**NIPWG xx-xx**

## Paper for Consideration by NIPWG

## Portrayal Concepts for S-126 (Physical Environment) Data – Status Report

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| ***Submitted by:*** | KHOA, Republic of Korea |
| ***Executive Summary:*** | Development status for portrayal concepts for the S-126 data and consideration of future direction |
| ***Related Documents:*** | NIPWG5-21.3 A New Approach for Extension of S-126 Physical Environment – Including Marine ForecastNIPWG5-21.2 S-126 (Physical Environment) – Status Report and Annex A |
| ***Related Projects:*** | S-126 |

## Introduction / Background

In NIPWG5, KHOA proposed a new direction to include ocean forecast information in S-126 Physical Environment. It was suggested to include forecast information and display the data on ENCs which could serve useful to mariners based on KHOA’s wide experience in ocean forecasting services. Following NIPWG5, KHOA was tasked to develop portrayal concepts for S-126 data. Thus Sample Portrayal Rule and SVG Symbol were produced from the result of 2017 as S-126 features and attributes were not set yet. The progress made so far and review of future direction will be discussed in this paper.

## Analysis/Discussion

Following NIPWG5, we developed the technology for the portrayal of S-126 data. Since S-126 does not currently have a clear Feature Catalogue concluded, we developed Portrayal Catalogue using the sample modelling and symbols produced for the additional forecast information proposal (NIPWG5-21.3). The target features are caution of tidal current, sea fog and eddy, and the existing designed symbol was reproduced in the form of S-100 SVG. S-100 SVG could not plot curves in Path items so the curves that comprise the symbol were digitized into a group of short lines. Rules are included to distinguish the level of phenomena in the sea fog and its cold/warm characteristics in the case of eddy. If S-126 data model is established in the future, it is intended to provide useful recognition experience to users by effectively reflecting the characteristics of the feature. For example, in the case of caution of tidal current, if the colour of the symbol is overlaid on ENC based on the values (3.5 knots) and risks (very dangerous) mentioned in the Pilots, users will be able to summarize the core content of the Coast Pilot during operation. Since Coast Pilots or nautical publications aim to inform mariners of data worthy of attention, this summarized description meets the original purpose.

The following consideration is required for future development of the portrayal concepts. First of all, the features that S-126 Product Specification contains must be finalized in order to develop Portrayal Rule and Symbols, which include and describe the characteristics of features on ENCs. S-126 is in a pre-development phase so if there is any difficulty in finalizing features, KHOA welcomes receiving a list of priorities.

According to the list of feature priorities, research and survey on commonly used symbols are needed to make symbols and the following roadmaps are to be considered:

1. To create completely new symbols: All new forms of symbols, such as the symbols introduced in NIPWG5-21.3, have the advantage of making a clear distinction between S-126 products’ data and existing ENC data when they are overlaid to ENCs.
2. To use commonly used symbols: The advantage of using traditional symbols is that it is easier to characterize symbols for existing users who are already familiar with them. Of course, completely new symbols would be needed, if the symbols in common use do not exist. However, in this case, symbols would be produced similarly to the symbols generally used.

In addition, there are physical phenomena that seem reasonable to express in line and area, not in point, depending on the features, and the importance of the data (e.g. areas where tidal currents are very fast, areas where freezing is frequent). The method to overlay significant information summarized from original text data to ENC symbols will be considered in the development process. Also, it will be useful to display original data in the ECDIS console if users wish to check the text data. Additionally, KHOA plans to analyze the Korea Coast Pilot in addition to the publications analyzed by the existing S-126 Project Team during the development period and the results will contribute to the Team.

If the portrayal concepts are accepted, each feature will have proper attribute to describe its characteristics. Unlike other products that only display the existing values, the completed S-126 product will be independent because it will have special features that characterize the phenomenon. It will also be of great help in producing the Coast Pilots and maintaining contents by displaying a paragraph from the Pilots on ECDIS console and in making the Pilot by some document preparation system.

## Conclusions

S-126 is currently working on a selection process of proper features through analysis of the Coast Pilots. In order to express the data effectively after completing the data modelling, the Portrayal Rule and symbols that reflect the characteristics of each feature will be produced. Since it could be used 1) for overlaying on ENCs and console, 2) for producing printable publications or web-based documents after the completion of S-126 Product Specification, data modelling of S-126 would be implemented with all these considerations in mind.

## Action Required of NIPWG

The NIPWG is invited to:

a. Note this paper and provide feedback and guidance for further work