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| From: e-NAV Committee | e-NAV9/output/19 |
| To: EEP Committee  ANM Committee | 18 March 2011 |

**Liaison Note**

**The electronic Pelorus (ePelorus)**

# Introduction

The e-Navigation Committee has noted the paper on Tools for integrating the Mariner’s use of traditional navigation techniques submitted to e-NAV3 by the Australian Maritime Safety Authority (AMSA) and The Nautical Institute (NI), and would make the following observations regarding the electronic Pelorus concept.

It is considered that the development of the ePelorus would significantly contribute towards a stated e-Navigation aim of encouraging the bridge watchkeeper to make maximum use of visual observation to ensure ship safety, and thereby ensure that mariners remain engaged in the process of navigation.

The two primary roles of the ePelorus would be to plot lines of position from known objects in order to augment position fixing; and to assess relative bearings to other ships in order to indicate risk of collision. The traditional pelorus has been a proven and highly effective tool for hundreds of years and needs to be adapted for the electronic age to enhance e-Navigation.

The ePelorus may take the form of a traditional pedestal mounted gyro repeater with electronic bearing line capture functionality. Alternatively, it could be a separate digital video camera unit mounted on the wheelhouse or similar high point, or a portable binocular unit with electronic sensing of the unit position and attitude within the wheelhouse area.

# Adding Value to Aids to Navigation

The IALA NAVGUIDE defines Aids to Navigation as a device or system external to the vessel that is designed and operated to enhance the safe and efficient navigation of a vessel and/or vessel traffic. An electronic pelorus will add value to the AtoN infrastructure, by increasing the range of recognition of Physical AtoN, improve the ability to positively identify such aids, establish LoP in near real time, provide the ability to cross-check electronic navigation aids; improve situational awareness, and provide an auditable record of due diligence.

# Potential functionality

The proposed functionality could be expanded to include:

* The data captured by triggering the ePelorus (time, position, bearing) should be viewable on a navigation display, and allow the user to allocate a target name and information.
* The electronic bearing line should be selectable for viewing on other displays, including ECDIS and radar. For navigational objects e.g. AtoN, the user should have the capability to move the (non-shipboard end of the) displayed line in ECDIS and allocate it to a charted object, to provide a cross check of position. This is the same concept as radar ‘tie point tagging’ as per the input paper.
* The onboard database could also be used to indicate cues of known visual targets onto a visual display. Taking this idea further would allow the provision of enhanced reality e.g. using an input from the vector chart to display a warning of shallow areas on the visual display.
* Rangefinder functionality using active laser or passive (e.g. image processing) means could also be incorporated.
* Visual images from the ePelorus may be able to be enhanced with low-light or infrared technology. This is considered to have particular benefit in the SAR situation. Reference to the onboard database could provide help in identifying targets or geographic features to the watchkeeper in low visibility conditions.
* Automatic recognition of AtoN daymark characteristics or light character, based on the onboard database.
* Voice-recognition functionality could be used to allocate a target name (e.g. “Lighthouse" or “Fishing boat”) whilst pressing the trigger.
* The plotting of lines of position or relative bearing to other ships also creates a needed auditable record of human intervention that is required under the ISM Code, and by vetting inspectors such as PSC and SIRE.

# Implementation

The development and implementation of basic ePelorus functionality is not considered to be technically difficult. A common message standard would require to be defined, and the interface with displays (radar, ECDIS) would require to be established.

# Recommendations

The ePelorus concept is consistent with current thinking on the development of e-Navigation. The EEP and ANM Committees are invited to explore the technical and facilitation issues associated with making the ePelorus reality.

IALA National and Industrial Members are encouraged to support research into the functionality and implementation required to make the ePelorus a value-added tool for aids to navigation and a user-friendly component of e-Navigation.