

REVIEW AND AUDIT

PROVIDING SAMPLE AUDIT DATA TO THE LRIT COORDINATOR

GUIDANCE NOTES FOR LRIT DATA CENTRES AND THE INTERNATIONAL LRIT DATA EXCHANGE

1 General

1.1 This Circular provides guidance on the provision of LRIT sample data to the LRIT Coordinator for audit and review purposes.

1.2 These notes are relevant to all LRIT Data Centres (DC) and the International LRIT Data Exchange (IDE) whose LRIT performance will be reviewed and audited by IMSO as the LRIT Coordinator in accordance with the provisions of section 14 of the Revised performance standards and functional requirements for the long-range identification and tracking of ships (Revised performance standards) adopted by IMO resolution MSC.263(84).

1.3 These guidance notes should be read together with;

- MSC 86/26/Add.1, Annex 6, Principles and Guidelines Relating to the Review and Audit of the Performance of LRIT Data Centres and of the International LRIT Data Exchange; and
- Standards and Procedures for Auditing the Performance of LRIT Data Centres and the International LRIT Data Exchange (Standards and Procedures)

2 Regulatory requirement

¹ Since the IMSO Circular LRIT/004/2010 was originally issued on 20 November 2009, a number of changes have been made for better interpretation. Changes are shown in bold and side-lined.

2.1 In accordance with the requirements of the Revised performance standards, all LRIT DCs and the IDE are subject to audit and review by the LRIT Coordinator on an annual basis.

2.2 All Data Centres are required to: “ ... archive LRIT information from ships which transmit the information to the centre, for at least one year and until such time as the Committee reviews and accepts the annual report of the audit of its performance by the LRIT Coordinator. However, the archived LRIT information should provide a complete record of the activities of the centre between two annual audits of its performance.” (Resolution MSC 263(84) paragraph 7.1.9)

2.3 The IDE is required to “automatically maintain journal(s) containing message header information only which may be used for:

- .1 invoicing functions and settlement of invoicing disputes; and
- .2 audit purposes.”

The IDE should “archive journal(s) for at least one year and until such time as the Committee reviews and accepts the LRIT Coordinator’s annual report of the audit of its performance. However, the archived journal(s) should provide a complete record of the activities of the exchange between two consecutive annual audits of its performance.” (Resolution MSC 263(84) paragraph 10.3.4 and .5)

3 Sample data

3.1 Amongst the other audit evidence materials listed in MSC 86/26/Add.1 Annex 6 paragraph 9.2, all DCs “are required to provide to the LRIT Coordinator at least one sample of LRIT information and LRIT messages which covers 30 consecutive calendar days (the 30 day sample) during the period which is to be covered by the audit.

3.2 The IDE is required to provide its journal(s) of all transactions for each calendar year because of its/their necessity and role on conducting a proper review and audit of the performance of all DCs. IMSO and the IDE Operator will consider and agree on the appropriate arrangements to provide IDE journal(s) to IMSO.

3.3 Sample data should be generated and provided to IMSO only in response to a formal request from IMSO in the form of a Pre-Audit letter from the LRIT Coordinator. The data should be generated, formatted and transmitted to IMSO in accordance with the following instructions.

4 Sample data format

4.1 All LRIT DCs are required to use the XML schema file *LRITMessageLog.xsd*, provided in annex 1, when generating the sample data file to provide to IMSO for the review and audit of their performance. DCs should provide IMSO with xml data file(s) named:

- LRITMessageLog_<LRIT ID of DC>_<file_number>.xml.

(e.g: **LRITMessageLog_3153_1.xml, LRITMessageLog_3153_2.xml, ...**)

4.2 The IDE is also required to use the XML schema file ***LRITMessageLog.xsd*** provided in annex 1 when generating the sample data file to provide to IMSO for the review and audit of its and/or DC's performance. The IDE should provide IMSO with xml data file(s) named:

- LRITMessageLog_<LRIT ID of the IDE>_<file_number>.xml.

(e.g: **LRITMessageLog_0002_1.xml, LRITMessageLog_0002_2.xml, ...**)

4.3 IMSO will perform schema validation on all received sample data packages upon their receipt. If a package fails schema validation, then that sample data will neither be processed nor accepted by IMSO. IMSO will provide information to this end to the DC or the IDE.

4.4 Size of a single XML data file must never exceed 2GB when unzipped and unencrypted. Multiple xml data files must be used to transfer sample data which is greater than 2GB.

5 Sample data content

5.1 LRIT Data Centres

5.1.1 The starting and ending dates for the sample data will be communicated to the DC concerned by IMSO prior to preparation of the required sample data.

5.1.2 All DCs are required to provide to IMSO all LRIT message with the exception of the file attachments associated with Message 10 (DDP Update), Message 12 (Journal) and Message 15 (Pricing Update). IMSO is not required to audit the fee structures of LRIT DCs.

5.1.3 Inbound messages, which were received from other DCs, the DDP and/or the IDE should **not** be included in the sample data.

5.1.4 Sample data should include only the following message types:

- .1 LRIT Message Types 1, 2 and 3 with all parameters;
- .2 LRIT Message Types 4, 5 and 6 with all parameters;
- .3 LRIT Message Type 7 with all parameters;
- .4 LRIT Message Type 9 with all parameters;
- .5 LRIT Message Type 11 with all parameters;
- .6 LRIT Message Type 12 with all parameters *with the exception of file attachment* (if journal is kept by the DC); and

- .7 LRIT Message Type 14 and 15 with all parameters *with the exception of file attachments*.

5.1.5 LRIT Message Types 8, 10 and 13 are not included in the above list as they cannot be generated by DCs according to the technical specifications of the system.

5.1.6 **The LRIT position reports that were received during the 30-day audit period by the flag administration and haven't been transmitted to any LRIT Data User requester until the time the sample data is despatched to the LRIT Coordinator should be classified as Message Type 1 with Response Type 2.**

The *TimeStamp5* and *DataUserRequestor* parameters and the attribute "positionsent" of the aforementioned position reports must be populated with values as follows;

- *TimeStamp5* = "1000-01-01T00:00:00Z";
- *DataUserRequestor* = 0003 (LRIT Id of the LRIT Coordinator); and
- *Positionsent* = false.

All other parameters including DDP Version number which was valid at the time when the message was received by the Data Centre must be populated with proper values. An example XML data file for data centres is available online at http://www.imsso.org/LRIT/XML/sample_data_package.zip

5.2 *International LRIT Data Exchange*

5.2.1 The IDE journal(s) provided to IMSO should contain the complete record of the IDE's activities by means of LRIT message exchange.

5.2.2 The IDE should provide its journal(s), with the exception of the file attachments associated with Message 10 (DDP Update), Message 12 (Journal) and Message 15 (Pricing Update), to the LRIT Coordinator upon request. IMSO is not required to audit the fee structures of the IDE.

5.2.3 The *Latitude*, *Longitude*, *TimeStamp1* and *ShipborneEquipmentId* parameters of the LRIT Message Types 1, 2 and 3 (position reports) should be populated with values as follows:

- .1 *Latitude* = "00.00.00.N"
- .2 *Longitude* = "000.00.00.W"
- .3 *TimeStamp1* = "1000-01-01T00:00:00Z"
- .4 *ShipborneEquipmentId* = "N/A"

6 **Transfer method and security of sample data**

6.1 All DCs and the IDE are required to submit their sample data to IMSO only on a CD or DVD.

6.2 The CD or DVD which contains the sample data should be handled and protected as a classified document by the DCs and the IDE with a view to ensuring the security and integrity of the data. DCs and the IDE are recommended to use suitable secure transfer methods, at their discretion, for transfer of the CD or DVD to the LRIT Coordinator.

6.3 It should be clearly understood that IMSO has put in place the necessary arrangements for ensuring that all sample data provided on CD or DVD will be protected from unauthorised access or disclosure from the time such media is received by IMSO.

6.4 In order to ensure the security of the sample data while it is in transit, and to prevent inadvertent disclosure or an attempt to access the data by unauthorized parties, sample data on CD or DVD should be encrypted prior to being sent to IMSO.

6.5 LRIT Data Centres and the IDE should use 7-Zip², a free and open source tool, when encrypting and also compressing sample data. 7-Zip supports AES-256 encryption method which is one of the well known and trusted industry-standard for data encryption. Sample data must be encrypted by using AES-256 method and with the password provided by IMSO in a sealed envelope. The password will be generated automatically and without human intervention by the key generator developed by IMSO. The password will be 16 characters long containing numbers, letters and some special signs.

6.6 DCs having more than one XML data file due to the size restriction may use one single 7-Zip archive file to encrypt all XML data files.

6.7 Recommended encryption settings and a simple user guide which demonstrates how to create an archive are set out in Annex 2.

7 Communication of sample data

7.1 IMSO will neither accept nor process any sample data or material for the review and audit of a DC and/or the IDE received from individuals other than those identified in the Data Distribution Plan as a formal point of contact for that LRIT DC and/or the IDE.

7.2 All communications of information to IMSO in relation to review and audit of LRIT DCs and the IDE should be addressed and sent to:

Mr Andy Fuller
Deputy Director General

International Mobile Satellite Organization (LRIT Coordinator)
99 City Road
London EC1Y 1AX
United Kingdom

Facsimile number: +44 (0)20 7728 1172

E-mail address: lrit@imso.org

² <http://www.7-zip.org/download.html>

ANNEX 1

“LritMessageLog.xsd” and the other schema files imported by “LritMessageLog.xsd” are also available online at <http://www.imo.org/LRIT/XML/Audit XML Schemas.zip>

LritMessageLog.xsd

```
<xs:schema version="1.0"
  targetNamespace="http://gisis.imo.org/XML/LRIT/2008"
  xmlns="http://gisis.imo.org/XML/LRIT/2008"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:posrep="http://gisis.imo.org/XML/LRIT/positionReport/2008"
  xmlns:posreq="http://gisis.imo.org/XML/LRIT/positionRequest/2008"
  xmlns:surpic="http://gisis.imo.org/XML/LRIT/sarSurpicRequest/2008"
  xmlns:receipt="http://gisis.imo.org/XML/LRIT/receipt/2008"
  xmlns:systemStatus="http://gisis.imo.org/XML/LRIT/systemStatus/2008"
  xmlns:journalReport="http://gisis.imo.org/XML/LRIT/journalReport/2008"
  xmlns:pricingNotification="http://gisis.imo.org/XML/LRIT/pricingNotification/2008"
  xmlns:pricingRequest="http://gisis.imo.org/XML/LRIT/pricingRequest/2008"
  xmlns:pricingUpdate="http://gisis.imo.org/XML/LRIT/pricingUpdate/2008"
  xmlns:ddpNotification="http://gisis.imo.org/XML/LRIT/ddpNotification/2008"
  xmlns:ddpRequest="http://gisis.imo.org/XML/LRIT/ddpRequest/2008"
  xmlns:ddpUpdate="http://gisis.imo.org/XML/LRIT/ddpUpdate/2008"
  xmlns:xmime="http://www.w3.org/2005/05/xmlmime"
  elementFormDefault="qualified">

  <xs:import namespace="http://gisis.imo.org/XML/LRIT/journalReport/2008"
    schemaLocation="JournalReport.xsd"/>
  <xs:import namespace="http://gisis.imo.org/XML/LRIT/positionReport/2008"
    schemaLocation="ShipPositionReport.xsd"/>
  <xs:import namespace="http://gisis.imo.org/XML/LRIT/positionRequest/2008"
    schemaLocation="ShipPositionRequest.xsd"/>
  <xs:import namespace="http://gisis.imo.org/XML/LRIT/sarSurpicRequest/2008"
    schemaLocation="SARSURPICRequest.xsd"/>
  <xs:import namespace="http://gisis.imo.org/XML/LRIT/receipt/2008"
    schemaLocation="Receipt.xsd"/>
  <xs:import namespace="http://gisis.imo.org/XML/LRIT/systemStatus/2008"
    schemaLocation="SystemStatus.xsd"/>
  <xs:import namespace="http://gisis.imo.org/XML/LRIT/pricingNotification/2008"
    schemaLocation="PricingNotification.xsd"/>
  <xs:import namespace="http://gisis.imo.org/XML/LRIT/pricingRequest/2008"
    schemaLocation="PricingRequest.xsd"/>
  <xs:import namespace="http://gisis.imo.org/XML/LRIT/pricingUpdate/2008"
    schemaLocation="PricingUpdate.xsd"/>
  <xs:import namespace="http://gisis.imo.org/XML/LRIT/ddpNotification/2008"
    schemaLocation="DDPNotification.xsd"/>
  <xs:import namespace="http://gisis.imo.org/XML/LRIT/ddpRequest/2008"
    schemaLocation="DDPRequest.xsd"/>
```

```

<xs:import namespace="http://gis.imo.org/XML/LRIT/ddpUpdate/2008"
schemaLocation="DDPUpdate.xsd"/>

<xs:complexType name="PositionReportLogType">
  <xs:sequence>
    <xs:element ref="posrep:ShipPositionReport"/>
  </xs:sequence>
  <xs:attribute name="positionSent" type="xs:boolean" use="required"/>
</xs:complexType>

<xs:complexType name="LritMessageType">
  <xs:sequence>
    <xs:element name="receivedTimestamp" type="xs:dateTime" minOccurs="0"/>
    <xs:element name="sentTimestamp" type="xs:dateTime" minOccurs="0"/>
    <xs:choice minOccurs="1" maxOccurs="1">
      <xs:element name="PositionReport" type="PositionReportLogType"/>
      <xs:element ref="posreq:ShipPositionRequest"/>
      <xs:element ref="surpic:SARSURPICRequest" />
      <xs:element ref="receipt:Receipt" />
      <xs:element ref="systemStatus:SystemStatus" />
      <xs:element ref="journalReport:JournalReport" />
      <xs:element ref="pricingNotification:PricingNotification" />
      <xs:element ref="pricingRequest:PricingRequest" />
      <xs:element ref="pricingUpdate:PricingUpdate" />
      <xs:element ref="ddpUpdate:DDPUpdate" />
      <xs:element ref="ddpRequest:DDPRequest" />
      <xs:element ref="ddpNotification:DDPNotification" />
    </xs:choice>
  </xs:sequence>
</xs:complexType>

<xs:complexType name="MessageLogType">
  <xs:sequence>
    <xs:element name="LritMessage" type="LritMessageType"
maxOccurs="unbounded" />
  </xs:sequence>
</xs:complexType>
<xs:element name="LritMessageLog" type="MessageLogType" />
</xs:schema>

```

ANNEX 2

CREATING 7-ZIP ARCHIVES WITH AES-256 ENCRYPTION

- 1 Install 7-Zip which can be found in the CD provided by IMSO or downloaded from <http://www.7-zip.org/download.html>.
- 2 Right click the xml data files or the folder which contains the xml data files to be archived and encrypted.
- 3 Click “7-zip > Add to archive...” on the context menu.
- 4 A 7-Zip dialog will open; adjust the settings/options on that window as shown in the picture below.
- 5 Type the file name and the password provided by IMSO.
- 6 Click OK

