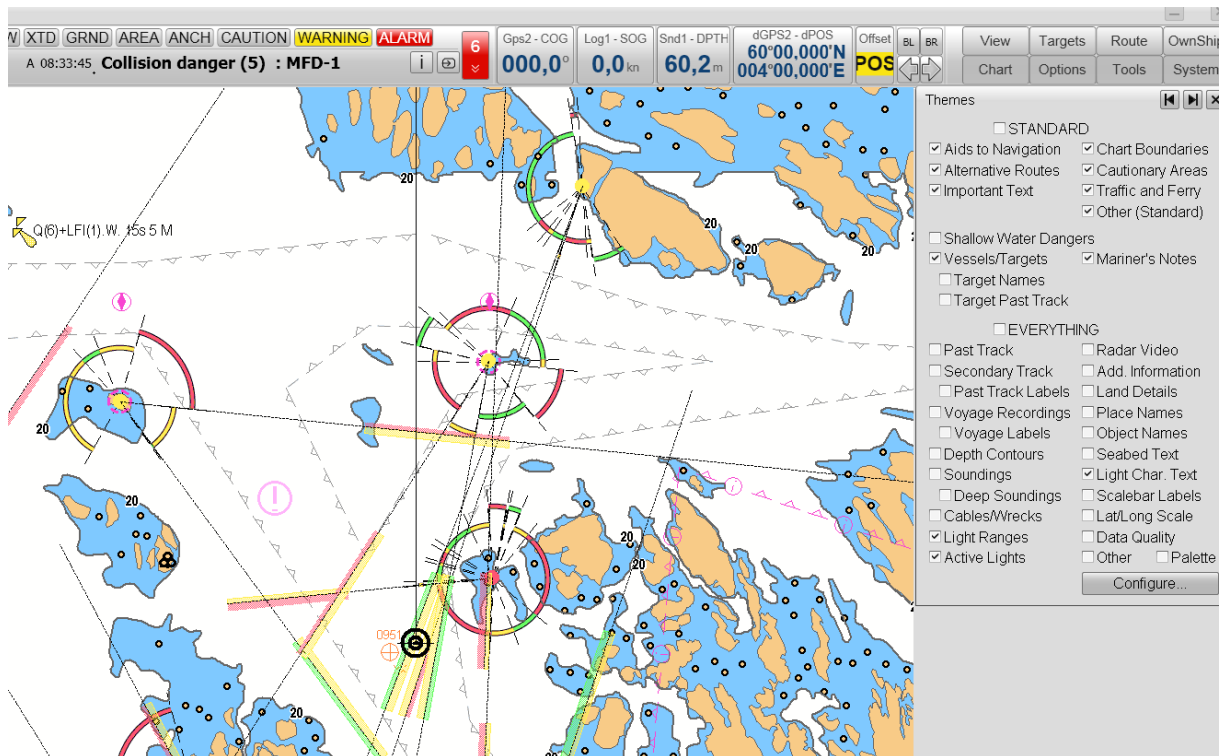


Figure 3: SDK version 5.2.3.85, Preslib 3.4. Light characteristics text, light ranges and active lights visualized

For mariners navigating using sector lights the information of the characteristics are **critical** and should be available to be displayed on the screen. Figure 3 illustrates the problem of separating the sector lights from each other when navigating in view of many sector lights. The character of the lights is the only way to determine the different lights.

The information of the sector light characteristics are not easy accessible as well. The next two figures show the steps the operator has to take to get information of the characteristics of the sector lights. Firstly, he has to double click on the light and then information of the object class "Pile" occurs (Figure 4). Secondly, he has to scroll down to "Light" and click on it, and then finally information about the character which is "Fl(1)5s." appears well hidden between other information (Figure 5). These operation steps are time consuming and could especially be difficult to carry out for operators on high-speed vessels navigating in rough seas.

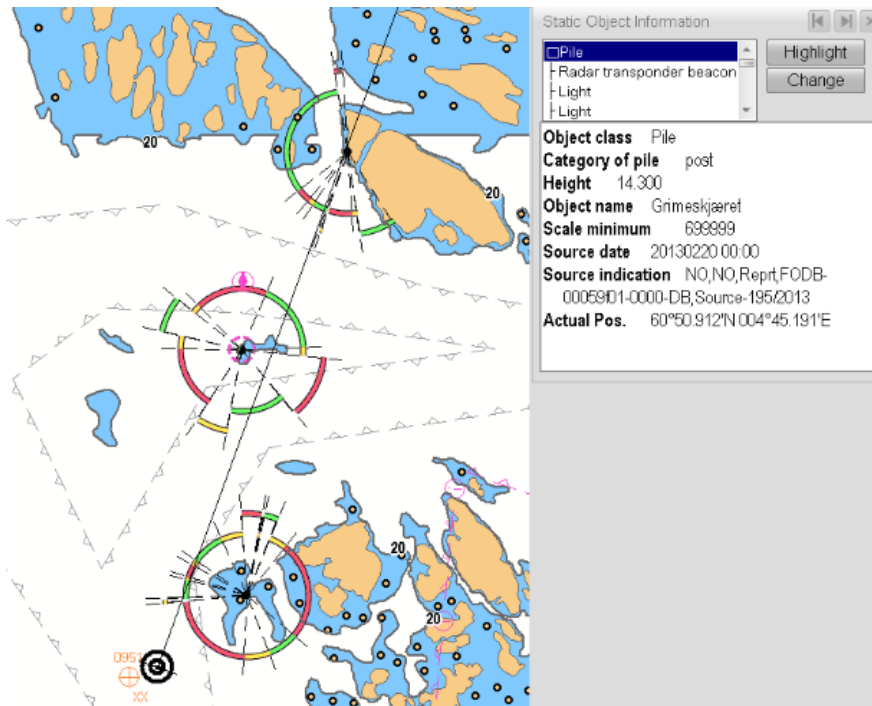


Figure 4: Pick report query - light characteristics

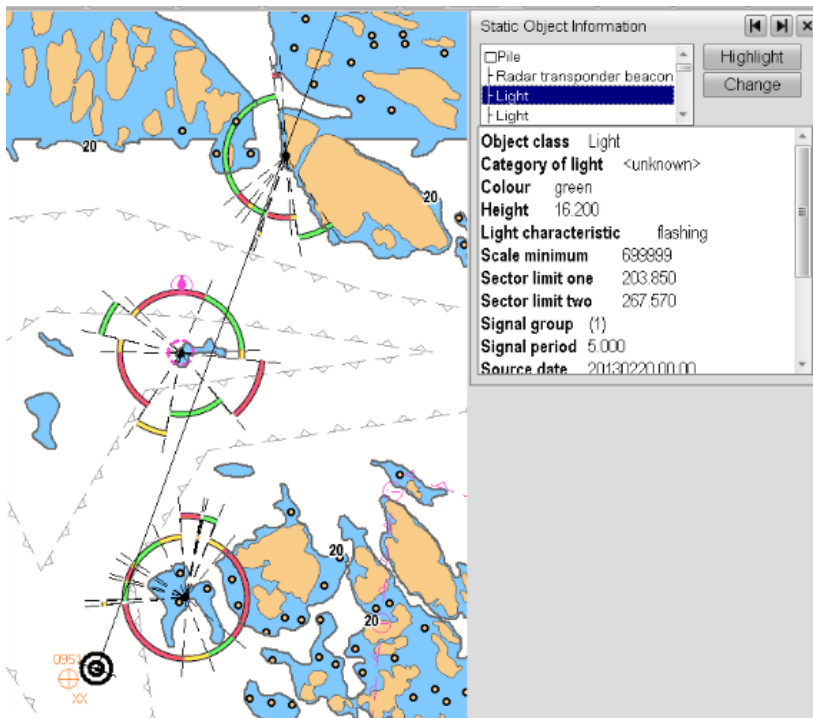


Figure 5: Pick report query - light characteristics

Preslib history

Investigating previous preslib versions indicate no change in the preslib itself in this matter through history. Within the LIGHTS05 CSP there has always been a statement (within parentheses) stating that *The LITDSN text string is not used for sector lights because it would cause clutter.* For preslib 3.4

and earlier versions, this sentence was within the LIGHTS05 diagram. After the rewriting of the diagram in version 4.0 the same sentence is now within the explanation.

In conjunction with preslib 3.4 IHO issued “ECDIS Data Presentation and Performance Check in Ships” in 2011. These checks contained several illustrations on what display to expect on a given test data set, one of them showing sector and non-sector lights:

3. When the display is zoomed in to an appropriate scale you should see the light sectors (1) and (2) and the light characteristics (3) exactly as shown in Figure 3:

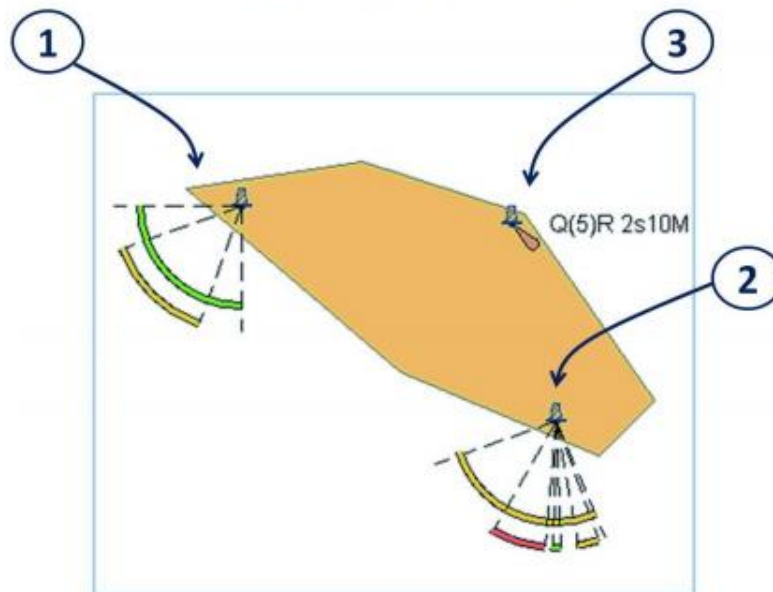


Figure 3 – Correct display of complex lights objects

Figure 6: Excerpt from Page 6 of ECDIS Check instructions

This has been interpreted so that the display should be exactly like this to be in conformance with preslib 3.4. No mentioning on adding more information to the display.

The proposal in this paper is to allow for an option, selectable by the mariner, to display the light characteristics also for the sectored lights. Being a separate option, it can also be turned off, to make the portrayal identical to the given example in the above check.

There is also a proposal to shorten the character string returned by the LITDSN function to reduce clutter

Conclusion

To ensure safe coastal navigation during darkness, the characteristics of the sector lights are crucial information for the navigator. This critical information must be able to display on the screen in a short text string by choice of the operator.

Only the required minimum information like “light characteristics”, “signal group” and “signal period” with no decimals should be included. By including minimum information of the characteristics, there will normally be no problem of clutter on the screen when the sector light character text is added.

If problems of clutter should occur, it is easy accessible for the operator to remove the information.

Actions requested of the ENCWG

1. Please consider this paper and bear in mind the impact on safe navigation.
2. Acknowledge the need for portrayal of light characteristics also for sector lights on the ECDIS screen, and make the necessary changes to allow an (optional) option in ECDIS to display light characteristics also for sectored lights.
3. Please also consider the proposed shortening of the portrayed characteristics text string (LITDSN) to only show “Light character”, “Signal group” and “Signal period” in order to reduce clutter.