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| From: e-NAV Committee | e-NAV8/output/15 |
| To: IALA Council | 24 September 2010 |

Briefing Note

Redundancy of position fixing

# Background

The IMO (in MSC 85/26) has described the need for resilience of e-Navigation: ‘e-Navigation systems should be resilient and take into account issues of data validity, plausibility and integrity for the systems to be robust, reliable and dependable. Requirements for redundancy, particularly in relation to position fixing systems should be considered.’

Trials in the UK have demonstrated the vulnerability of GNSS to deliberate jamming and events have shown that there is a significant risk of disruption to GNSS through jamming, as well as unintentional interference, problems with satellites and signal propagation disturbances. These issues are detailed in IALA Recommendation R-129 on GNSS vulnerability and mitigation measures.

# IALA’s role

IALA’s World Wide Radio Navigation Plan was presented at IMO NAV 56 and it was noted ‘that one of the key elements of e-navigation was a robust electronic position, navigation and timing system with redundancy.

This topic was discussed at length in the e-Navigation Working Group at NAV 56 and it was decided that information provided on eLoran ‘could be used as input for the gap analysis along with other alternative solutions that might be available’.

As the international body representing providers of maritime radio-navigation systems, IALA will be expected to offer guidance to IMO on how best to provide the resilient position-fixing needed for e-Navigation

# Related developments

NAV 56 approved revisions to Resolution A.953(23) on the World Wide Radio Navigation System. The changes simplify the requirements and set a more achievable level for continuity, which will make it possible for administrations to obtain recognition for systems such as DGNSS under the WWRNS.

An input to MSC has been proposed for a new work item in NAV to prepare performance standards for integrated, multi-system navigation receivers. This will facilitate and expedite the introduction of new radio-navigation systems and use of combinations of systems.

In both these cases the submissions are made by groups of national administrations, because these carry most weight in IMO. However, the preparation and coordination comes from IALA members.

# Action proposed

The e-Navigation Committee plans to revise and update Rec. R-129, on GNSS vulnerability and mitigation measures. It is also proposed that a report be prepared in time for submission to NAV 57 (June 2011) setting out the options for reducing the risk of reliance on a single system for position, navigation and timing inputs.

These options will include not only terrestrial navigation systems but also measures for reducing the vulnerability of GNSS, radar position-fixing and inertial systems. IALA members are encouraged to contribute information and results of trials and studies that can be used in the preparation of such a report, to be collated at e-NAV9 in March 2011.