

## Paper for Consideration by ENCWG

## [Depiction of light characters and object names]

<b>Submitted by:</b>	BSH (Germany)
<b>Executive Summary:</b>	Proposal for a readable depiction of light characters and Object names on offshore wind turbines and wind farms
<b>Related Documents:</b>	S-52 PresLib Ed. 4.0.1 Part I App. E, S-52 PresLib Ed. 4.0.1 Part I App. F S-57 Appendix B.1, Annex A – Use of the Object Catalogue (UOC)
<b>Related Projects:</b>	

**Introduction / Background**

The continuously increasing number of new wind farms in German waters implies a rising demand of detailed cartographic products for the navigation within the wind farms. Particularly for the purpose of an efficient accident management detailed paper charts and ENCs are essential.

During the development of the ENCs we encountered problems in the depiction of light characters. In the case of several LIGHTS at the same position we got overlapping and therefore unreadable light characters on the ECDIS. Maybe it is not a new problem. Against the background of a safe navigation within wind farms especially in emergency situations we should newly tackle that problem of the S-52.

In the same context we have to represent the object name of an offshore wind turbine and the object name of the wind farm.

**Analysis/Discussion**

Depending on the position of a wind turbine in a wind farm, the wind turbine is differently lighted. But all wind turbines have an additionally air obstruction light. In the following example a peripheral wind turbine has been encoded:

Wind turbine – master:

CATLMK = 19 (wind motor)  
CONVIS = 1 (visually conspicuous)  
OBJNAM = B 15

Navigational light:

LITCHR = 2 (flashing)  
COLOUR = 6 (yellow)  
SIGGRP = (1)  
SIGPER = 4  
SIGSEQ = 01.00+(03.00)  
VALNMR = 5  
HEIGHT = 16

Air obstruction light:

CATLIT = 6 (air obstruction light)  
COLOUR = 3 (red)  
HEIGHT = 72  
LITVIS = 2 (low intensity).

The area of the wind farm is encoded as offshore production area:

CATPRA = 9 (wind farm)  
OBJNAM = EnBW Baltic 1

The depiction of the light objects on four different ECDIS devices:



Figure 1



Figure 2

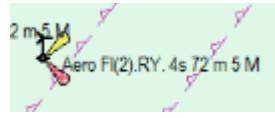


Figure 3



Figure 4

1. In figure 1 the both light characters overlay, in figure 2 and 3 the light characters have been mixed. Only in figure 4 the depiction of both light characters is readable.
2. For a LNDMRK with the attribute CATLMK=19(windmotor) the object name is currently not displayed. The S-52 shows the object name of a LNDMRK only if the attributes CATLMK=17(tower) and FUNCTN=33(light support) are defined.
3. Furthermore there is no definition in the lookup-up tables in order to show the object name of a wind farm.

## Conclusions

We propose following amendments in the Presentation Libraries:

1. Positioning of the text for the air obstruction light (CATLIT=6) always under the navigational light like in figure 4. The readable presentation of the text for a red air obstruction light could be:

135° \_\_\_\_\_TX('LITDSN';3,2,3;'15110';2,0,CHBLK,23).

2. Displaying the object name of a wind turbine:

"LNDMRK","CATLMK19CONVIS1","SY(WIMCON11);TX(OBJNAM,3,2,2,'15110',1,-1,CHBLK,26)","6","O","STANDARD","22220"

3. Displaying the object name of an offshore production area:

"OSPARE","CATPRA9","SY(CTYARE51);LC(CTYARE51);CS(RESTRN01);TX(OBJNAM,3,2,2,'15110',1,-1,CHBLK,26)","4","S","STANDARD","26040"

This detailed depiction of wind farms is intended to use in ENC's with scales 1:30.000 in maximum, but primarily in ENC's of larger harbour scale ranges. The ENC's should only cover the area of a wind farm or a cluster of several adjacent wind farms. In smaller scale ranges the wind farms are generalized and show less details.

We assume that the recommended changes will not negatively influence the "normal" navigation.

## Recommendations

Amendments in the S-52 PresLib Ed. 4.0.1 Part I App. E and S-52 PresLib Ed. 4.0.1 Part I App. F

## Justification and Impacts

For purposes of rescue operations in and around wind farms the mariner unquestionably needs all the information about LIGHTS, the name of the wind turbines and the name of the wind farm in a readable form directly on the display.

It is not sufficient to get the information via pick report by clicking on the object because in the mentioned cases urgent decisions along short distances must be made.

## Action Required of ENCWG

The ENCWG is invited to discuss the issue and to agree to this proposal.