MARINE ELECTRONIC HIGHWAY IN STRAITS OF MALACCA AND SINGAPORE

Development of Supporting Element for Future & Sustainable Operation

Submitted by Indonesia

SUMMARY	
Executive Summary:	This document proposes approaches for sustainable operation of the MEH-SOMS and to ensure its readiness for future expansion and integration with other systems for the enhancement of safety navigation and marine environmental protection in the Straits of Malacca and Singapore
Proposed solution: Action to be taken:	paragraph 26 and 27 paragraph 31, 32

Background

- 1 The Straits of Malacca & Singapore
 - .1 The choke point of 650 NM Straits of Malacca and Singapore are characterized with a highly congested maritime traffic lanes and environmentally-rich coastal areas. According to several sources, traffic density transiting navigation in the Straits of Malacca and Singapore in now approaching 100.000 vessels per annual. In addition, there is a high level of local traffic engaged in trade and fishing across the Straits.
 - .2 Although the Straits are shallow, hazardous to navigation and characterized by narrow channels, irregular tides and shifting bottom topography, they are the preferred international route for maritime trade due to the presence of services and active ports and the fact that this route provides the shortest one to connect the Far East with the Indian Ocean and the Middle East compared with other routes.
 - .3 Oil tankers trading between the Middle East and the Far East, transit through the Straits of Malacca and Singapore would save approximately 1.000 NM or equivalent to three days' steaming if compared with the two alternative routes, i.e. Lombok-Makassar and the Sunda Straits.
 - .4 The Straits of Malacca and Singapore is a zone of high biodiversity, rich in marine fauna and flora that is characteristic of a tropical estuarine environment. The abundance of sea grass beds, mangrove swamps, coral reefs and wetlands enrich the associated coastal marine environment, which also acts as a stopover point for migratory birds on seasonal transition. This environment serves as a unique heritage to the world.

2 The three littoral States of Indonesia, Malaysia and Singapore consistently demonstrate strong commitment to navigational safety and environmental management which was substantiated by the ratification of the 1982 UNCLOS, SOLAS 1974 and MARPOL 73/78 and other IMO Conventions dealing with navigational safety, pollution prevention and control.

3 Although maritime safety infrastructures and regulatory mechanisms that have been established in the Straits have reduced the frequency of ship collisions, groundings and oil spills, occasional incidents still occurred in recent years and some of these incidents caused oil pollution. An innovative approach to improve the management of maritime traffic and marine environment protection in the Straits could ameliorate these impacts and enhance the carrying capacity of the Straits for various uses and activities.

4 In 1998, the three littoral states jointly commissioned a mandatory Ship Reporting System (STRAITREP) for the most congested 260 NM section of the Straits from One Fathom Bank to the Singapore Strait, which combines radar and automatic ship identification and tracking. However, the threat of collisions and groundings and of consequent environmental damage is still significant and, with rapid traffic growth, is increasing.

Development of Marine Electronic Highway

5 The concept of Marine Electronic Highway was discussed for the first time in GEF/UNDP/IMO Regional Program for the Prevention and Management of Marine Pollution in the East Asian Seas in1996, to address navigational safety and trans-boundary marine pollution issues.

6 Memorandum of Understanding on the Development of Regional Marine Electronic Highway Demonstration Project for the Straits of Malacca and Singapore (MEH-MOU) was further signed by Indonesia, Malaysia, Singapore and the International Maritime Organization during Jakarta Meeting in September 2005.

7 Subsequently, a Memorandum of Arrangement for the Implementation of Specific Activities of Article IV of MEH-MOU was also signed by Indonesia, Malaysia, Singapore, International Hydrographic Organization, International Association of Independent Tanker Owners and International Chamber of Shipping.

8 Global Environment Facility Trust Fund Grant Agreement between the Republic of Indonesia and International Bank for Reconstruction and Development that was signed on 7 July 2006 marked the commencement of the implementation of Marine Electronic Highway Demonstration Project.

9 IMO incorporation with Republic of Korea supported the development of MEH Data Centre in Batam which was further handed over by the Secretariat General of the IMO on 3 August 2012 in Batam.

10 The three littoral states have further carried out some efforts in order to upkeep the continuity of the MEH service to the user i.e. through the establishment of MEH Backup Data Centre in Malaysia and Singapore.

General Features and Objectives

11 MEH-SOMS links shore-based marine information and communication infrastructure with the corresponding navigational and communication facilities aboard transiting ships, while being capable of incorporating marine environmental management systems.

12 MEH-SOMS is a marine information and infrastructure system that enable the integration of marine environmental management and protection systems (EMPS) and state-of-the-art marine navigation technologies using the innovative and significant advances in navigational safety and protection of the marine environment, incorporating the latest available technologies and 3-dimensional hydrodynamic model for oil and chemical spills trajectory and fate models including spill damage models as well as the linkage to coastal and ocean monitoring systems, and environmental impact assessment and sensitivity mapping.

13 Backbone of the MEH-SOMS is a precision navigation system that utilizes a network of Electronic Navigational Charts (ENCs) in conjunction with Electronic Chart Display and Information Systems (ECDIS). Differential Global Positioning Systems (DGPS) and Automatic Identification Systems (AIS).

14 The system allows for an integrated digital navigation, which enables the provision of vital marine information such as tides and current to ships on a "real-time" basis and enables ships to navigate accurately under the overall traffic management system of the Straits of SOMS

15 The overall objectives are to enhance maritime services, improve navigational safety and security and promote marine environment protection and the sustainable development and use of the coastal and marine resources of the Straits' littoral States, Indonesia, Malaysia and Singapore.

16 The system will further enhance the transparency of navigation and overall traffic control and will provide a basis for intensive monitoring of the real-time situation of navigation, which would help in the efforts of relevant countries to reduce piracy and armed robbery in the Straits and enhance maritime security throughout the region.

General System Overview

17 The geographic boundary of the MEH Demonstration Project extends from One Fathom Bank in the Malacca Strait to Horsburgh Lighthouse in the Singapore Strait, including adjacent coastal provinces/states of Indonesia, peninsular Malaysia and Singapore. This covers the whole traffic separation scheme for the Straits of Malacca and Singapore.

18 Initial architecture of the MEH that was developed under the demonstration phase, has capability of providing and delivering weather information (tide, current, temperature, wind and humidity), ship tracking and positioning, marine environment (mangrove, coral reef, marine protected area, vessel accident place, fishery areas) to the participating vessel through www.mehsoms.com, was comprise of:

- .1 MEH Data Center in Batam
- .2 MEH Systems in Indonesia, Malaysia and Singapore
- .3 Weather Sensors and Tide Gauge at One Fathom Bank, Pulau Undan, Tanjung Pagar, Raffles, Horsburgh, Tanjung Medang, Hiyu Kecil and Nongsapura.
- .4 AIS Base Station at Batam and Tanjung Medang
- .5 Oil Spill Modeling Software
- .6 Differential Global Positioning System (DGPS) at Dumai
- .7 Ocean Data Buoy at the entrance of Phillips Channel

19 Further development carried out by the three littoral states, improved the reliability of the system and extended the general architecture of the MEIH-SOMS to the followings:

- .1 MEH Data Center in Batam
- .2 MEH System in Indonesia, Malaysia and Singapore
- .3 MEH Back-up Data Center in Malaysia and Singapore

- .4 IP Detector in Batam
- .5 Weather Sensors and Tide Gauge at One Fathom Bank, Pulau Undan, Tanjung Pagar, Raffles, Horsburgh, Tanjung Medang, Hiyu Kecil and Nongsapura.
- .6 AIS Base Station at Batam and Tanjung Medang
- .7 Oil Spill Modeling Software
- .8 Differential Global Positioning System (DGPS) at Dumai
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Potential Role of MEH-SOMS

20 MEH-SOMS is an integrated marine information system that utilizes information-system based technology so that it is open for further expansion as well as integration with other data, communication and information systems.

21 MEH-SOMS is a strategic modality for the future improvement of safety navigation and marine environmental protection in regard with current international concerns and developed issues such as the development of e-Navigation, under keel clearance real time monitoring, global single windows, higher accuracy of positioning, navigation and timing, shore based (cloud) information center for the benefit of navigating vessel and shipping industries, and in particular the increasing of marine traffic and activities.

Challenges

22 Intensify the operation of the MEH-SOMS and the use of services it provides in order to gain more experience and lesson-learnt that could strategically reinforce the foundation for future optimization of the MEH-SOMS.

23 Sustainable operation and improvement of operational performance of the MEH-SOMS has to be managed in order to assure its readiness for future expansion, integration and its role as an embryo for the future adopted safety of navigation and marine environmental protection technologies in the Straits.

24 Gaps on the implementation of sustainable operation and performance improvement of the MEH-SOMS must be identified, analyzed and addressed progressively.

25 Gaps on the preparedness for expansion of service and integration with other technologies and systems must be timely identified, analyzed and addressed appropriately.

Proposed Solutions for Current Situation

At the first stage, the initial efforts to enable sustainable operation and improvement of operational performance of the MEH-SOMS would be accomplished through:

- .1 Capacity building of management level officer, operator and technicians to meet the required skills, knowledge and visions according for the successful operation, maintenance and organization of the latest technology and systems used in the MEH-SOMS.
- .2 Development of Standard Operation and Procedure of the MEH-SOMS
- .3 Development of Manual of the users of the MEH-SOMS

- .4 Standardization for system architecture, applications, database and data exchange interface among the three littoral states taking into account the presentation of the information onboard the ships and the future development, expansion and integration of the MEH-SOMS with other systems.
- .5 Invite voluntary or recommendatory participation of navigating vessels within the coverage of the MEH-SOMS data transmission
- .6 Exploration of the most possible, affordable and reliable data transmission network for the entire area of the waters in concern to allow communication and data transmissions from shore to ships and vice versa.

Methods

27 The three littoral states with the support of user states, users and stake holders, under the spirit of Article 43 of the UNCLOS, conduct possible efforts to implement the solutions for the currently identified situations, among other through:

- .1 Management, operator and technical trainings
- .2 Study and formulation of standard, manual and SOP
- .3 Study and formulation of the Straits network for transmission of data, information and communications
- .4 Formulation of concept for effective implementation of MEH through the continuous participation of ships, taking into account the Memorandum of Arrangement between three littoral states, IHO, INTERTANKO and ICS that was signed in 2006.

Benefits

28 Sustainable and reliable operation, effective implementation and optimized utilization of the MEH-SOMS

29 Progressively actuate and more guarantee on the effective and successful implementation of any high-technology based system for the improvement of safety navigation and environmental protection in the Straits

30 Enhanced preparedness of system and human resources for future implementation of advance technology to support the safety navigation and environmental protection for the international navigation in the Straits.

Action Requested to the Cooperation Forum

31 The meeting is requested to deliver views and opinion on the proposal for further consideration and decision by the TTEG on its way forwards.

32 Interested user states, users and stake holders of the Straits are invited to participate and to contribute in such ways that possible according to the provision of the rule and procedure of the Cooperative Mechanism, to materialize the agreed way forwards.