**Executive Summary**

IALA Guideline No. ####

On Technical Features and Technology Relevant for Simulation of AtoN

Edition 1, May 2013

The Guideline is proposed to become a technical supplement to IALA Guideline No. 1058 “On the Use of Simulation as a Tool for Waterway Design and AtoN Planning Edition 1 (December 2007)”.

Development took place during ANM committee meetings 16 until 19, supplemented by an inter-sessional 2-day workshop prior to ANM 19. Recently, at ANM 20, a final review focused on readability, grammar and consistency, involving end-user representatives.

The core part of the Guideline provides technical information on simulation systems, providing end-users with a discussion on simulator capabilities and limitations when such systems are used for research, design and testing of AtoN.

The Guideline covers the software and hardware elements of a marine simulator system where AtoN play a major role, including visual, radar, sound and radio transmission of AtoN for navigation.

Currently, the most challenging element is visual simulation. Providing visual images for observation and detection of AtoN during night and day time, at sufficient resolution, light intensity and contrast pushes the capability of modern projectors and monitors to the edge and even beyond. Understanding the human eye, the physics of light, as described in many IALA Recommendations and Guidelines, are prerequisites for developing adequate simulation models. Relevant phenomena, for consideration as part of a model, are referred to and described in some detail.

References to radar performance standards forms the basis of the section on radar simulation and modelling. Proper sizing of AtoN, for radar observations, can be studied using radar simulation.

The modelling of sound regarding sounds made by AtoN is discussed and how simulated sound can be presented to the user in a way consistent with real-time bridge situations, where ambient noise and environmental conditions vary widely.

Radionavigation, radio and presentation systems, such as ECDIS, are discussed and includes references to the relevant IMO and IEC documentation. The IMO’s e-Navigation concept is presented and the idea of interfacing, integrating, developing and testing of existing and new systems and services on simulators is discussed.