



MARITIME SAFETY COMMITTEE  
80th session  
Agenda item 5

MSC 80/5/5  
2 March 2005  
Original: ENGLISH

## MEASURES TO ENHANCE MARITIME SECURITY

### A practical system for implementing long range identification and tracking of ships (LRIT)

Submitted by the International Mobile Satellite Organization (IMSO)

#### SUMMARY

<i>Executive summary:</i>	This document proposes a practical system for implementing long-range identification and tracking of ships (LRIT)
<i>Action to be taken:</i>	Paragraph 8
<i>Related documents:</i>	MSC 79/23 paragraphs 5.65 to 5.75, COMSAR 9/WP.6 and MSC 80/3/3

## 1 Introduction

1.1 The Maritime Safety Committee (MSC), at its seventy-eighth session in May 2004, noted the view of COMSAR 8 that "... considerable work needed to be done before the COMSAR Sub-Committee will be in a position to advise the Committee on the issue of LRIT".

1.2 MSC 78 "noted that if the Organization was to assume any role in relation to the LRIT, there would be a need to develop and agree a legal, administrative and financial framework for its involvement ..." and "agreed that the Organization should not be involved in collecting, storing and disseminating the LRIT information".

1.3 MSC 78 therefore "... instructed the COMSAR Sub-Committee to develop and propose a robust inter-governmental oversight scheme for the approved LRIT providers ...".

1.4 Discussions in IMO have included reference to a possible role for IMSO in relation to the intergovernmental oversight of a future LRIT system. This paper therefore proposes a practical system for implementing LRIT for ships world-wide, including a robust inter-governmental oversight scheme such as could be carried out by IMSO, and which could be brought into operation within a reasonably short period of time.

1.5 The proposed system takes account of formal and informal discussions at COMSAR 9 and includes elements of similar proposals tabled at that session. In addition, it is understood that this proposal is consistent with the trial system established by the Marshall Islands, some results of which will be reported to the Committee at its present session.

For reasons of economy, this document is printed in a limited number. Delegates are kindly asked to bring their copies to meetings and not to request additional copies.

1.6 During consideration of the issue at COMSAR 9, several delegations requested that this paper be made available to the Committee at its next session.

## 2 Basic Considerations

2.1 In implementing LRIT for ships, some basic considerations must be taken into account. The system should:

- .1 be global in scope;
- .2 track all ships over 300 tgt on international voyages, wherever they are, outside the coverage of shore-based AIS;
- .3 provide information to those Administrations authorized to receive it, e.g:
  - the ship's flag State;
  - the port State towards which the ship is sailing;
  - the coastal State through whose waters the ship is sailing; and
  - Search and Rescue (SAR) authorities or any others authorized by IMO to receive LRIT data;
- .4 be capable of providing Administrations and others with *only* the specific information they are entitled to receive;
- .5 protect the privacy of the information reported by participating ships whilst it is in transit from the ship to the system, within the system and whilst it is being transferred to authorized recipients;
- .6 encourage secure handling of the data by authorized recipients;
- .7 be defined and mandated by IMO, who could appoint IMSO to oversee the practical daily operation of the system;
- .8 be specified and overseen by an inter-governmental organization such as IMSO in co-operation with IMO, service providers, Administrations and ship owners/managers;
- .9 make maximum use of existing expertise in the provision of commercial ship reporting services;
- .10 be financially self-supporting; and
- .11 be capable of implementation within 18 months of the MSC taking a decision to proceed.

## 3 A practical solution

3.1 A practical solution to the provision and rapid implementation of LRIT is outlined in figure 1.

3.2 The proposed service allows:

- Administrations

- .1 to mandate a basic LRIT system for use by all ships, in the knowledge that the equipment can be provided on board at no additional cost to the ship owner, the data can be collected and distributed in a secure and private environment, and the entire system can be operated at minimum cost to Administrations;
- .2 to receive LRIT data in an assured way to meet the needs of homeland security, maritime safety and environmental protection;
- .3 to receive reports at pre-determined time intervals, and remotely instruct ships' LRIT equipment to make more frequent reports under certain circumstances if required; and
- .4 to control the operation of the LRIT system in a cost-effective and efficient way.

- Ship owners and Managers

- .1 to choose from a number of approved LRIT service providers (the service approval process would be undertaken by IMSO);
- .2 to use any suitable communication system for reporting (communication system approval would form part of the service approval) and use their existing ships communications equipment (eg Inmarsat C) to meet the LRIT requirement at no additional equipment cost, if they so choose;
- .3 to opt to purchase additional, value-added services from their LRIT service provider, as many choose to do today;
- .4 to provide only the internationally mandated minimum position reports if they choose to do so.

3.3 The diagram shows the international LRIT database operated by the LRIT Data Centre and mirrored in three locations world-wide. It is initially envisioned that these locations could be in Australasia, Europe and the Americas. This arrangement has been adopted to ensure that the database is robust and able to withstand equipment failure, natural disaster or terrorist attack. All data would be lodged at each of the three locations. Similarly, data could be input to and output from the database at any of the three locations. The database would be available 24-hours per day.

3.4 The diagram shows IMSO acting as the international LRIT Data Centre as well as performing a number of other functions as the LRIT Co-ordinator. This structure has been proposed after extensive consultation with existing ship reporting and communications service providers and ship owners organizations. It takes account of acknowledged potential difficulties in accounting and paying for the service, as well as certain practical requirements for controlling access to and ensuring the privacy of data within the system.

3.5 Other functions which are necessary and it is proposed could be performed by IMSO include: negotiation of costs with service providers, approval of service providers, establishment of operating standards for individual elements of the service, accounting and billing functions, quality control through oversight of service providers, security and risk management, and registration of approved points-of-contact within Administrations.

3.6 If IMSO were to accept such a role, it would consider adopting a policy of outsourcing the provision of major elements of the service, in particular the operation of the computers and relevant communications links, in order to make best use of existing expertise in the marketplace and keep operational costs to a minimum.

#### **4 Data Protection**

4.1 The latest draft of the proposed amendment to SOLAS chapter XI-2, Special Measures to Enhance Maritime Security, produced at COMSAR 9, specifically recognizes the importance of data security in regulation 3.6, which requires that:

*“... the information transmitted by the ship is protected during transmission from the ship, from unauthorized access or disclosure.”*

In addition, draft regulation 6 requires Contracting Governments to:

- “1. recognize and respect commercial confidentiality and sensitivity of any information they may receive; and*
- 2. protect the LRIT information they may receive from unauthorized access or disclosure ...”*

4.2 It is vital that the communications links and databases also provide suitable protection for the data passing through the LRIT system. It is not considered essential, and could prove prohibitively expensive, to require encrypted data communications from ship to shore. The nature of modern satellite-based data communications does not make it easy to intercept such data messages and it may not be practicably possible to provide for such a high level of protection that these messages could never be intercepted. However, once the messages reach the shore, they should be protected in transmission to the database, within the storage medium and during retrieval. The use of public key encryption methods should be considered in these cases.

4.3 It will not be possible for IMO or the LRIT Co-ordinator to control the way that data is protected once it is passed to those who are entitled to receive it. But, given the type of contractual structure envisaged in this paper, it will be possible for the LRIT Co-ordinator to include provisions relating to the protection of the data in the contracts that will be concluded between the LRIT Co-ordinator and Administrations wishing to receive data. Such contracts could include penalties for the misuse of data by those Administrations.

#### **5 Financial Considerations**

5.1 IMO has already decided that LRIT services should be provided at no cost to the ship. The costs will therefore have to be borne by the Administrations using the data.

5.2 Precise costs cannot be estimated at this stage, but it can be anticipated that costs will arise in the proposed system as follows:

- .1 Provision of equipment on board ships.  
Existing SOLAS ships will almost invariably be fitted with Inmarsat C for reception of Maritime Safety Information and to meet other requirements of the GMDSS. Those terminals can be used to provide the basic reporting functions required by the LRIT service at no extra cost. Other ships may have to fit additional equipment, but will be able to choose from a range of communication systems offered by their LRIT service provider. Some ships are already fitted with special equipment for ship reporting purposes.
- .2 Data collection and communication costs.  
In accordance with IMO's decision, these costs must not fall upon the ship. They will be borne by the LRIT Tracking Service and may be passed on to the international Data Centre operator (IMSO), who will recover the cost by selling the data to authorized official entities.
- .3 International database operating costs.  
These costs can be minimized by outsourcing the ownership and operating of the computers. One option would be to sub-contract the operation of the databases to so-called "tele-houses", which are businesses established in many parts of the world specifically to provide computer capacity for the internet and other business uses. Such tele-houses not only lease computer capacity but also maintain the computers and a wide range of broadband and other specialist inter-computer communications links. An alternative solution would be for the system to utilize computer capacity provided by governments, either free or at cost.
- .4 System management and oversight costs.  
The need to minimize the cost of system management and oversight also points to the desirability of outsourcing as much of the operation as possible. This allows for a process of competitive tendering. However, certain costs are unavoidable. IMSO has estimated that it should be possible to manage and oversee the LRIT system with an additional staff of 4 professional officers at United Nations P4 level (1 computer expert, 1 legal officer, 1 accountant and 1 other) plus up to 4 administrative assistants (United Nations G2/3 level). These personnel would need office space and equipment, plus a travel budget to enable them to travel to negotiate contracts, oversee contractors and liaise with client States.
- .5 System operating costs.  
The primary source of funds for operating the LRIT system is expected to be the countries choosing to receive data from the database. These countries will be expected to pay for the data they receive, on a "per report" basis. It is possible that, in order to encourage an early positive cash-flow through the system, IMSO would offer discounts for early or pre-payment. Clearly, a large element of pre-payment will reduce the size of the fund needed to establish the system. Contracts covering the sale of data to Administrations will have to include provisions for suspension of supply in the case of non-payment of fees.
- .6 System set-up costs.  
It is difficult to estimate system set-up costs at this early stage, but it would certainly be necessary to establish a fund to enable the oversight body to establish the system on a global basis. One early calculation has indicated that a figure of between half and one million US dollars could be sufficient. This fund could be established from the budget of IMO, or by contributions from Member States, or

through soft loans from some Member States, or by borrowing on the open market. The money for loans could be repaid from operating charges over a period of years.

## **6 Relationship between IMO and IMSO**

6.1 The setting up and operation of an international LRIT system is a new and complex matter. It will require careful consideration and definition of the relative tasks and responsibilities between all those who contribute to the overall system. It is proposed that most of the relationships in the system will be contractual ones. Following this model, it is likely that the complexity will be most effectively dealt with by the development of an operating agreement between IMO and IMSO, which could define the joint responsibilities for setting up and operating the international LRIT system, the deliverables expected and develop the concept of IMSO acting as an operating agency for IMO in this area.

## **7 National Vessel Monitoring Systems**

7.1 Any country that wishes ships on its own register to report via its existing national vessel monitoring system (VMS) could continue to receive reports in this way. However, this would have to be in addition to a ship's obligation to report to the international LRIT system via an LRIT Tracking Service. The co-ordination of reports to other countries in their roles as coastal or port states, and the need to ensure global availability of LRIT reports for search and rescue or environmental purposes would make this essential. National VMS that met relevant international requirements for LRIT Tracking Services in respect of certain ships could provide information to the international LRIT system on that basis.

## **8 Action requested of the Committee**

The Committee is invited to:

- .1 consider the above proposed practical system for implementing LRIT for ships;
- .2 adopt a system of Long Range Identification and Tracking for ships based on the recommendations in this paper; and
- .3 request IMSO to undertake the role of operating the LRIT databases and overseeing the system, as defined by IMO.

\*\*\*

ANNEX

