1. The Maritime Safety Committee, at its 106th session, approved amendments to the Long-range identification and tracking system – Technical documentation (Part I) (MSC.1/Circ.1259/Rev.8) prepared by the Sub-Committee on Navigation, Communications and Search and Rescue, at its ninth session (NCSR 9/24/Add.1, annex 4). This circular incorporates the aforesaid amendments as well as additional editorial amendments and minor corrections.

2. The Long-range identification and tracking system – Technical documentation (Part I) includes:

   .1 Technical specifications for the International LRIT Data Exchange;
   .2 Technical specifications for the International LRIT Data Centre;
   .3 Technical specifications for communications within the LRIT system;
   .4 Technical specifications for the LRIT Data Distribution Plan;
   .5 Criteria for the location of the International LRIT Data Centre and the International LRIT Data Exchange; and
   .6 XML schemas.

3. This circular should always be read together with SOLAS regulation V/19-1, the revised Performance standards and functional requirements for the long range identification and tracking of ships (resolution MSC.263(84), as amended) and the Long-range identification and tracking system – Technical documentation (Part II) (MSC.1/Circ.1294, as revised).

4. The XML schemas are available in their native format for downloading from the LRIT Data Distribution Plan server. In addition, those wishing to receive the XML schemas in their native format may request them from the Secretariat by sending an email to LRIT@imo.org.

5. SOLAS Contracting Governments are invited to bring the present circular and its annex to the attention of those engaged in implementation of the provisions of SOLAS regulation V/19-1 and/or the development, establishment, operation and maintenance of their LRIT Data Centres and the International LRIT Data Exchange.
This circular revokes MSC.1/Circ.1259/Rev.8 issued on 8 April 2020. Any reference to MSC.1/Circ.1259/Rev.8 or any of its previous versions should be read as reference to the present circular.

***
ANNEX (English only)

LONG-RANGE IDENTIFICATION AND TRACKING SYSTEM –
TECHNICAL DOCUMENTATION (PART I)

1 General provisions

1.1 Scope and background

1.1.1 Scope

1.1.1.1 This document sets out the Technical specifications for the Long-range identification and tracking system as specified in the revised Performance standards and functional requirements for the long-range identification and tracking of ships (the revised Performance standards) adopted by resolution MSC.263(84), as amended.

1.1.1.2 This part provides an overview of the LRIT system and the various specifications are set out in the following six annexes:

.1 Annex 1 – Technical specifications for the International LRIT Data Exchange;

.2 Annex 2 – Technical specifications for the International LRIT Data Centre;

.3 Annex 3 – Technical specifications for communications within the LRIT system;

.4 Annex 4 – Technical specifications for the LRIT Data Distribution Plan;

.5 Annex 5 – Criteria for the location of the International LRIT Data Centre and the International LRIT Data Exchange; and

.6 Annex 6 – XML schemas.

1.1.1.3 In preparing the document, account has been taken of the provisions of regulation V/19-1 of the 1974 SOLAS Convention and of the revised Performance standards.

1.1.2 Background

1.1.2.1 The Maritime Safety Committee, at its eighty-first session, adopted amendments to chapter V of the 1974 SOLAS Convention in relation to the long-range identification and tracking of ships. The amendments entered into force on 1 January 2008 and the LRIT system has been operational since 00:01 UTC on 31 December 2008.

1.1.2.2 The LRIT system provides for the global identification and tracking of ships which are required to comply with the provisions of regulation V/19-1.
1.1.2.3 In operating the LRIT system, recognition should be given to international conventions, agreements, rules or standards that provide for the protection of navigational information.

1.1.2.4 The technical specifications for the International LRIT Data Exchange (IDE), within the LRIT system, detail the routeing of LRIT information, LRIT request messages and system messages between LRIT Data Centres (DCs).

1.1.2.5 The International LRIT Data Centre (IDC) is an element of the LRIT system that receives, stores and disseminates LRIT information on behalf of Contracting Governments to the 1974 SOLAS Convention. In the context of the LRIT system architecture, technical specifications International LRIT Data Centre addresses the functional specifications for the IDC.

1.1.2.6 The IDC should be capable of receiving and processing LRIT information from all ships, other than those that are required to transmit LRIT information to a National (NDC) or Regional/Co-operative (R/CDC) LRIT Data Centres.

1.1.2.7 The IDC should accommodate any LRIT Data User not participating in a NDC or R/CDC.

1.1.2.8 The specifications for data security throughout the network and protocols required for transporting data from one network point to another are described in annex 3 on Technical specifications for communications within the LRIT system.

1.1.2.9 Communication specifications within the LRIT system detail the messaging format between LRIT components, data security throughout the network, and the protocols required for transporting data from one network point to another.

1.2 General description of the system and definitions

1.2.1 LRIT system description

1.2.1.1 As described in the revised Performance standards, the LRIT system consists of the following components:

.1 the shipborne LRIT information transmitting equipment;
.2 the Communication Service Provider(s);
.3 the Application Service Provider(s);
.4 the DC(s), including any related Vessel Monitoring System(s);
.5 the LRIT Data Distribution Plan server;
.6 the IDE; and
.7 LRIT Data Users.

1.2.1.2 As described in paragraph 1.2 of the revised Performance standards, certain aspects of the performance of the LRIT system are reviewed or audited by an LRIT Coordinator acting on behalf of all Contracting Governments to the 1974 SOLAS Convention (Contracting Governments).
1.2.2 LRIT system operation

1.2.2.1 Paragraphs 1.2.2.1 to 1.2.2.11 provide a high-level overview of the LRIT system architecture. The revised Performance standards provide further details on the functions associated with each component of the system.

1.2.2.2 Tracking of any applicable ship begins with LRIT information being transmitted from the shipborne equipment. The LRIT information transmitted includes the ship's GNSS position (based on the WGS 84 datum), time and identification, as described in table 1 of the revised Performance standards.

1.2.2.3 The Communication Service Provider (CSP) provides the communication infrastructure and services that are necessary for establishing a communication path between the ship and the Application Service Provider (ASP). The LRIT information transmitted from the ship travels across the communication path set up by the CSP to the ASP.

1.2.2.4 The ASP, after receiving the LRIT information from the ship, adds additional information to the LRIT message and passes the expanded message to its associated DC. Functionality required for the programming and communicating of commands to the shipborne equipment is provided by the ASP.

1.2.2.5 The LRIT data, along with all the parameters added by the various LRIT components, is described in the messaging section of annex 3 on Technical specifications for communications within the LRIT system.

1.2.2.6 DCs should store all incoming LRIT information from ships instructed by their Administrations to transmit LRIT information to that DC. DCs disseminate LRIT information to LRIT Data Users according to the LRIT Data Distribution Plan (DDP).

1.2.2.7 The DDP contains the information required by the DCs for determining how LRIT information is distributed to the various Contracting Governments. The DDP contains information such as standing orders from Contracting Governments and geographical polygons relating to Contracting Governments' coastal waters.

1.2.2.8 DCs process all LRIT messages to and from the IDE. The IDE processes all LRIT messages between DCs. The IDE routes the message to the appropriate DC based upon the address in the message and the URL/URI in the DDP. The IDE neither processes nor stores the information contained within LRIT messages.

1.2.2.9 LRIT Data Users might be entitled to receive or request LRIT information in their capacity as a flag State¹, port State², coastal State³ or Search and Rescue (SAR) service.

1.2.2.10 The LRIT Coordinator assists in the establishment of components of the LRIT system (namely the IDE and IDC), performs administrative functions, and reviews and audits the performance of certain components of the LRIT system.

¹ The term *flag State* is used for simplicity and refers to the cases when a Contracting Government is requesting LRIT information pursuant to the provisions of regulation V/19-1.8.1.1.

² The term *port State* is used for simplicity and refers to the cases when a Contracting Government is requesting LRIT information pursuant to the provisions of regulation V/19-1.8.1.2.

³ The term *coastal State* is used for simplicity and refers to the cases when a Contracting Government is requesting LRIT information pursuant to the provisions of regulation V/19-1.8.1.3.
1.2.2.11 Figure 1 provides a high-level illustration of the basic LRIT system architecture.

**Figure 1**

**LRIT system architecture**

1.2.3 **Definitions**

1.2.3.1 Unless expressly provided otherwise:

.1 *Convention* means the International Convention for the Safety of Life at Sea, 1974, as amended.

.2 *Regulation* means a regulation of the Convention.

.3 *Chapter* means a chapter of the Convention.

.4 *LRIT Data User* means a Contracting Government or a Search and rescue service that opts to receive the LRIT information it is entitled to.

.5 *Committee* means the Maritime Safety Committee.

.6 *High-speed craft* means a craft as defined in regulation X/1.3.

.7 *Mobile offshore drilling unit* means a mobile offshore drilling unit as defined in regulation XI-2/1.1.5.

.8 *Organization* means the International Maritime Organization.
.9 Vessel Monitoring System means a system established by a Contracting Government or a group of Contracting Governments to monitor the movements of the ships entitled to fly its or their flag. A Vessel Monitoring System might also collect from the ships information specified by the Contracting Government(s) that has established it.

.10 LRIT information means the information specified in regulation V/19-1.5.

.11 IDC Operator means the individual responsible for the daily operation and maintenance of the International LRIT Data Centre.

.12 IDE Operator means the individual responsible for the daily operation and maintenance of the International LRIT Data Exchange.

.13 DC Operator means the individual responsible for the daily operation and maintenance of an LRIT Data Centre.

.14 International Routeing Rules means a list of all DCs with their associated URL/URI as identified in the DDP.

.15 Contracting Government means a Contracting Government to the Convention.

.16 Flag State is used for simplicity and refers to the cases when a Contracting Government is requesting LRIT information pursuant to the provisions of regulation V/19-1.8.1.1.

.17 Port State is used for simplicity and refers to the cases when a Contracting Government is requesting LRIT information pursuant to the provisions of regulation V/19-1.8.1.2.

.18 Coastal State is used for simplicity and refers to the cases when a Contracting Government is requesting LRIT information pursuant to the provisions of regulation V/19-1.8.1.3.

.19 LRIT Component refers to 1.2.1.1.

.20 Passenger ship means a ship as defined in regulation I/2(f).

.21 Cargo ship means a ship as defined in regulation I/2(g).

.22 Tanker means a ship as defined in regulation I/2(h).

1.2.3.2 The term "ship" when used in this document includes mobile offshore drilling units and high-speed craft as specified in regulation V/19-1.4.1 and means a ship that is required to transmit LRIT information.

1.2.3.3 The term "Ship Type" means type of the ship transmitting the LRIT information. The following main categories of ship-types are defined exclusively to be used for the purposes of the LRIT system, including the respective ship type codes:
.1 Passenger ship\(^4\) (ship type code 0100);
.2 Cargo ship\(^5, 6\) (ship type code 0200);
.3 Tanker (ship type code 0300);
.4 Mobile offshore drilling unit (ship type code 0400); and
.5 Other ship\(^7\) (ship type code 9900).

1.2.3.4 Terms not otherwise defined should have the same meaning as the meaning attributed to them in the Convention.

1.2.4 Acronyms used within this document

1.2.4.1 The acronyms that appear within this document should have the meanings assigned to them in this paragraph:

.1 ASP Application Service Provider
.2 BIST Built in Self Test
.3 CSP Communication Service Provider
.4 DC LRIT Data Centre
.5 DDP LRIT Data Distribution Plan
.6 FAT Factory Acceptance Test
.7 HMAC Hash Message Authentication Code
.8 IDC International LRIT Data Centre
.9 IDE International LRIT Data Exchange
.10 IP Internet Protocol
.11 LES Land Earth Station
.12 LRIT Long-range identification and tracking (of ships)
.13 MMSI Maritime Mobile Service Identity
.14 NDC National LRIT Data Centre
.15 NOA Notice of Arrival

\(^4\) Including High-speed Passenger Craft.
\(^5\) Excluding Tanker.
\(^6\) Including High-speed Craft.
\(^7\) Ships which are not defined in other categories should be categorized as "other ship".
| .16  | OASIS          | Organization for the Advancement of Structured Information Standards |
| .17  | PKI            | Public Key Infrastructure                                          |
| .18  | R/CDC          | Regional/Co-operative LRIT Data Centre                             |
| .19  | RFP            | Request for Proposal                                               |
| .20  | SAR            | Search and Rescue                                                  |
| .21  | SURPIC         | Surface Picture                                                     |
| .22  | SOAP           | Simple Object Access Protocol                                       |
| .23  | SOLAS          | International Convention for the Safety of Life at Sea, 1974        |
| .24  | SSL            | Secure Sockets Layer                                               |
| .25  | TLS            | Transport Layer Security                                            |
| .26  | VPN            | Virtual Private Network                                             |
| .27  | VMS            | Vessel Monitoring System                                            |
| .28  | WS             | Web Service                                                          |
ANNEX 1

TECHNICAL SPECIFICATIONS FOR THE INTERNATIONAL LRIT DATA EXCHANGE

1 Overview

1.1 General provisions

1.1.1 General

1.1.1.1 The technical specification described in this annex should always be read together with:

.1 regulation V/19-1;
.2 the revised Performance standards and functional requirements for the Long-range identification and tracking of ships;
.3 the Technical specifications for communications within the LRIT system;
.4 the Technical specifications for the LRIT Data Distribution Plan; and
.5 the XML schemas.

2 Description of the International LRIT Data Exchange

2.1 Overview

2.1.1 International LRIT Data Exchange

2.1.1.1 The International LRIT Data Exchange (IDE) is a message handling service that facilitates the exchange of LRIT information amongst DCs to enable LRIT Data Users to obtain that LRIT information that they are entitled to receive. The IDE routes messages between DCs.

2.1.1.2 The IDE, at a minimum, should be accessible to DCs via standard Internet protocol.

2.1.1.3 The IDE should store and archive message header information in a Journal(s) for audit, billing and statistical analysis purposes.

2.1.1.4 The IDE does not:

.1 read the LRIT information contained in LRIT messages; and
.2 store or archive any LRIT information.

2.1.1.5 The IDE Operator should not be able to access the LRIT information contained in the LRIT messages. Further, the IDE Operator should not be able to tamper with the contents of the LRIT messages flowing through the IDE.

2.1.1.6 The application of standing orders and other information contained within the DDP is a function of individual DCs. The IDE should only read the message header content. The IDE should not perform any filtering function on the LRIT information.
2.1.1.7 As stated in the revised Performance standards, the message header refers to all parameters with the exception of the parameters provided by the shipborne equipment.

2.1.1.8 The IDE should use the LRIT ID contained in either the Destination parameter, the DataUserRequestor parameter or the DataUserProvider parameter included in the messages to determine where to route the message. The IDE maps the LRIT ID to the URL/URI address of the DC holding the information using the mapping information contained in the DDP.

3 System architecture/High level design of the IDE

3.1 High level overview of system architecture

3.1.1 General composition of the IDE

3.1.1.1 The general composition (top level block diagram) of the IDE is illustrated in figure 1.

**Figure 1**

Top level block diagram of IDE data flow

3.1.1.2 The various blocks illustrated in the IDE block diagram represent functional modules or sub systems of the larger system being the IDE itself.

3.1.1.3 Implementation of the IDE, for example, could consist of a high-speed computer running IDE specific application software. The IDE application software could consist of various software modules such as a DC interface module, message processing module, billing module, Quality of Service (QoS) monitoring module, etc.
3.2 DC interface

3.2.1 Functional overview

3.2.1.1 The DC interface of the IDE should:

.1 receive LRIT messages from all DCs participating in the international LRIT system;

.2 transmit LRIT messages to the appropriate DCs based upon message processing performed by the IDE;

.3 maintain a secure communication connection to all participating DCs based upon the communication and data security protocols outlined in annex 3 on Technical specifications for communications in the LRIT system; and

.4 communicate, through an IP-based network, with all DCs.

3.3 Message processing and handling

3.3.1 Message summary

3.3.1.1 Table 1 provides a summary of all LRIT messages (Messages 1-17) and indicates whether the message is routed between DCs or broadcast to all DCs.

Table 1

Summary of LRIT messages

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>Description/Purpose</th>
<th>TX²</th>
<th>RX²</th>
<th>Broadcast</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LRIT information (position report) messages</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Periodic position report</td>
<td>Regular periodic position reports</td>
<td>DC2</td>
<td>IDE</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IDE</td>
<td>DC1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Polled position report</td>
<td>Position report as a result of a poll request</td>
<td>DC2</td>
<td>IDE</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IDE</td>
<td>DC1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>SAR position report</td>
<td>Position report as a result of a SAR request</td>
<td>DCx</td>
<td>IDE</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IDE</td>
<td>DC1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LRIT request messages</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Position request</td>
<td>To enable a DC to request LRIT information for ships being monitored by another DC</td>
<td>DC1</td>
<td>IDE</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IDE</td>
<td>DC2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SAR position request</td>
<td>To enable a DC to request LRIT information, as a SAR user, for ships being monitored by another DC</td>
<td>DC1</td>
<td>IDE</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IDE</td>
<td>DC2</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>SURPIC request</td>
<td>Coastal or SAR request for position of ships in a specific area, broadcast via the IDE to all DCs</td>
<td>DC1</td>
<td>IDE</td>
<td>Yes³</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IDE</td>
<td>DCx</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Name</td>
<td>Description/Purpose</td>
<td>$TX^c$</td>
<td>$RX^c$</td>
<td>Broadcast</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>--------</td>
<td>-----------------</td>
<td>--------------------</td>
</tr>
<tr>
<td></td>
<td>Other messages</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Receipt</td>
<td>To enable a LRIT component to confirm the processing of a LRIT message</td>
<td>DC2</td>
<td>IDE</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IDE</td>
<td>DC1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DDP</td>
<td>DC1 IDE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DC1 IDE</td>
<td>DDP server</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>DDP notification</td>
<td>Notification that an updated version of the DDP file is available</td>
<td>DDP</td>
<td>IDE</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IDE</td>
<td>DCx</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>DDP request</td>
<td>Request for current full copy of the DDP or incremental copy</td>
<td>DC1</td>
<td>IDE</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DDP</td>
<td>server</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>DDP update</td>
<td>This is a routine update of the DDP by the DDP server to the IDE</td>
<td>DDP</td>
<td>DC1 IDE</td>
<td>Does not get routed by the IDE</td>
</tr>
<tr>
<td>11</td>
<td>System status</td>
<td>To enable the IDE to communicate a status message every 30 min to each DC and the DDP server advising that the system is &quot;healthy&quot; and receive status messages from the DCs and the DDP server</td>
<td>IDE</td>
<td>DCx DDP server</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DC2</td>
<td>DDP server</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Journal</td>
<td>Routine monthly, biweekly, weekly or daily message from a R/CDC or the IDC to the IDE containing its Journal</td>
<td>R/CDC1 and IDC</td>
<td>IDE</td>
<td>No</td>
</tr>
<tr>
<td>13</td>
<td>Pricing notification</td>
<td>Notification that a new pricing list for inter-DC charges is in place</td>
<td>Not used</td>
<td>Not used</td>
<td>Yes</td>
</tr>
<tr>
<td>14</td>
<td>Pricing request</td>
<td>Request for updated pricing list</td>
<td>Not used</td>
<td>Not used</td>
<td>No</td>
</tr>
<tr>
<td>15</td>
<td>Pricing update</td>
<td>Updated pricing list file</td>
<td>Not used</td>
<td>Not used</td>
<td>No</td>
</tr>
<tr>
<td>16</td>
<td>Geographical area update</td>
<td>Request to perform technical validation of polygons and Add, replace or delete custom coastal geographical areas</td>
<td>DC</td>
<td>IDE</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DDP</td>
<td>server</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Coastal State standing order update</td>
<td>Update Coastal State Standing order</td>
<td>DC</td>
<td>DDP server</td>
<td>No</td>
</tr>
</tbody>
</table>
Note:

1 Refer to paragraph 2.2 of the Technical specifications for communications within the for further information.

2 DC1 = requesting DC; DC2 = providing DC; DCx = all DCs; R/CDC1 = Regional or Co-operative LRIT Data Centre; TX= Transmitting; RX = Receiving.

3 Excludes Coastal SURPIC messages in which a DataUserProvider is specified.

3.3.2 General message processing functions

3.3.2.1 The IDE should have the functional capability to validate the DDP version # contained in all received LRIT messages against the version number of the DDP it is using. If the IDE detects a mismatch in DDP version numbers, it archives the received message and transmits a receipt message to the originating DC. It should not route the LRIT message (unless it is a SAR message) that contained the invalid DDP version #. The ability to enable or disable this function should be accessible from the IDE administrative interface.

3.3.2.2 The DDP version number checking function should have a time delay feature that automatically disables the DDP version # checking for a period of time after the IDE has updated its internal DDP. The period of time in which this function is disabled should be programmable through the IDE administrative interface.

3.3.2.3 SAR messages (Message types 3, 5, 6 (Access Type 6 only), and 7 where ReceiptCode = 1 (no ship in SAR SURPIC area)) should always be routed regardless of the DDP version used. The IDE should also consider as SAR messages (and pass without DDP version checking) message types 1 and 2 with ResponseType = 4 even though these are not proper message parameter combinations.

3.3.2.4 The IDE should implement industry standard virus checking and network security procedures on all messages to prevent malicious attacks (e.g. Structured Query Language (SQL) injection).

3.3.2.5 The IDE should only perform schema validation on messages addressed to the IDE. All other messages should be routed to their destinations with only schema validation performed on parameters used by the IDE for routeing and DDPVersionNum checking.

3.3.2.6 If the destination DC sends a SOAP fault message to the IDE, the IDE should send a receipt message (Message 7) with the SOAP fault information contained in the Parameter: Message, Value: Text field to the originating DC.

3.3.3 Generic message handling

3.3.3.1 Section 5 contains message handling and processing diagrams for received LRIT messages.

3.3.3.2 The following generic process should be followed for all LRIT messages (Messages 1 to 16) received by the IDE:

.1 perform a DDPVersionNum check, if the function is enabled, by looking at the DDPVersionNum parameter contained in the message and comparing it with the current valid DDP version as defined in the Technical specifications for the LRIT Data Distribution Plan;
.2 LRIT messages that fail the check (mismatch of DDP version #s) should be archived in the Journal and a receipt message with a receipt code of "9" should be sent to the DC which transmitted the message;

.3 LRIT messages that pass the check (DDP version #s match) should be further processed by looking at the MessageType parameter in order to identify the particular type of LRIT message and handling the message as detailed in the subsequent paragraphs; and

.4 when connectivity issues occur, attempt redelivery of a message 3 times in 12 min to a DC.

3.3.3.3 The IDE should handle LRIT messages with the test parameter set to "1" as described in the following table:

<table>
<thead>
<tr>
<th>Message Type</th>
<th>Direction</th>
<th>Message Handling action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message Types 1 to 6 and Message Type 7 not addressed to IDE</td>
<td>Received</td>
<td>The IDE should forward the LRIT message to the intended recipient and journal the message.</td>
</tr>
<tr>
<td></td>
<td>Sent</td>
<td>The recipient component should not process or take any action in response to the message.</td>
</tr>
<tr>
<td>Message Type 7 Addressed to IDE</td>
<td>Received</td>
<td>The IDE should journal the message.</td>
</tr>
<tr>
<td></td>
<td>Sent</td>
<td>The recipient component should not process or take any action in response to the message.</td>
</tr>
<tr>
<td>Message Type 8 – DDP Notification</td>
<td>Received</td>
<td>Normal – the IDE should broadcast to all Data Centres and journal.</td>
</tr>
<tr>
<td></td>
<td>Sent</td>
<td>The recipient component should not process or take any action in response to the message.</td>
</tr>
<tr>
<td>Message Type 9 – DDP Request</td>
<td>Sent</td>
<td>The recipient component should not process or take any action in response to the message.</td>
</tr>
<tr>
<td>Message Type 10 – DDP Update</td>
<td>Received</td>
<td>The IDE should journal the message.</td>
</tr>
<tr>
<td>Message Type 11 – System Status</td>
<td>Received</td>
<td>The IDE should journal the message.</td>
</tr>
<tr>
<td></td>
<td>Sent</td>
<td>The recipient component should not process or take any action in response to the message.</td>
</tr>
<tr>
<td>Message Type 12 – Journal</td>
<td>Received</td>
<td>The IDE should not process the message, but should journal it.</td>
</tr>
<tr>
<td>Message Type 13 – Pricing Notification</td>
<td>Sent</td>
<td>The recipient component should not process or take any action in response to the message. Pricing Notification messages will remain in the XML schema for backward compatibility. However, messages of this type have been discontinued.</td>
</tr>
<tr>
<td>Message Type 14 – Pricing Request</td>
<td>Received</td>
<td>The IDE should not process the message, but should journal it. No Pricing Update will be sent to the originating Data Centre as a result. Pricing Request messages will remain in the XML schema for backward compatibility. However, messages of this type have been discontinued.</td>
</tr>
</tbody>
</table>
### Message Type 15 – Pricing Update

<table>
<thead>
<tr>
<th>Direction</th>
<th>Message Handling action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received</td>
<td>The IDE should journal the pricing update messages, however an update notification should not be broadcast. Pricing Update messages will remain in the XML schema for backward compatibility. However, messages of this type have been discontinued.</td>
</tr>
<tr>
<td>Sent</td>
<td>The recipient component should not process or take any action in response to the message. Pricing Update messages will remain in the XML schema for backward compatibility. However, messages of this type have been discontinued.</td>
</tr>
</tbody>
</table>

### Message Type 16 – Geographical area update

<table>
<thead>
<tr>
<th>Direction</th>
<th>Message Handling action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received</td>
<td>The IDE should journal the message.</td>
</tr>
</tbody>
</table>

### 3.3.4 Message handling for Messages 1 to 7

3.3.4.1 The IDE should process LRIT messages with Messages 1 to 7 by:

.1 identifying the message destination (e.g. LRIT Data User, DC) by looking at the `DataUserRequestor` parameter for Messages 1 to 3, the `DataUserProvider` parameter for Messages 4 to 6 or the `Destination` parameter for Message 7;

.2 mapping the LRIT ID associated with the message destination to the Internet address of the appropriate DC using the mapping information from the DDP;

.3 routeing the LRIT message to the appropriate DC or to all DCs in the case of broadcast messages (i.e. SURPIC request message);

.4 building a receipt message with a receipt code of 3 and route the receipt message to the DC associated with the originating LRIT message if the IDE determines that the DC intended to receive the message is not available (not online); and

.5 archiving everything in the messages except for the Shipborne equipment parameters of messages 1, 2 and 3 as defined in table 2 of annex 3 on Technical specifications for communications within the LRIT system.

### 3.3.5 Message handling for DDP messages (Messages 8 to 10)

3.3.5.1 The IDE should process the DDP messages by:

.1 receiving update notifications for the DDP through the DDP notification message (Message 8) automatically;

.2 building and transmitting a DDP request message (Message 9) for all incremental updates (update type 2) of the DDP;

.3 receiving updated incremental DDP files through the DDP update message (Message 10);

.4 updating the map of Internet addresses for all DCs accordingly; and
archiving all messages in the Journal(s).

3.3.5.2 Additional details concerning the processing of DDP notifications and updates by the IDE may be found in section 6.

### 3.3.6 Message handling for System status message (Message 11)

3.3.6.1 The IDE should:

.1 send out a system status message (Message 11) every 30 min to each DC and the DDP server advising them on the health of the IDE, and archive the transmitted message in the Journal(s); and

.2 on receipt of a system status message from the DCs and the DDP server, update the system status information by processing the `SystemStatus` parameter in the messages (i.e. if no message from a DC or the DDP server, or message with unrecognized values or incorrect DDP version number, generate a warning to the IDE Operator), and archive everything in the messages in the Journal(s).

### 3.3.7 Message handling for R/CDC or IDC issued Journal message (Message 12)

3.3.7.1 The IDE should:

.1 receive and process Journal messages from all R/CDCs and the IDC; and

.2 archive all of the contents of the R/CDC and IDC Journals in the IDE Journal.

### 3.3.8 Message handling for Pricing messages (Messages 13 to 15)

3.3.8.1 Messages 13 to 15 have been removed from the LRIT system.

### 3.3.9 Message handling for Geographical area update (Messages 16)

3.3.9.1 The IDE should process the Geographical area update message by:

.1 Identifying the polygon(s) for technical validation by looking at the GML file parameter and performing the validation based on the constraints set out in section 5 of the Technical specifications for the DDP;

.2 Building a receipt message with the receipt code of:

- 7, if the Action Type parameter is not 0 or if one or more polygons do not pass technical validation for any reason; and

- 10, if all polygons pass technical validation; and

.3 Archiving all messages in the Journal(s).
3.4 DDP interface

3.4.1 General

3.4.1.1 The IDE should maintain a secure communication connection to the DDP server based upon the communication and data security protocols outlined in annex 3 on Technical specifications for communications in the LRIT system.

3.5 Quality of service monitoring

3.5.1 Quality reporting

3.5.1.1 The IDE should monitor the communication connections to all DCs and:

.1 respond to quality-related requests from the IDE Operator and the LRIT Coordinator;

.2 provide, to the LRIT Coordinator, the necessary level of access in order for the LRIT Coordinator to carry out a performance review and audit of the IDE performance; and

.3 provide sufficient information to the IDE Operator for daily operation at required levels of reliability, maintenance and availability.

3.5.1.2 The archived LRIT information should provide a complete record of the activities of the IDE between two consecutive performance reviews and audits of its performance.

3.5.1.3 The IDE should be able to measure quality of service as defined in the revised Performance standards.

3.6 IDE administrative interface

3.6.1 General

3.6.1.1 The functionality associated with the IDE interface should provide the LRIT Coordinator and the IDE Operator with the ability to connect to the IDE and perform simple administrative tasks based on, but not limited to, the following requirements:

.1 integration and testing of a new DC; and

.2 trouble shooting a connection problem with a DC.

3.6.1.2 The LRIT Coordinator for the purpose of reviewing the performance of the LRIT system should be given access to the management, charging, technical and operational data of the IDE via the administrative interface.

3.6.1.3 The communication method used by the LRIT Coordinator and the IDE Operator to connect to the IDE administrative interface should be over a secure communication link.

3.6.1.4 Notwithstanding paragraph 3.6.1.2, the following three levels of front end access to the IDE Administrative interface should be provided:

.1 the DC operator should have limited access so as to be able to query its share of the Journal for troubleshooting or system management functions.
DCs points of contact defined in the DDP may create sub-accounts with the same level of front end access. For this the DC operator should use a web interface;

.2 the DDP operator should have limited access so as to be able to perform any necessary queries for troubleshooting or system management functions. For this the DDP operator should use a web interface;

.3 the IDE Operator should have unlimited access to the IDE to perform all required functions, however such access should not allow the IDE Operator to process, store, or view LRIT information; and

.4 the LRIT Coordinator should have limited access so as to be able to submit requests to the IDE Operator to bring new DCs on line and to conduct performance review and audit functions. For this the LRIT Coordinator should use a web interface.

3.6.1.5 All front end IDE administrative interface accounts should have user accounts using standard user management/user authentication.

3.6.2 Administrative capabilities

3.6.2.1 The IDE should have the capability to allow external users to connect to the IDE system and perform the following tasks if the user has been specified within brackets after each task:

.1 Query the Journal for individual LRIT messages (DC Operator, IDE Operator, LRIT Coordinator):

.1 Journal queries should be filterable by start/end times, message type, data user, or DC;

.2 Journal queries should be filterable from one DC to other DC and by referenceID (optional);

.3 Journal query results should be exportable as a CSV file; and

.4 Query results should be set to a limit of 1,500 records;

.2 Query the IDE for a list of all DCs (and their Uniform Resource Locator/Uniform Resource Identifier (URL/URI) or Internet Protocol Addresses (IP addresses)) connected to the IDE (IDE Operator);

.3 Query the IDE for network statistics (data rate, dropped packets, etc.) on specific or all communication links (IDE Operator);

.4 Query the IDE for quality of service information (IDE Operator, LRIT Coordinator);

.5 Query the IDE for a list of errors or anomalies that the IDE has detected over a given period of time (IDE Operator);

.6 Query the IDE for the results of a diagnostic test (IDE Operator);
Query the IDE for information pertaining to the LRIT application software on
the IDE (i.e. version number, etc.) (IDE Operator, DC Operator, LRIT
Coordinator);

Query the IDE for the version of the DDP being used (IDE Operator,
DC Operator, LRIT Coordinator);

Enable or disable the DDP version # validity checking function for LRIT
messages from all DCs (IDE Operator);

Configure the time delay feature of the DDP version # checking function (IDE
Operator);

Provide users of the IDE administrative interface with the ability to perform a
technical polygon validation on polygon GML files of the same format
uploaded to the DDP server, as defined in section 4 to the Technical
specifications for the LRIT Data Distribution Plan (IDE operator, DC operator,
LRIT Coordinator);

Access general information regarding the LRIT system (IDE operator, DC
operator, LRIT Coordinator) (optional):

IMO hyperlink is available to the IMO Website Home page (optional);

FAQ information is available for the LRIT system (optional); and

"How To" (help) information is available, including PKI information
(optional);

Access general information regarding the Administrative Interface
(IDE operator, DC operator, LRIT Coordinator):

A means of contacting the IDE Administrative Interface Operator is
available via a "Contact Us" link;

Password administration capabilities are available, including a
resetting password function; and

DDP contacts are able to self administer their login accounts;

Query the IDE for a message count (IDE operator, DC operator,
LRIT Coordinator); and

support the functionality described in annex 2 to the annex of
MSC.1/Circ.1294, as revised (Procedures for the notification, reporting and
recording of temporary suspensions of operations or reduction of the service
provided).
3.7 **Journal(s)**

3.7.1 **General**

3.7.1.1 In accordance with paragraph 10.3.4 of the revised Performance standards, the IDE should automatically maintain Journal(s) containing message header information only, meaning that the shipborne equipment parameters of messages 1, 2 and 3 as defined in table 2 of annex 3 on Technical specifications for communications within the LRIT system should not be stored.

3.7.1.2 The purpose of the Journal(s) is to enable the IDE to trace, record and archive the identification of all messages routed through the IDE to support:

1. auditing;
2. message handling/distribution;
3. the necessary information required to aid in the resolution of billing disputes; and
4. usage and performance statistics.

3.7.1.3 A request for data from the Journal(s) might be made to the IDE Operator by Contracting Governments, the LRIT Coordinator and DCs.

3.7.1.4 The Journal entries should be sent to the requesting entity, specified in paragraph 3.7.1.3, offline rather than via the LRIT system using standard data storage media (for example CD or DVD).

3.7.1.5 The requests for Journal information should be actioned by the IDE Operator within five working days.

3.7.2 **Journal contents**

3.7.2.1 The IDE logs all messages relating to the request for LRIT information in a manner that facilitates the ready identification of individual transactions and provides an audit trail to identify:

1. each request message received from individual DCs;
2. the communications with other DCs; and
3. the subsequent delivery of the response message to the Requesting DC.

3.7.2.2 In particular, the Journal(s) should include:

1. TimeStamp of receiving a message;
2. TimeStamp of transmitting a message; and
3. The complete message contents except for the Shipborne equipment parameters of messages 1, 2 and 3 as defined in table 2 of annex 3 on Technical specifications for communications within the LRIT system.

3.7.2.3 The format for the Journal is outlined in table 2.
### Table 2

**Format for Journal**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Data field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rx$^2$ TimeStamp</td>
<td>Time$^1$ of receiving a message</td>
</tr>
<tr>
<td></td>
<td>Not available for messages only transmitted by the IDE and not routed</td>
</tr>
<tr>
<td>Tx$^3$ TimeStamp</td>
<td>Time$^1$ of transmitting the message (routing to the appropriate DC)</td>
</tr>
<tr>
<td></td>
<td>Not available for messages only received by the IDE and not routed</td>
</tr>
<tr>
<td>Message contents</td>
<td>Complete message contents except for the Shipborne equipment parameters of Messages 1, 2 and 3</td>
</tr>
</tbody>
</table>

**Notes:**

1. All times should be indicated as Universal Coordinated Time (UTC).
2. Receiving.
3. Transmitting.

#### 3.7.3 Archiving

3.7.3.1 The IDE should maintain an archive Journal that can accommodate the ready retrieval of Journal(s) data for at least one year or until such time as the Committee reviews and accepts the LRIT Coordinator's annual report of the audit of its performance.

3.7.3.2 The archived Journal(s) should provide a complete record of the activities of the IDE between two consecutive annual audits of its performance.

3.7.3.3 Key requirements for archiving include:

.1 redundancy – should include the capability to load balance and cluster between redundant servers (i.e. hot swap);

.2 resiliency – communications should have more than one physical path;

.3 query – the data can be retrieved; and

.4 integrity – the data is preserved in its original state.

#### 3.8 Diagnostic tools

##### 3.8.1 General

3.8.1.1 Diagnostic tools should be available from the administrator interface of the IDE in order to allow the testing of the various modules or sub components that make up the IDE.

##### 3.8.2 Diagnostic tool list

3.8.2.1 Network interface check: This test when executed should perform a check on all network interface connections to verify proper operation. This would include all DC connections, the IDE administrator interface connection and the DDP connection.
3.8.2.2 Journal storage check: This test should check the read and write function of the storage space used to hold the Journal.

3.8.2.3 Message handling check: This test should check the message handling function's ability to properly process different types of messages.

3.8.2.4 General health check: This test should check the general health of IDE sub-components that are not checked by other tests.

3.8.2.5 Generate LRIT message check: This test should provide the administrative user with the ability to generate any of the LRIT messages (with the test parameter set to "1") with any valid parameter value and transmit the message to a connected DC or the DDP server.

4 IDE system performance

4.1 Overview of IDE system performance

4.1.1 General

4.1.1.1 The IDE should process and handle any input within 30 seconds of the receipt of the input and should give the appropriate output.

4.1.1.2 The IDE should be capable of receiving and processing at least 100 reports per second.

4.1.2 Availability and reliability

4.1.2.1 The IDE should provide data to the LRIT system 24 h per day seven days per week with better than 99.9% availability measured over a year and better than 95% availability in any one day.

4.1.3 Maintainability and upgradeability

4.1.3.1 IDE equipment should be so designed that the main units can be replaced readily, without elaborate recalibration or readjustment.

4.1.3.2 IDE equipment should be so constructed and installed that it is readily accessible for inspection and maintenance purposes.

4.1.3.3 IDE software should be capable of being easily upgraded through a standard secure internet based communication link.

4.1.3.4 The IDE should be designed such that it has the capability to add future features or functions via software upgrade (for example billing reports managed similar to Internet banking).

5 IDE message handling and processing diagram

5.1 General

5.1.1 Overview

5.1.1.1 Figure 2 provides an illustration of IDE message handling and processing.
Figure 2

IDE message handling and processing for received LRIT messages

Note: Figure 2 should be read in conjunction with the relevant paragraphs of the Technical specifications for communications within the LRIT system.
6 IDE handling of DDP notifications and updates

6.1 General

6.1.1 Overview

6.1.1.1 The IDE will function as follows when it receives a DDP notification from the DDP server:

.1 The IDE verifies that the LRIT ID in the PKI certificate is that of the DDP server – if not, a Receipt, receipt code 7, is generated and no further processing takes place.

.2 The IDE issues a DDP request to the DDP server for the update.

.3 The IDE forwards the DDP notification to all configured DCs.

.4 The IDE will wait X min for a DDP update to be sent by the DDP server, where X=15 for an immediate update and X=60 for a regular update.

.5 If no DDP update is received in X min, the IDE will issue another DDP Request.

.6 The IDE will repeat steps 4 and 5 until within 30 min of when the DDP version associated with the Notification is to become required. If the DDP update has not been received by that time, an alarm will be generated to trigger manual action by the IDE Operator.

.7 The IDE receives the DDP update from the DDP server.

.8 The IDE verifies that the LRIT ID in the PKI certificate is that of the DDP server – if not, a Receipt, receipt code 7, is generated and an alarm will be generated to trigger manual action by the IDE Operator.

.9 The IDE processes the DDP update, updating its database as required.

6.1.1.2 The process described in paragraph 6.1.1.1 is illustrated in figure 3.
Figure 3
IDE handling of DDP notifications and updates flow chart

IDE Receives DDP Notification

LRIT ID in Certificate matches DDP server?
Yes

Journal DDP Notification

Send DDP Request to DDP Server

Journal DDP Request

Forward DDP Notification to all Data Centres

Journal DDP Notifications Sent to Data Centres

No

Wait X minutes

Yes

DDP Update Received?
Yes

Process DDP Update

Journal DDP Update

Send Receipt Journal Receipt Journal DDP Notification

< 30 minutes Until implementation deadline?

No

Generate Alarm to IDE Operator

Yes
7 DC handling of DDP notifications and updates

7.1 General

7.1.1 Overview

7.1.1.1 The DC will function as follows when it receives a DDP notification from the IDE:

.1 The DC verifies that the LRIT ID in the PKI certificate is that of the IDE – if not, a Receipt, receipt code 7, is generated and no further processing takes place.

.2 The DC issues a DDP request to the DDP server for the update.

.3 The DC will wait X min for a DDP update to be sent by the DDP server, where X=15 for an immediate update and X=60 for a regular update.

.4 If no DDP update is received in X min, the DC will issue another DDP request.

.5 The DC will repeat steps 4 and 5 until within 30 min of when the DDP version associated with the Notification is to become required. If the DDP update has not been received by that time, an alarm will be generated to trigger manual action by the DC Operator.

.6 The DC receives the DDP update from the DDP server.

.7 The DC verifies that the LRIT ID in the PKI certificate is that of the DDP server – if not, a Receipt, receipt code 7, is generated and an alarm will be generated to trigger manual action by the DC Operator.

.8 The DC processes the DDP update, updating its database as required.
ANNEX 2

TECHNICAL SPECIFICATIONS FOR THE INTERNATIONAL LRIT DATA CENTRE

(To be updated when an International LRIT Data Centre is to be established)
ANNEX 3

TECHNICAL SPECIFICATIONS FOR COMMUNICATIONS WITHIN THE LRIT SYSTEM

1 Overview

1.1 General provisions

1.1.1 General

1.1.1.1 The technical specification described in this annex should always be read together with:

   .1 regulation V/19-1;
   .2 the revised Performance standards and functional requirements for the long-range identification and tracking of ships;
   .3 the Technical specifications for the International LRIT Data Exchange;
   .4 the Technical specifications for the LRIT Data Distribution Plan; and
   .5 the XML schemas.

2 Communication within the LRIT system

2.1 General

2.1.1 Overview

2.1.1.1 This annex describes communications within the LRIT system.

2.1.2 Message types

2.1.2.1 Communication within the LRIT system is based upon three types of messages passing between the various LRIT system components: LRIT request messages; LRIT position report messages; and other system messages.

2.1.2.2 Request messages are those requesting specific LRIT information.

2.1.2.3 LRIT position report messages are those containing LRIT information.

2.1.2.4 Other messages managed by the system include: receipt messages; DDP related messages, system status messages, Journal related messages and pricing related messages.

2.1.2.5 This annex outlines the parameters associated with each message, as well as the functional operational flow of the messages within the LRIT system.

2.1.2.6 Each LRIT component (with the exception of the shipborne equipment, which has its own unique identifier) and each LRIT Data User has its own unique LRIT identifier (LRIT ID) that enables other components within the LRIT system to identify that particular component or user. The Organization should manage the list of unique LRIT identifiers (LRIT IDs) and be responsible for assigning, to the various LRIT system components, their designated LRIT identifier (LRIT ID) number.
2.1.2.7 Figure 1 illustrates the LRIT components (shipborne equipment, CSP Station, CSP, ASP, DC, Contracting Government, DDP server and the IDE) as well as the various communications segments (A to F) in the LRIT system. The shaded area represents the communication paths specified in this annex.

2.1.2.8 The design of communications segments A and B for NDCs and R/CDCs are at the discretion of the Contracting Governments establishing such DCs. Communication segment A for the IDC is at the discretion of ASPs and CSPs providing services to the IDC. Section 3 on Communication protocol strategy provides further detail with respect to the responsibilities of the various LRIT components with respect to the communications segments.

Figure 1
LRIT communications segments

2.2 LRIT messaging format summary

2.2.1 Summary of LRIT messages

2.2.1.1 Table 1 provides a summary of all LRIT messages.
Table 1

Summary of LRIT messages

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>Description/Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>LRIT position report messages</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Periodic position report</td>
<td>On demand position report(^1) or pre-scheduled position report(^2) containing LRIT information transmitted either at preset intervals(^3) (i.e. pre-scheduled), or as a result of remote configuration of the shipborne equipment so as to transmit at an interval other than the pre-set one (i.e. on demand position report involving remote configuration), or in response to receipt of a most recent position request or an archived LRIT information request.</td>
</tr>
<tr>
<td>2</td>
<td>Polled position report</td>
<td>On-demand position report(^4) containing LRIT information transmitted in response to receipt of a one time poll request.</td>
</tr>
<tr>
<td>3</td>
<td>SAR position report</td>
<td>Position report containing LRIT information provided to a SAR service as a result of a SAR position request or a SURPIC request with Access Type 6.</td>
</tr>
<tr>
<td></td>
<td><strong>LRIT request messages</strong></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Position request</td>
<td>Request by an LRIT Data User (other than SAR service) to: poll the position of a specific ship (i.e on-demand polling command)(^5), request pre-set 6-h reports, change the rate of transmission of LRIT information by a ship (i.e on demand request to change the rate of pre-scheduled position reports)(^6), request most recent position report in the database, request archived LRIT information or stop or restart receiving LRIT information transmitted by a given ship.</td>
</tr>
<tr>
<td>5</td>
<td>SAR position request</td>
<td>Request by a SAR service to: poll the position of a specific ship (i.e on-demand polling command)(^5), request the most recent position report in the database of a given ship or request archived LRIT information transmitted by a given ship.</td>
</tr>
<tr>
<td>6</td>
<td>SURPIC request</td>
<td>Request by a Contracting Government or a SAR service for the provision of the most recent position reports or the archived position reports already in a DC’s database, within a specific geographical area.</td>
</tr>
</tbody>
</table>

1 Refer to on demand reports as defined in Note (1) in table 1 of the revised Performance standards.
2 Refer to pre-scheduled position reports as defined in Note (2) in table 1 of the revised Performance standards.
3 Preset intervals are the intervals specified in paragraph 4.4 of the revised Performance standards.
4 Refer to on demand reports as defined in Note (1) in table 1 of the revised Performance standards.
5 Refer to on demand reports as defined in Note (1) in table 1 of the revised Performance standards.
6 Refer to pre-scheduled position reports as defined in Note (2) in table 1 of the revised Performance standards.
<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>Description/Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Receipt</td>
<td>Acknowledges receipt of a message that was successfully processed or that cannot be processed for some reason</td>
</tr>
<tr>
<td>8</td>
<td>DDP notification</td>
<td>Advises the IDE and all DCs that a new version of the DDP has been published and is available for download</td>
</tr>
<tr>
<td>9</td>
<td>DDP request</td>
<td>Request for a copy of the DDP or for an incremental update</td>
</tr>
<tr>
<td>10</td>
<td>DDP update</td>
<td>Transmits the requested version of the DDP including archived ones</td>
</tr>
<tr>
<td>11</td>
<td>System status</td>
<td>Routine 30-min message from the IDE to all DCs and the DDP server and from all DCS and the DDP server to the IDE advising the system status</td>
</tr>
<tr>
<td>12</td>
<td>Journal</td>
<td>Transmits to the IDE the journals created by an R/CDC or the IDC when internally routing LRIT information from ships associated with that R/CDC or the IDC</td>
</tr>
<tr>
<td>13</td>
<td>Pricing notification</td>
<td>Not used</td>
</tr>
<tr>
<td>14</td>
<td>Pricing request</td>
<td>Not used</td>
</tr>
<tr>
<td>15</td>
<td>Update pricing file</td>
<td>Not used</td>
</tr>
<tr>
<td>16</td>
<td>Geographical area update</td>
<td>Requests technical validation of polygons from the IDE, and adds, replaces or deletes custom coastal geographical areas in the DDP</td>
</tr>
<tr>
<td>17</td>
<td>Coastal State standing order update</td>
<td>Updates coastal State standing order in the DDP</td>
</tr>
</tbody>
</table>

2.2.1.2 Paragraphs 2.2.2 to 2.2.13 describe each of the LRIT messages. Each message is presented in tabular format under the following column headings:

.1 Parameter provided by – indicates the particular LRIT component that provides the parameter information contained in the message;

.2 Parameter – lists the various parameter names contained within the LRIT message;

.3 Values – lists the potential values of each associated parameter;

.4 Description – provides brief information pertaining to each of the various parameters in the LRIT message;

.5 LRIT segments – indicates which of the LRIT communications segments of figure 1 contain each parameter; and

.6 Processed format – defines the specific format for each parameter.
2.2.1.3 The definition of the various processed formats listed in the *Processed format* column of the tables 2 to 12 are provided below. For full schemas for the various processed formats, reference should be made to annex 6 on XML Schemas.

.1 \( n \) - indicates 1 ASCII decimal digit (0-9);

.2 \( n_1...n_n \) - indicates 1 to \( n \) ASCII decimal digits;

.3 \( c \) - indicates 1 ASCII alphabetic character;

.4 \( c_1...c_n \) – indicates 1 to \( n \) ASCII alphabetic characters;

.5 \( \text{xs:dateTime} \) – represents a Timestamp: Timestamps used within the LRIT system are of the XML Schema Datatype *dateTime*, as defined in http://www.w3.org/TR/xmlschema-2. The lexical representation of *dateTime* consists of finite-length sequences of characters of the form:

\[
'\text{-}'? \text{yyyy} '\text{-}' \text{mm} '\text{-}' \text{dd} 'T' 'hh':\text{mm}':\text{ss} ('.' \text{s+}? (zzzzzz)?
\]

Where:

- '\-?' \text{yyyy} is a four-or-more digit optionally negative-signed numeral that represents the year; if more than four digits, leading zeros are prohibited, and '0000' is prohibited (note that a plus sign is not permitted);
- the remaining '\-'s are separators between parts of the date portion;
- the first mm is a two-digit numeral that represents the month;
- dd is a two-digit numeral that represents the day;
- 'T' is a separator indicating that time-of-day follows;
- hh is a two-digit numeral that represents the h; '24' is permitted if the min and seconds represented are zero, and the dateTime value so represented is the first instant of the following day (the h property of a dateTime object in the ·value space· cannot have a value greater than 23);
- ':' is a separator between parts of the time-of-day portion;
- the second mm is a two-digit numeral that represents the minute;
- ss is a two-integer-digit numeral that represents the whole seconds;
- '.' \text{s+} (if present) represents the fractional seconds;
- zzzzzz (if present) represents the timezone (as described below).

LRIT timestamps must all be in UTC. An example of a valid timestamp would be 2009-10-10T12:00:00Z or 2009-10-10T12:00:00.067Z.

.6 TEXT – unformatted alpha numeric text string in the English language.

2.2.1.4 All times in the LRIT system should be indicated as Universal Co-ordinated Time (UTC) and all time stamps should use UTC with an accuracy of less than or equal to 1 second. This may be achieved by synchronization with an NTP server (a list of publicly available time servers can be found on the web site NTP.org) or other technical means.

2.2.1.5 All geographical positions and coordinate points (latitude and longitude) should be based on the WGS 84 datum.
2.2.1.6 XML data formats will use UTF-8 to encode Unicode characters in the English language. Acceptable characters for use in LRIT messages are listed in table 17.

2.2.1.7 All DCs should archive all LRIT Messages with the exception of the file attachments associated with Message 10 (DDP Update) and Message 12 (Journal), in the case or RDC, CDCs and the IDC, 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 Messages should provide a complete record of the activities of the centre between two consecutive annual audits of its performance.

2.2.2 LRIT position report messages (Messages 1, 2 and 3)

2.2.2.1 Table 2 outlines the parameters associated with the LRIT position report messages.

2.2.2.2 NDCs and R/CDCs should format LRIT position reports in a processed format as specified in table 2 before transmitting them to the IDE. The ship to CSP to ASP to NDC or R/CDC communication path may transmit LRIT position report messages amongst themselves in any format that they choose.

2.2.2.3 The ASP to IDC to IDE communication path should transmit LRIT position reports in a processed format as specified in table 2. The ship to CSP to ASP communication path used by the IDC may transmit LRIT position report messages amongst themselves in any format that they choose.

2.2.2.4 The LRIT position messages are intended to provide each of the LRIT Data Users (other than the SAR service) with the LRIT information pertaining to the ships being tracked by them and to SAR services related information to enable the search and rescue of persons in distress at sea.

2.2.2.5 The message header, as stated in the revised Performance standards, refers to all parameters with the exception of the parameters provided by the LRIT shipborne equipment (i.e. the Latitude, Longitude, TimeStamp1 and ShipborneEquipmentId parameters as shown in table 2).

2.2.2.6 The parameters provided by the LRIT shipborne equipment include: the Latitude; Longitude; TimeStamp when the position was generated; and the ShipborneEquipmentId.

2.2.2.7 The processed format of these parameters as outlined in table 2 indicates how the parameters should be formatted while the information is contained within the message and does not specify the format of how the shipborne equipment transmits the information.

2.2.2.8 The ASPId parameter is the LRIT ID of the ASP that has received the LRIT information.

2.2.2.9 The CSPId parameter is the LRIT ID of the CSP that has transmitted the LRIT information to the ASP. This parameter is optional within the schema.

2.2.2.10 The MessageType parameter indicates the type of the message. LRIT components such as the DCs should use this parameter to distinguish between the various types of messages listed in table 1.

2.2.2.11 The MessageId parameter is a unique identification number that LRIT components should use to identify individual messages within the LRIT system. The MessageId is generated by linking the LRIT Component ID of the data provider (for segment B from figure 1,
ASPiD; for other segments, Data User ID) the date and time, and a 5 digit unique sequence number together. An example of a MessageId is 19992007013011552311111 where the LRIT ID of the LRIT Data User = 1999, year = 2007, month = 01, day = 30, hour = 11, minute = 55, second = 23, and unique number = 11111.

2.2.2.12 The ReferenceId parameter should be either a MessageId of an associated request message or an empty value. Specifically, for archived requests, the ReferenceId should be the MessageId of the associated archive request message and not the value as stored. The value is not populated if the message is not the result of a request message. A valid ReferenceId that is not an empty value indicates that a request message has initiated the provision of LRIT information.

2.2.2.13 The IMONum and MMSINum parameters are the IMO ship identification number and the Maritime Mobile Service Identity (MMSI) of the ship being tracked, respectively.

2.2.2.14 The TimeStamp2 and TimeStamp3 parameters are the date and time associated with when the ASP received and transmitted the LRIT information message, respectively. Both TimeStamps should be indicated as Universal Co-ordinated Time (UTC).

2.2.2.15 The DCId parameter is the LRIT ID of the DC receiving the LRIT information.

2.2.2.16 The TimeStamp4 and TimeStamp5 parameters are the date and time associated with when the DC received and transmitted the LRIT information message, respectively.

2.2.2.17 The responseType parameter provides information with respect to why the receiving LRIT Data User (DataUserRequestor) is receiving the LRIT information. The LRIT Data User’s entitlement to receive the LRIT information is based upon its functioning as: a flag State; a port State; a coastal State; or a SAR service.

2.2.2.18 The DataUserRequestor parameter is the LRIT ID of the LRIT Data User that is intended to receive LRIT information as a result of a request message or a standing order. The IDE should look at this parameter during processing of the message and use it to correctly route the message to the appropriate DC.

2.2.2.19 The ShipName parameter is the name of the ship in the English language using UTF-8 encoding. Acceptable characters for inclusion in ship names are listed in table 17. A DC may reject a message containing any other character with a SOAP Fault or with a Receipt containing ReceiptCode 7 (System fault).

2.2.2.20 The ShipType parameter is the code of the type of ship transmitting the LRIT information. Ship types codes to be used in the LRIT system are defined in paragraph 1.2.3.3 to the annex of this circular.

2.2.2.21 The DataUserProvider parameter is the LRIT ID of the LRIT Data User (i.e. the Administration) associated with that ship.

2.2.2.22 The DDPVersionNum parameter is the version number of the DDP that is being used by the DC sending the message.

2.2.2.23 The test parameter indicates whether the message is a test message intended for testing purposes only, or a regular LRIT message.

2.2.2.24 The schemaVersion parameter represents the release number associated with the set of XML schema files that define the LRIT messages. This parameter is informative only and no processing action is required by the receiving LRIT component.
# Table 2

## Summary of LRIT position report messages
(Messages 1, 2 and 3)

<table>
<thead>
<tr>
<th>Parameter provided by</th>
<th>Parameter</th>
<th>Values</th>
<th>Description</th>
<th>LRIT system communication segments (see figure 1)</th>
<th>Processed format (see paragraph 2.2.1.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipborne equipment</td>
<td>Latitude</td>
<td>Latitude</td>
<td>GNSS latitude position of ship (based on the WGS84 datum) in degrees, minutes and decimal minutes to two decimal places N (North) /S (South)</td>
<td>B, C, D</td>
<td>nn.nn.nn.nn.c</td>
</tr>
<tr>
<td></td>
<td>Longitude</td>
<td>Longitude</td>
<td>GNSS longitude position of ship (based on the WGS84 datum in degrees, minutes and decimal minutes to two decimal places E (East) /W (West)</td>
<td>B, C, D</td>
<td>nnn.nn.nn.nn.c</td>
</tr>
<tr>
<td></td>
<td>TimeStamp1</td>
<td>Date and time</td>
<td>Date and time associated with the GNSS position</td>
<td>B, C, D</td>
<td>xs:dateTime</td>
</tr>
<tr>
<td></td>
<td>ShipborneEquipmentId</td>
<td>Unique number</td>
<td>Identifier used by the shipborne equipment</td>
<td>B, C, D</td>
<td>c₁…cₙ</td>
</tr>
<tr>
<td>ASP or DC</td>
<td>ASPId</td>
<td>LRIT ID</td>
<td>LRIT ID of the ASP that received the LRIT information</td>
<td>B, C, D</td>
<td>nnnn</td>
</tr>
<tr>
<td></td>
<td>CSPId</td>
<td>LRIT ID</td>
<td>LRIT ID of the CSP that transmitted the LRIT information</td>
<td>B, C, D</td>
<td>nnnn (optional in the schema)</td>
</tr>
<tr>
<td></td>
<td>MessageType</td>
<td>1, 2, 3</td>
<td>Message type number: 1 - Periodic report 2 - Polled report 3 - SAR report</td>
<td>B, C, D</td>
<td>nn</td>
</tr>
<tr>
<td>Parameter provided by</td>
<td>Parameter</td>
<td>Values</td>
<td>Description</td>
<td>LRIT system communication segments (see figure 1)</td>
<td>Processed format (see paragraph 2.2.1.3)</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------</td>
<td>--------</td>
<td>-------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>MessageId</td>
<td>Unique number</td>
<td>Unique message number generated by using: the LRIT Component ID of the data provider (for segment B from figure 1, ASPId; for other segments, Data User ID), date and time and unique sequence number</td>
<td>B, C, D</td>
<td>nnnnYYYYMMDDHHmmssnnnnnn</td>
<td></td>
</tr>
<tr>
<td>ReferenceId</td>
<td>Empty, MessageId</td>
<td>MessageId of associated request message. Only valid for a response to a request message. An empty value indicates the message is not result of request message</td>
<td>B, C, D</td>
<td>nnnnYYYYMMDDHHmmssnnnnnn</td>
<td></td>
</tr>
<tr>
<td>IMONum</td>
<td>IMO#</td>
<td>IMO ship identification number of the ship being tracked</td>
<td>B, C, D</td>
<td>nnnnnnn</td>
<td></td>
</tr>
<tr>
<td>MMSINum</td>
<td>MMSI#</td>
<td>MMSI of the ship being tracked</td>
<td>B, C, D</td>
<td>nnnnnnnnnnn</td>
<td></td>
</tr>
<tr>
<td>TimeStamp2</td>
<td>Date and time</td>
<td>Date and time the ASP receives the message</td>
<td>B, C, D</td>
<td>xs:dateTime</td>
<td></td>
</tr>
<tr>
<td>TimeStamp3</td>
<td>Date and time</td>
<td>Date and time the ASP transmits the message</td>
<td>B, C, D</td>
<td>xs:dateTime</td>
<td></td>
</tr>
<tr>
<td>DC</td>
<td>DCId</td>
<td>LRIT ID of the DC receiving the LRIT information</td>
<td>D, C</td>
<td>nnnn</td>
<td></td>
</tr>
<tr>
<td>TimeStamp4</td>
<td>Date and time</td>
<td>Date and time when the DC receives the message</td>
<td>D, C</td>
<td>xs:dateTime</td>
<td></td>
</tr>
<tr>
<td>TimeStamp5</td>
<td>Date and time</td>
<td>Date and time when the DC sends the message</td>
<td>D, C</td>
<td>xs:dateTime</td>
<td></td>
</tr>
<tr>
<td>ResponseType</td>
<td>1, 2, 3, 4</td>
<td>One of the following values should be added by the DC when the message is transmitted: 1 - Coastal 2 - Flag 3 - Port 4 - SAR</td>
<td>D, C</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>Parameter provided by</td>
<td>Parameter</td>
<td>Values</td>
<td>Description</td>
<td>LRIT system communication segments (see figure 1)</td>
<td>Processed format (see paragraph 2.2.1.3)</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------</td>
<td>-----------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------------------------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>DataUserRequestor</td>
<td>LRIT ID</td>
<td>LRIT ID of the LRIT Data User requesting the LRIT information as a result of a request message or a standing order. For a coastal State the request should be part of the standing order in the DDP</td>
<td>D, C</td>
<td>nnnn</td>
<td></td>
</tr>
<tr>
<td>ShipName</td>
<td>Name</td>
<td>Name of the ship associated with the LRIT information</td>
<td>D, C</td>
<td>TEXT</td>
<td></td>
</tr>
<tr>
<td>ShipType</td>
<td>Ship type</td>
<td>Code of the type of ship transmitting the LRIT information (ship types codes to be used in the LRIT system are defined in paragraph 1.2.3.3 to the annex of this circular)</td>
<td>D, C</td>
<td>nnnn</td>
<td></td>
</tr>
<tr>
<td>DataUserProvider</td>
<td>LRIT ID</td>
<td>LRIT ID of the LRIT Data User (i.e. the Administration) associated with that ship</td>
<td>D, C</td>
<td>nnnn</td>
<td></td>
</tr>
<tr>
<td>DDPVersionNum</td>
<td>Unique number</td>
<td>DDP version number of the DDP used by a DC</td>
<td>D, C</td>
<td>n1...n1:n1...n1:n1...n1:n1...n1</td>
<td></td>
</tr>
<tr>
<td>test</td>
<td>0, 1</td>
<td>Setting indicates if the message is a test message or a regular LRIT message: 0 - Regular message 1 - Test message</td>
<td>D, C</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>schemaVersion</td>
<td>Decimal number</td>
<td>The release number of the XML schema associated with all the LRIT messages</td>
<td>D, C</td>
<td>n1...n1:n1...n1:n1...n1:n1...n1</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. ASP providing services to the IDC.
2.2.3 Position request and SAR position request messages (Messages 4 and 5)

2.2.3.1 Table 3 outlines the parameters associated with the Position request and SAR position request messages.

2.2.3.2 NDCs and R/CDCs should format Position request and SAR position request messages as specified in table 3 before transmitting them to the IDE. The LRIT Data User to NDC or R/CDC communication path may transmit Position request and SAR position request messages amongst themselves in any format they choose.

2.2.3.3 The LRIT Data User to IDC to IDE communication path should transmit Position request and SAR position request messages in a processed format as specified in table 3.

2.2.3.4 The LRIT request messages are intended to provide LRIT Data Users with the ability, inter alia, to poll the position of a specific ship, change the rate of transmission of LRIT information by a ship, request archived LRIT information or stop receiving LRIT information transmitted by a given ship.

2.2.3.5 The MessageType parameter indicates the type of the message. The LRIT components such as the DCs should use this parameter to distinguish between the various types of messages listed in table 1.

2.2.3.6 The MessageId parameter is a unique identification number that LRIT components should use to identify individual messages within the LRIT system. The MessageId is generated by linking the LRIT ID of the LRIT Data User, the date and time, and a 5 digit unique sequence number together. The unique sequence number should be generated by the LRIT Data User and the date and time should be the year, month, day, h, min and second when the parameter was generated. An example of a MessageId is 19992007013011552322222 where the LRIT ID of the LRIT Data User = 1999, year = 2007, month = 01, day = 30, h = 11 min = 55, second = 23, unique sequence number = 22222).

2.2.3.7 The IMONum parameter is the IMO ship identification number of the ship being tracked.

2.2.3.8 The DataUserProvider parameter is the LRIT ID of the LRIT Data User of the Administration for that ship. This parameter is used to identify the destination of the request message. The IDE should look at this parameter during processing of the request message and use it to correctly route the message to the appropriate DC.

2.2.3.9 The AccessType parameter indicates the requesting LRIT Data User’s entitlement to receive the LRIT information. The LRIT Data User might be requesting the LRIT information as: a flag State; a port State; a coastal State; or a SAR service. If the AccessType is port State, then the trigger mechanism should be: a distance from a port, or commence tracking upon receiving request message, or a specific time. AccessType 0 is used in conjunction with RequestType 0 in order to restart/reset all previous requests to the referenced ship. The LRIT Data User issuing the request message with this parameter combination has effectively cancelled all previous request messages and should only receive LRIT information based upon standing orders in the DDP for that ship.

2.2.3.10 The Port, PortFacility, or Place parameter should be populated with the UN/LOCODE code for the port, IMO port facility number of the port facility or a unique code for places under the jurisdiction of Contracting Governments that the ship is intending to enter. This parameter should not be present if the request is not a port State request. This parameter is only valid for AccessTypes 3 and 5.
2.2.3.11 The **Distance** parameter should be the distance in nautical miles from a port or port facility where the requesting Contracting Government wishes to track the designated ship. This parameter is only valid when the **AccessType** parameter is set to 3.

2.2.3.12 The **RequestType** parameter should indicate whether the request is for: a restart/reset; a one-time poll; a specified periodic rate; archived data; most recent position report; stop tracking / do not start sending position reports. The *do not start sending position reports* message option provides Contracting Governments with the ability to temporarily override standing orders in the DDP. Consider the scenario where a Contracting Government is tracking a ship via port State access and does not want to receive LRIT information as a coastal State. The Contracting Governments could build a request message with coastal for the "AccessType parameter and stop / don't start sending for the **RequestType**. The providing DC, after receiving such a request message, should not start sending any coastal LRIT information for the period of time stated in the **RequestDuration** parameter. If a stop time is not specified within the **RequestDuration** parameter, then the providing DC should terminate the request upon receipt of the ship’s first position report from the ship that is outside the coastal State standing order polygon(s) of the requestor. If the ship has not reported within the 6 months from the time the stop request was received, the providing DC should terminate the request. Furthermore, if a **RequestDuration** parameter is specified, then the stop request (with associated request duration) should be applied irrespective of the ship's location.

2.2.3.13 The **RequestDuration** parameter provides information on the start and stop times for tracking of a ship. If the **AccessType** is 3, then the **RequestDuration** and the **Distance** are both valid parameters. If the **RequestDuration** is unspecified, then only the distance from port is valid for the port State request with distance trigger. The Data User Provider should queue and continue to process request messages with **AccessTypes** 3 and 5 and with a valid **RequestDuration** until the time expires or the Data User Requester terminates the ship position request. If the start time is not populated, it will default to the current time. If the stop time is not populated, it will default to infinity. The start time shall precede the end time. The Request duration for an archived request should not exceed 30 days.

2.2.3.14 The **DataUserRequestor** parameter is the LRIT ID of the LRIT Data User originating the request message. For SAR position requests, the **DataUserRequestor** parameter should be populated with an LRIT ID that is associated with a valid SAR service for SAR related messages.

2.2.3.15 The **TimeStamp** parameter is the date and time associated with the generation of the message.

2.2.3.16 The **DDPVersionNum** parameter is the version number of the DDP that is being used by the DC sending the message at the time the message is sent (timestamp5).

2.2.3.17 The **test** parameter indicates whether the message is a test message intended for testing purposes only or if it is a regular message.

2.2.3.18 The **schemaVersion** parameter represents the release number associated with the set of XML schema files that define the LRIT messages. This parameter is informative only and no processing action is required by the receiving LRIT component.
Table 3
Summary of Position request and SAR position request messages
(Messages 4 and 5)

<table>
<thead>
<tr>
<th>Parameter provided by</th>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>LRIT system communication segments (see figure 1)</th>
<th>Processed format (see paragraph 2.2.1.3)</th>
</tr>
</thead>
</table>
| LRIT Data User 1      | MessageType     | 4, 5  | Message type number:  
4 - Position request  
5 - SAR position request | B, C, D | nn |
|                       | MessageId       | Unique number | Unique message number generated by using: LRIT ID of the LRIT Data User, date and time and unique sequence number | B, C, D | nnnnYYYYMMDDHHmssnnnnn |
|                       | IMONum          | IMO number | IMO ship identification number of the ship to be tracked | B, C, D | nnnnnnn |
|                       | DataUserProvider | LRIT ID | LRIT ID of the LRIT Data User (i.e. the Administration) associated with that ship | B, C, D | nnnn |
|                       | AccessType      | 0, 1, 2, 3, 4, 5, 6 | This parameter should be set based upon the Data User Requestor's entitlement to receive LRIT information:  
0 - Restart/reset for all entitlements of LRIT Data User  
1 - Coastal  
2 - Flag  
3 - Port with distance trigger from port or port facility\(^2\)  
4 - Reserved for future use  
5 - Port with time trigger  
6 - SAR (only valid with message type 5) | B, C, D | n |
<table>
<thead>
<tr>
<th>Parameter provided by</th>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>LRIT system communication segments (see figure 1)</th>
<th>Processed format (see paragraph 2.2.1.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port, PortFacility, or Place</td>
<td>UN/LOCODE, IMO unique port facility number, or place code</td>
<td>UN/LOCODE code for the port, IMO port facility number for the port facility, or a unique code for places under the jurisdiction of Contracting Governments that the ship is planning on entering. Parameter is valid only for AccessType 3 and 5</td>
<td>B, C, D</td>
<td>c1…cn</td>
<td></td>
</tr>
<tr>
<td>Distance</td>
<td>nautical miles</td>
<td>Distance in nautical miles from the port or port facility where tracking should commence. Parameter is only valid for AccessType 3</td>
<td>B, C, D</td>
<td>nnnn</td>
<td></td>
</tr>
<tr>
<td>RequestType</td>
<td>0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11</td>
<td>Request type5:&lt;br&gt;&lt;br&gt;0 - Restart/reset 3&lt;br&gt;1 - One time poll of ship 4&lt;br&gt;2 - 15 min periodic rate&lt;br&gt;3 - 30 min periodic rate&lt;br&gt;4 - 1 h periodic rate&lt;br&gt;5 - 3 h periodic rate&lt;br&gt;6 - 6 h periodic rate&lt;br&gt;7 - Archived LRIT information request&lt;br&gt;8 - Stop/don’t start sending position reports&lt;br&gt;9 - Most recent position report&lt;br&gt;10 - 12 h periodic rate&lt;br&gt;11 - 24 h periodic rate</td>
<td>B, C, D</td>
<td>nn</td>
<td></td>
</tr>
<tr>
<td>RequestDuration</td>
<td>Start time and/or stop time</td>
<td>START refers to the time when LRIT position reports are requested to begin. If not specified, it defaults to the current time&lt;br&gt;STOP refers to the end time for receiving LRIT reports. If not specified, it defaults to infinity (Contracting Governments might decide to use repeat polling or periodic rate modification to obtain variable position report intervals)</td>
<td>B, C, D</td>
<td>xs:dateTime</td>
<td></td>
</tr>
<tr>
<td>Parameter provided by</td>
<td>Parameter</td>
<td>Value</td>
<td>Description</td>
<td>LRIT system communication segments (see figure 1)</td>
<td>Processed format (see paragraph 2.2.1.3)</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------</td>
<td>------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>---------------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>DataUserRequestor</td>
<td>LRIT ID</td>
<td>LRIT ID of the LRIT Data User originating the request</td>
<td></td>
<td>B, C, D</td>
<td>nnnn</td>
</tr>
<tr>
<td>TimeStamp</td>
<td>Date and time</td>
<td>Date and time when an LRIT Data User transmits the message to its DC</td>
<td></td>
<td>B, C, D</td>
<td>xs:dateTime</td>
</tr>
<tr>
<td>DC</td>
<td>DDPVersionNum</td>
<td>Unique number</td>
<td>DDP version number of the DDP used by the DC</td>
<td>D, C</td>
<td>$n_1...n_n$</td>
</tr>
<tr>
<td>Test</td>
<td>0, 1</td>
<td>Setting indicates if the message is a test message or a regular message</td>
<td>0 - Regular message 1 - Test message</td>
<td>D, C</td>
<td>n</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>schemaVersion</td>
<td>Decimal number</td>
<td>The release number of the XML schema associated with all the LRIT messages</td>
<td>D, C</td>
<td>$n_1...n_n$</td>
</tr>
</tbody>
</table>

Notes:

1. LRIT Data Users that receive services from the IDC should provide the parameter information listed in the table. The connection between LRIT Data Users and NDCs or R/CDCs is not specified in this annex and thus the parameter information listed in the table might be provided by the DC.

2. For port with distance trigger (AccessType 3), RequestTypes 1, 7 and 9 are not valid.

3. AccessType 0 and RequestType 0 are only valid with Message 4, and RequestType 0 should only be used with AccessType 0 and vice versa.

4. To make a port State request for a one time poll (RequestType 1), archive LRIT information requests (RequestType 7) or most recent LRIT information (RequestType 9), AccessType 5 should be used.

5. RequestTypes 1 (one time poll), 7 (archive request) and 9 (most recent position report) are the only valid values for Message 5 (SAR position request).
2.2.4  SURPIC request message (Message 6)

2.2.4.1  Table 4 outlines the parameters associated with the SURPIC request message.

2.2.4.2  NDCs and R/CDCs should format the SURPIC message as specified in table 4 before transmitting it to the IDE. The LRIT Data User to NDC or R/CDC communication path may transmit SURPIC messages amongst themselves in any format that they choose.

2.2.4.3  The LRIT Data User to IDC to IDE communication path should transmit SURPIC messages in a processed format as specified in table 4.

2.2.4.4  This message requests the most recent LRIT information and the archived LRIT information from the databases within the DCs. It is intended to provide Coastal and SAR LRIT Data users with the ability to obtain a picture of the ships in a given geographical area. Coastal LRIT Data users have the option to request LRIT information only from certain ships by indicating the type of ship and/or the LRIT ID of the Contracting Government the LRIT information is requested from.

2.2.4.5  The MessageType parameter indicates the type of the message. The LRIT components such as the DCs should use this parameter to distinguish between the various types of messages listed in table 1.

2.2.4.6  The MessageId parameter is a unique identification number that LRIT components should use to identify individual messages within the LRIT system. The MessageId is generated by linking the LRIT ID of the LRIT Data User, the date and time, and a 5 digit unique sequence number together. The unique sequence number should be generated by the LRIT Data User and the date and time should be the year, month, day, h, min and second when the parameter was generated. An example of a MessageId is 29992007013021552344444 where the LRIT ID of the LRIT Data User = 2999, year = 2007, month = 01, day = 30, h = 21, min = 55, second = 23, and unique sequence number = 44444.

2.2.4.7  The AccessType parameter indicates the requesting LRIT Data User’s entitlement to receive the LRIT information. The LRIT Data User might be requesting the LRIT information as a coastal State or SAR service.

2.2.4.8  The DataUserProvider parameter is the LRIT ID of the Contracting Government the information is requested from. This parameter is used by Coastal LRIT Data users to identify the destination of the request message. The IDE should look at this parameter during processing of the request message and use it to correctly route the message to the appropriate DC. If this parameter is unspecified, the message will be broadcast to all DCs.

2.2.4.9  The CircularArea parameter defines the circular geographical area within which the LRIT Data User wishes to check for ships. The position of the centre of the circular area should be indicated by the latitude and longitude on the basis of the WGS 84 datum in degrees and minutes with North/South (latitude) and East/West (longitude). The radius of the circular area should be indicated in nautical miles. This parameter is only valid if the parameter is populated and indicates that the LRIT Data User wishes to perform a search based on a circular area. The radius of the circular search area should not exceed 999 nautical miles. If a processing DC encounters a radius of a circular search that is greater than 999 nautical miles then the processing DC should send a receipt message with receipt code 7 to the requestor.

2.2.4.10  The RectangularArea parameter defines the rectangular geographical area within which the LRIT Data User wishes to check for ships. The rectangular area should be indicated by the latitude and longitude on the basis of the WGS 84 datum of the southwest corner of the
rectangular area in degrees and minutes with North/South (latitude) and East/West (longitude), and the north and east offsets are expressed as: degrees.minutes.North and East from the Southwest corner. This parameter is only valid if the parameter is populated and indicates that the LRIT Data User wishes to perform a search based on a rectangular area. No side of the rectangular search area should exceed 2000 nautical miles. If a processing DC encounters a side of the rectangular area that is greater than 2000 nautical miles then the processing DC should send a receipt message with receipt code 7 to the requestor.

2.2.4.10.1 If the latitude of the Southwest corner of the rectangular area is 90 degrees North or South, or if adding the North offset to the latitude of the Southwest corner results in a latitude of 90 degrees North or South, then the processing DC may, in the course of processing the request, modify the 90 degree latitude by a maximum of one minute to ensure proper geospatial processing (i.e. In the maximum allowable modification, the latitude should be set to 89 degrees 59 minutes).

2.2.4.10.2 If adding the North offset to the latitude of the Southwest corner of the rectangular area results in a latitude of greater than 90 degrees North, then the processing DC should send a Receipt message with a receipt code of 7 to the requestor. In other words, the rectangular search area should not cross the North Pole. In situations where a LRIT Data User needs to submit a SURPIC that crosses either the North Pole or the South Pole, a circular area should be used.

2.2.4.11 The `ShipTypes` parameter is a list of ship type codes of the ships to be tracked. This parameter is used by Coastal LRIT Data users to identify the ship type(s) it wishes to track. Ship types codes to be used in the LRIT system are defined in paragraph 1.2.3.3 to the annex of this circular. If this parameter is unspecified, it will default to all ship types.

2.2.4.12 The `NumberOfPositions` parameter defines how many of the most recent position reports received by a DC during the past 24 h from ships within the requested geographical area are being requested by the LRIT Data User. The `NumberOfPositions` is not a valid parameter when `AccessType` is 1 and `RequestType` is 7. The `NumberOfPositions` value must be from 1 to 4. Once a DC has received a SURPIC request message, it should check all position reports it has received during the past 24 h from every ship registered to that DC. If the timestamp associated with these position reports are within the past 24 h and the position reports are within the geographical area established by the SURPIC message, then the DC should send the last N position reports associated with the ship that are within the past 24-h window and in the geographical area. Thus all the position reports that are sent to the requesting DC should have timestamps that are within the past 24-h window as well as location co-ordinates that are within the geographical area.

2.2.4.13 The `DataUserRequestor` parameter is the LRIT Data User originating the request message. The `DataUserRequestor` parameter should be populated with an LRIT ID that is associated with a valid SAR service for SAR related messages.

2.2.4.14 The `TimeStamp` parameter is the date and time associated with the generation of the message.

2.2.4.15 The `DDPVersionNum` parameter is the version number of the DDP that is being used by the DC sending the message to the IDE for broadcast to all DCs.

2.2.4.16 The `test` parameter indicates whether the message is a test message intended for testing purposes only or if it is a regular message.
2.2.4.17 The \textit{schemaVersion} parameter represents the release number associated with the set of XML schema files that define the LRIT messages. This parameter is informative only and no processing action is required by the receiving LRIT component.

2.2.4.18 The \textit{RequestDuration} parameter provides information on the start and stop time for tracking of a ship. If the \textit{RequestType} is 7, then the \textit{RequestDuration} is a valid parameter. The start and stop time must be specified. The start time should precede the stop time. The \textit{RequestDuration} for an archived request should not exceed 72 hours.

2.2.4.19 The \textit{RequestType} parameter should indicate whether the request is for: archived data or most recent position report. The \textit{RequestType} is not a valid parameter when \textit{Access Type} is 6.

2.2.4.20 The Start Time from the \textit{RequestDuration} parameter should not exceed 180 days from the \textit{TimeStamp} parameter. If the Start Time exceeds 180 days, then the DC should reply with a Receipt Message with Receipt Code 7.

2.2.4.21 In order to prevent any possible overload of the LRIT system, it is recommended that LRIT Data Users do not send more than three SURPIC requests with Request Type 7 within any 24 hours.
Table 4

Summary of SURPIC request
(Message 6)

<table>
<thead>
<tr>
<th>Parameter provided by</th>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>LRIT system communication segments (see figure 1)</th>
<th>Processed format (see paragraph 2.2.1.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRIT Data User (^1)</td>
<td>MessageType</td>
<td>6</td>
<td>Message type number: 6 – SURPIC request</td>
<td>C, D</td>
<td>nn</td>
</tr>
<tr>
<td></td>
<td>MessageId</td>
<td>Unique number</td>
<td>Unique message number generated by using: LRIT ID of the LRIT Data User, date and time and unique sequence number</td>
<td>C, D</td>
<td>nnnnYYYYMMDDHHmmssnnnnnn</td>
</tr>
<tr>
<td></td>
<td>AccessType</td>
<td>1, 6</td>
<td>This parameter should be set based upon the Data User Requestor’s entitlement to receive LRIT information: 1 – Coastal 6 – SAR</td>
<td>B, C, D</td>
<td>n</td>
</tr>
<tr>
<td></td>
<td>DataUserProvider</td>
<td>LRIT ID</td>
<td>LRIT ID of the Contracting Government the LRIT information is requested from. If unspecified, the message is broadcast to all DCs. This parameter is only valid for AccessType &quot;1&quot;.</td>
<td>B, C, D</td>
<td>nnnn</td>
</tr>
<tr>
<td></td>
<td>CircularArea</td>
<td>Centre:Radius</td>
<td>Centre of the circular area should be indicated by the latitude and longitude on the basis of the WGS 84 datum in degrees and minutes with North/South (latitude) and East / West (longitude). Radius is the radius of the circle in nautical miles</td>
<td>C, D</td>
<td>nn.nn.c:nnn.nn.c:nnn</td>
</tr>
</tbody>
</table>

\(^1\) This parameter is only valid for AccessType 1.
<table>
<thead>
<tr>
<th>Parameter provided by</th>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>LRIT system communication segments (see figure 1)</th>
<th>Processed format (see paragraph 2.2.1.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RectangularArea</td>
<td>SouthWest:Offset</td>
<td>The rectangular area should be indicated by the latitude and longitude on the basis of the WGS 84 datum of the southwest corner of the rectangular area in degrees and minutes with North/South (latitude) and East/West (longitude) and the north and east offsets are expressed as: degrees.minutes.North and East from the Southwest corner</td>
<td>C, D</td>
<td>nn.nn.c:nnn.nn.c:nnn.nn.N:nnn.nn.E</td>
<td></td>
</tr>
<tr>
<td>ShipTypes</td>
<td>Ship type</td>
<td>List of ship type codes of the ship(s) to be tracked. If unspecified, it defaults to all ship types (ship types codes to be used in the LRIT system are defined in paragraph 1.2.3.3 to the annex of this circular) This parameter is only valid for AccessType &quot;1&quot;.</td>
<td>D, C</td>
<td>List of nnnn</td>
<td></td>
</tr>
<tr>
<td>NumberOfPositions</td>
<td>1, 2, 3, 4</td>
<td>The number of position reports received from ships within the area during the past 24 h that the LRIT Data User wishes to receive. This parameter is not valid for Request Type &quot;7&quot; with Access Type &quot;1&quot;.</td>
<td>C, D</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>RequestDuration</td>
<td>Start time and stop time</td>
<td>START refers to the time when LRIT position reports are requested to begin. STOP refers to the end time for receiving LRIT reports. This parameter is only valid for Request Type &quot;7&quot; with Access Type &quot;1&quot;.</td>
<td>B, C, D</td>
<td>xs:dateTime</td>
<td></td>
</tr>
<tr>
<td>RequestType</td>
<td>7, 9</td>
<td>Request type: 7 – Archived LRIT information request 9 – Most recent LRIT information request</td>
<td>B, C, D</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>Parameter provided by</td>
<td>Parameter</td>
<td>Value</td>
<td>Description</td>
<td>LRIT system communication segments (see figure 1)</td>
<td>Processed format (see paragraph 2.2.1.3)</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------</td>
<td>-------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>DataUserRequestor</td>
<td>LRIT ID</td>
<td>LRIT ID of the LRIT Data User originating the request</td>
<td>C, D</td>
<td>nnnn</td>
<td></td>
</tr>
<tr>
<td>TimeStamp</td>
<td>Date and time</td>
<td>Date and time when the LRIT Data User transmits the message to the DC</td>
<td>C, D</td>
<td>xs:dateTime</td>
<td></td>
</tr>
<tr>
<td>DC</td>
<td>DDPVersionNum</td>
<td>Unique number</td>
<td>DDP version number of the DDP used by the DC</td>
<td>C, D</td>
<td>n_1...n_n</td>
</tr>
<tr>
<td>test</td>
<td>0, 1</td>
<td>Setting indicates if the message is a test message or a regular message</td>
<td>C, D</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 - Regular message</td>
<td>1 - Test message</td>
<td></td>
<td></td>
</tr>
<tr>
<td>schemaVersion</td>
<td>Decimal number</td>
<td>The release number of the XML schema associated with all the LRIT messages</td>
<td>C, D</td>
<td>n_1...n_n, n_1...n_n</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

1. LRIT Data Users that receive services from the IDC should provide the parameter information listed in the table. The connection between LRIT Data Users and NDCs or R/CDCs is not specified in this annex and thus the parameter information listed in the table might be provided by the DC.
2.2.5 Receipt message (Message 7)

2.2.5.1 Table 5 outlines the parameters associated with the Receipt message.

2.2.5.2 The Receipt message should be sent to the requestor in order to acknowledge the receipt of a message, or to indicate successful processing, or to inform that the request cannot be processed for some reason. When an LRIT component receives a message it should process the message and either send the requested information or send a Receipt message with the appropriate Receipt code.

2.2.5.3 The MessageType parameter indicates the type of the message. The LRIT components such as the DCs should use this parameter to distinguish between the various types of messages listed in table 1.

2.2.5.4 The MessageId parameter is a unique identification number that LRIT components should use to identify individual messages within the LRIT system. The MessageId is generated by linking the LRIT ID of the LRIT Component generating the receipt message, the date and time, and a 5 digit unique sequence number together. An example of a MessageId is 39992007013012552377777 where the LRIT ID of the LRIT Component = 3999, year = 2007, month = 01, day = 30, h =12, min = 55, second = 23, unique sequence number = 77777.

2.2.5.5 The ReferenceId parameter is the MessageId of an associated message.

2.2.5.6 The ReceiptCode parameter provides information with respect to the specific Receipt message that has been generated. In particular:

.1 ReceiptCode 0 – Not entitled to data Receipt message should be generated by a DC when it determines that the requesting LRIT Data User is not entitled to receive the LRIT information it has requested;

.2 ReceiptCode 1 – No ship in SAR SURPIC area should be generated in response to a SURPIC request message (with Access type = 6) if a DC that is processing a SURPIC request message determines that there are no ships within the geographical area specified in the SURPIC request message;

.3 ReceiptCode 2 – IDE not available should be generated when the IDE is not available for any reason. The Receipt message should typically be generated by a DC in order to indicate that the IDE is off line. A DC is able to detect this type of error by using the System status message transmitted from the IDE;

.4 ReceiptCode 3 – DC not available should be generated when a DC is not available. The IDE should be responsible for determining if all DCs are on line, as indicated by the System status message;

.5 ReceiptCode 4 – CSP not available should be generated when a DC has determined a CSP is off line. The DC is responsible for detecting when the CSP is not available;

.6 ReceiptCode 5 – Ship not responding should be generated by a DC if a ship that transmits to that DC is not responding. All DCs should be detecting if ships associated with that DC are transmitting LRIT information at the preset time intervals. If a LRIT Data User requests LRIT information from a ship that is not responding, then the DC to which the ship transmits should generate a Receipt message with text containing TimeStamp1 of the most recent LRIT information received from the ship;
.7 ReceiptCode 6 – Ship not available should be generated by a DC when a request has been made for LRIT information associated with a ship that should be transmitting to that DC but which has never transmitted information to the DC;

.8 ReceiptCode 7 – System fault should be generated when a fault occurs in the system that is not covered by the other Receipt Codes;

.9 ReceiptCode 8 – Could not load DDP should be generated when a DC or the IDE is unable to process the received DDP. The message should be sent to the DDP server;

.10 ReceiptCode 9 – Incorrect DDP version, message discarded should be generated by the IDE when the DDPVersionNum parameter contained within the message does not match the DDPVersionNum being used by the IDE. The IDE should discard the message and build a Receipt message with the ReferenceId populated with the MessageId of the discarded message;

.11 ReceiptCode 10 – Polygon passed technical validation should be generated by the IDE in response to a Message Type 16 with Action Type parameter = 0 in the case where all the polygons are in accordance with the the constraints set out in section 5 of the Technical specifications for the DDP;

.12 ReceiptCode 11 – Geographical areas successfully updated should be generated by the DDP server in response to a Message Type 16 with Action Type parameter = 1 or 2 in the case where the custom coastal geographical area(s) are successfully processed;

.13 ReceiptCode 12 – Coastal State Standing Order successfully updated should be generated by the DDP server in response to a Message Type 17 in the case where the Coastal State Standing Order is successfully processed; and

.14 ReceiptCode 13 – Not entitled or no ships in the coastal SURPIC area should be generated by a DC in response to a SURPIC request message (with Access Type = 1) when the requesting LRIT Data User is not entitled to receive the LRIT information it has requested, or when there are no ships within the SURPIC area specified.

2.2.5.7 The Destination parameter is the LRIT ID associated with the LRIT component to which the receipt message is destined. The value of this parameter should be determined by the message type of the referenced message (the message indicated by the Reference Id parameter) as follows:

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>Destination parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>Position reports</td>
<td>LRIT Data User provider</td>
</tr>
<tr>
<td>4-5</td>
<td>Position requests</td>
<td>LRIT Data User requestor</td>
</tr>
<tr>
<td>6</td>
<td>SURPIC request</td>
<td>LRIT Data User requestor</td>
</tr>
<tr>
<td>7</td>
<td>Receipt</td>
<td>Originator</td>
</tr>
</tbody>
</table>
2.2.5.8 The **Originator** parameter is the LRIT ID of the LRIT component generating the message. This parameter should be used to identify where the message originated.

2.2.5.9 The **Message** parameter should contain text providing information in relation to the nature of the Receipt message.

2.2.5.10 The **TimeStamp** parameter is the date and time associated with the generation of the message.

2.2.5.11 The **DDPVersionNum** parameter is the version number of the DDP that is being used by the DC sending the message.

2.2.5.12 The **test** parameter indicates whether the message is a test message intended for testing purposes only or if it is a regular message.

2.2.5.13 The **schemaVersion** parameter represents the release number associated with the set of XML schema files that define the LRIT messages. This parameter is informative only and no processing action is required by the receiving LRIT component.
Table 5

Summary of Receipt message
(Message 7)

<table>
<thead>
<tr>
<th>Parameter provided by</th>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>LRIT system communication segments (see figure 1)</th>
<th>Processed format (see paragraph 2.2.1.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC, IDC ASP, IDE, DDP server, LRIT Data User</td>
<td>MessageType</td>
<td>7</td>
<td>Message type number: 7 - Receipt message</td>
<td>B, C, D, E, F</td>
<td>nn</td>
</tr>
<tr>
<td></td>
<td>MessageId</td>
<td>Unique number</td>
<td>Unique message number generated by using: LRIT ID of the LRIT component, date and time and unique sequence number</td>
<td>B, C, D, E, F</td>
<td>nnnnYYYYMMDDHHmssnnnnnn</td>
</tr>
<tr>
<td></td>
<td>ReferenceId</td>
<td>MessageId of the associated message</td>
<td>MessageId of the associated message that has been received</td>
<td>B, C, D, E, F</td>
<td>nnnnYYYYMMDDHHmssnnnnnn</td>
</tr>
<tr>
<td>Parameter provided by</td>
<td>Parameter</td>
<td>Value</td>
<td>Description</td>
<td>LRIT system communication segments (see figure 1)</td>
<td>Processed format (see paragraph 2.2.1.3)</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------</td>
<td>------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>ReceiptCode</td>
<td>0 - 13</td>
<td>0 - Not entitled to data</td>
<td></td>
<td>B, C, D, E, F</td>
<td>nn</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 - No ships in SAR SURPIC area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 - IDE not available</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 - DC not available</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 - CSP not available</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 - Ship not responding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 - Ship not available</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 - System fault</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 - Could not load DDP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9 - Incorrect DDP version, message discarded</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 - Polygon passed technical validation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>11 - Geographical areas successfully updated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 - Coastal State standing order successfully updated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>13 - Not entitled or no ships in the coastal SURPIC area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Destination</td>
<td>LRIT ID</td>
<td>LRIT ID of the intended recipient of the message</td>
<td></td>
<td>B, C, D, E, F</td>
<td>nnnn</td>
</tr>
<tr>
<td>Originator</td>
<td>LRIT ID</td>
<td>LRIT ID of the LRIT component generating the message</td>
<td></td>
<td>B, C, D, E, F</td>
<td>nnnn</td>
</tr>
<tr>
<td>Message</td>
<td>Text</td>
<td>Text message indicating the nature of the message</td>
<td></td>
<td>B, C, D, E, F</td>
<td>TEXT</td>
</tr>
<tr>
<td>TimeStamp</td>
<td>Date and time</td>
<td>Date and time when the LRIT component transmits the message</td>
<td></td>
<td>B, C, D, E, F</td>
<td>xs:dateTime</td>
</tr>
<tr>
<td>DDPVersionNum</td>
<td>Unique number</td>
<td>DDP version number of the DDP used by the LRIT component</td>
<td></td>
<td>B, C, D, E, F</td>
<td>n1..n:n1..nn</td>
</tr>
<tr>
<td>Parameter provided by</td>
<td>Parameter</td>
<td>Value</td>
<td>Description</td>
<td>LRIT system communication segments (see figure 1)</td>
<td>Processed format (see paragraph 2.2.1.3)</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------</td>
<td>-------</td>
<td>-------------</td>
<td>-------------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>test</td>
<td>0, 1</td>
<td>Setting indicates if the message is a test message or a regular message</td>
<td>B, C, D, E, F</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td></td>
<td>test</td>
<td>0, 1</td>
<td>Regular message</td>
<td>B, C, D, E, F</td>
<td>n</td>
</tr>
<tr>
<td></td>
<td>1, Test message</td>
<td></td>
<td>Test message</td>
<td>B, C, D, E, F</td>
<td>n</td>
</tr>
<tr>
<td>schemaVersion</td>
<td>Decimal number</td>
<td>The release number of the XML schema associated with all the LRIT messages</td>
<td>B, C, D, E, F</td>
<td>n...n</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

1 IDE should only add this information if it is the original LRIT component that has built the message.
2.2.6 DDP notification message (Message 8)

2.2.6.1 Table 6 outlines the DDP notification message.

2.2.6.2 The DDP notification message should be sent by the DDP server to the IDE, which in
turn should broadcast the message to all DCs. The message is intended to inform the IDE and
all DCs that a new version of the DDP has been published and is available for download.

2.2.6.3 The MessageType parameter indicates the type of the message. LRIT components
such as the DCs should use this parameter to distinguish between the various types of
messages listed in table 1.

2.2.6.4 The MessageId parameter is a unique identification number that LRIT components
should use to identify individual messages within the LRIT system. The MessageId is
generated by linking the LRIT ID of the DDP server, the date and time, and a 5 digit unique
sequence number together. An example of a MessageId is 00012007013012552322222
where the LRIT ID of the DDP server = 0001, year = 2007, month = 01, day = 30, h = 12,
min = 55, second = 23, and unique sequence number = 22222.

2.2.6.5 The UpdateType parameter indicates the nature of the DDP available on the DDP
server. A value of 0 indicates that a new version of the DDP has been published with updates
to “regular” information in the DDP. A value of 1 indicates that a new version of the DDP has
been published with updates to “immediate” information in the DDP. Further details relating to
the scheduling and priority of implementing the particular DDP available on the server is found
in the Technical specifications for the LRIT Data Distribution Plan.

2.2.6.6 The Message parameter should contain text providing information in relation to the
nature of the message. It may, for example, state that certain Contracting Governments have
updated their standing orders in the DDP and this is the reason why a new DDP is available.

2.2.6.7 The TimeStamp parameter is the date and time when the DDP server transmits the
message.

2.2.6.8 The NewVersionNum parameter is either the regular version number (if UpdateType
is 0) or the immediate version number (if UpdateType is 1) of the new version that is available
for download.

2.2.6.9 The test parameter indicates whether the message is a test message intended for
testing purposes only or if it is a regular message.

2.2.6.10 The schemaVersion parameter represents the release number associated with the
set of XML schema files that define the LRIT messages. This parameter is informative only
and no processing action is required by the receiving LRIT component.
## Table 6

Summary of DDP notification message  
(Message 8)

<table>
<thead>
<tr>
<th>Parameter provided by</th>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>LRIT system communication segments (see figure 1)</th>
<th>Processed format (see paragraph 2.2.1.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDP Server</td>
<td>MessageType</td>
<td>8</td>
<td>Message type number: 8 - DDP notification</td>
<td>D, F</td>
<td>nn</td>
</tr>
<tr>
<td></td>
<td>MessageId</td>
<td>Unique number</td>
<td>Unique number generated by using: LRIT ID of the DDP server, date and time and unique sequence number</td>
<td>D, F</td>
<td>nnnnYYYYMDDDDHmssnnnnnn</td>
</tr>
</tbody>
</table>
|                       | UpdateType    | 0, 1  | 0 - Regular update  
1 - Immediate update                                                      | D, F                                               | n                                       |
|                       | MessageText   | Text  | Text message indicating the nature of message                               | D, F                                               | TEXT                                   |
|                       | TimeStamp     | Date and time | Date and time when the message is transmitted                              | D, F                                               | xs:dateTime                             |
|                       | NewVersionNum | Unique number | Version that is available for download  
If UpdateType is 0, the regular version number of the new version is available for download  
If UpdateType is 1, the immediate version number of the new version is available for download | D, F                                               | n1...n_n                                |
|                       | Test          | 0, 1  | Setting indicates if the message is a test message or a regular message  
0 - Regular message  
1 - Test message                                                      | D, F                                               | n                                       |
|                       | schemaVersion | Decimal number | The release number of the XML schema associated with all the LRIT messages | D, F                                               | n1...n_n.n1...n_n                      |
2.2.7  DDP request message (Message 9)

2.2.7.1  Table 7 outlines the parameters associated with the DDP request message.

2.2.7.2  The DDP request message should be sent by the IDE and DCs to the DDP server. The message is intended to inform the DDP server that the LRIT component (IDE or DC) sending the message is requesting either the full DDP or an incremental update to the DDP.

2.2.7.3  The *MessageType* parameter indicates the type of the message. LRIT components such as the DCs should use this parameter to distinguish between the various types of messages listed in table 1.

2.2.7.4  The *MessageId* parameter is a unique identification number that LRIT components should use to identify individual messages within the LRIT system. The *MessageId* is generated by linking the LRIT ID of the LRIT Component (IDE or DC), the date and time, and a 5 digit unique sequence number together. An example of a *MessageId* is 39992007013023552344444 where the LRIT ID of the LRIT Data Centre = 3999, year = 2007, month = 01, day = 30, h = 23, min = 55, second = 23, and unique sequence number = 44444.

2.2.7.5  The *UpdateType* parameter indicates the representation of the DDP being requested. If the value of *UpdateType* is 0, the request is for an incremental regular update. If the value is 1, the request is for an incremental immediate update. If the value is 2, the request is for all incremental updates. If the value is 3, the current full DDP is requested. If the value is 4, an archived full DDP is requested. Further details relating to the scheduling and priority of implementing the particular DDP file available on the server is found in the Technical specifications for the LRIT Data Distribution Plan.

2.2.7.6  The *ArchivedDDPVersionNum* parameter indicates the requested archived DDP version number. This parameter is only used when an archived DDP is being requested (update type 4). If the *ArchivedDDPVersionNum* parameter is specified, the *ArchivedDDPTimeStamp* should be ignored.

2.2.7.7  The *ArchivedDDPTimeStamp* parameter is the date and time associated with the full DDP version that was implemented within the LRIT system at that time. This parameter is only used when an archived DDP is being requested (*UpdateType* 4). If the *ArchivedDDPVersionNum* is specified, the *ArchivedDDPTimeStamp* should be ignored.

2.2.7.8  The *Originator* parameter is the LRIT ID number associated with the LRIT component generating the DDP request message. This parameter is used to identify where the DDP request message originated.

2.2.7.9  The *TimeStamp* parameter is the date and time associated with the generation of the message.

2.2.7.10 The *DDPVersionNum* parameter is the version number of the DDP that is being used by the DC or IDE issuing the request for a new DDP.

2.2.7.11 The *test* parameter indicates whether the message is a test message intended for testing purposes only or if it is a regular message.

2.2.7.12 The *ReferenceId* indicates the *MessageId* associated with the DDP notification message that caused the DDP request message to be generated.

2.2.7.13 The *schemaVersion* parameter represents the release number associated with the set of XML schema files that define the LRIT messages. This parameter is informative only and no processing action is required by the receiving LRIT component.
Table 7
Summary of DDP request message
(Message 9)

<table>
<thead>
<tr>
<th>Parameter provided by</th>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>LRIT system communication segments (see figure 1)</th>
<th>Processed format (see paragraph 2.2.1.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDE or DC</td>
<td>MessageType</td>
<td>9</td>
<td>Message type number: 9 - DDP request</td>
<td>E, F</td>
<td>nn</td>
</tr>
<tr>
<td></td>
<td>MessageId</td>
<td>Unique number</td>
<td>Unique message number generated by using: LRIT ID of the LRIT component, date and time, and unique sequence number</td>
<td>E, F</td>
<td>nnnnYYYYMMDDHHmmssnnnnn</td>
</tr>
</tbody>
</table>
|                       | UpdateType       | 0, 1, 2, 3, 4 | 0 - Incremental regular update  
1 - Incremental immediate update  
2 - All incremental updates (regular and immediate)  
3 - Full DDP  
4 - Archived DDP | E, F                                              | n                                       |
<p>|                       | ArchivedDDP      | Unique number | The DDP version number being requested                                      | E, F                                              | n1…nn:n1…nn                              |
|                       | VersionNum       | Date and time | The date and time of the version of the archived DDP requested               | E, F                                              | xs:dateTime                              |
|                       | Originator       | LRIT ID | LRIT ID of the LRIT component generating the message                        | E, F                                              | nnnn                                     |
|                       | ReferenceId      | Unique number | MessageId of the DDP notification message                                    | E, F                                              | nnnnYYYYMMDDHHmmssnnnnn                  |
|                       | TimeStamp        | Date and time | Date and time when the originator transmits the message                     | E, F                                              | xs:dateTime                              |</p>
<table>
<thead>
<tr>
<th>Parameter provided by</th>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>LRIT system communication segments (see figure 1)</th>
<th>Processed format (see paragraph 2.2.1.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDPVersionNum</td>
<td>Unique number</td>
<td></td>
<td>DDP version number of the DDP used by the LRIT component</td>
<td>E, F</td>
<td>n₁…nₖ; n₁…nₖ</td>
</tr>
<tr>
<td>test</td>
<td>0, 1</td>
<td></td>
<td>Setting indicates if the message is a test message or a regular message</td>
<td>E, F</td>
<td>n</td>
</tr>
<tr>
<td></td>
<td>test</td>
<td>0, 1</td>
<td>0 - Regular message</td>
<td>E, F</td>
<td>n₁…nₖ; n₁…nₖ</td>
</tr>
<tr>
<td></td>
<td>test</td>
<td>1</td>
<td>1 - Test message</td>
<td>E, F</td>
<td>n₁…nₖ; n₁…nₖ</td>
</tr>
<tr>
<td>schemaVersion</td>
<td>Decimal number</td>
<td></td>
<td>The release number of the XML schema associated with all the LRIT messages</td>
<td>E, F</td>
<td>n₁…nₖ; n₁…nₖ</td>
</tr>
</tbody>
</table>
2.2.8 DDP update message (Message 10)

2.2.8.1 Table 8 outlines the parameters associated with the DDP update message.

2.2.8.2 The DDP update message is sent by the DDP server to the IDE and/or DCs. The message should contain the requested version of the DDP.

2.2.8.3 The MessageType parameter indicates the type of the message. LRIT components such as the DCs should use this parameter to distinguish between the various types of messages listed in table 1.

2.2.8.4 The MessageId parameter is a unique identification number that LRIT components should use to identify individual messages within the LRIT system. The MessageId is generated by linking the LRIT ID of the DDP server, the date and time, and a 5 digit unique sequence number together. An example of a MessageId is 00012007013002552322222 where the LRIT ID of the DDP server = 0001, year = 2007, month = 01, day = 30, h = 02, min = 55, second = 23, and unique sequence number = 22222.

2.2.8.5 The ReferenceId indicates the MessageId associated with the DDP request message that caused the DDP update to be generated.

2.2.8.6 The UpdateType parameter indicates the representation of the DDP being downloaded. If the value of UpdateType is 0, the update is an incremental regular update. If the value is 1, the update is an incremental immediate update. If the value is 2, the update contains all incremental updates. If the value is 3, the current full DDP is provided. If the value is 4, an archived full DDP is provided. Further details relating to the scheduling and priority of implementing the particular DDP file available on the server is found in the Technical specifications for the LRIT Data Distribution Plan.

2.2.8.7 The Message parameter is for the provision of text providing information in relation to the nature of the message.

2.2.8.8 The TimeStamp parameter is the date and time when the originator transmits the message.

2.2.8.9 The DDPFile parameter is a file attachment containing either the full DDP or an incremental update.

2.2.8.10 The DDPFileVersionNum parameter is the version number of the DDP that is being used by the DDP server.

2.2.8.11 The test parameter indicates whether the message is a test message intended for testing purposes only or if it is a regular LRIT message.

2.2.8.12 The schemaVersion parameter represents the release number associated with the set of XML schema files that define the LRIT messages. This parameter is informative only and no processing action is required by the receiving LRIT component.
### Table 8

**Summary of DDP update message**

**(Message 10)**

<table>
<thead>
<tr>
<th>Parameter provided by</th>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>LRIT system communication segments (see figure 1)</th>
<th>Processed format (see paragraph 2.2.1.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDP server</td>
<td>MessageType</td>
<td>10</td>
<td>Message type number:</td>
<td>E, F</td>
<td>nn</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10 - DDP update</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MessageId</td>
<td>Unique number</td>
<td>Unique number generated by using: LRIT ID of the DDP server, date and time and unique sequence number</td>
<td>E, F</td>
<td>nnnnYYYYMMDDHHmmssnnnnnn</td>
</tr>
<tr>
<td></td>
<td>ReferenceId</td>
<td>Unique number</td>
<td>Unique number generated by using MessageId of the DDP request message</td>
<td>E, F</td>
<td>nnnnYYYYMMDDHHmmssnnnnnn</td>
</tr>
<tr>
<td></td>
<td>UpdateType</td>
<td>0, 1, 2, 3, 4</td>
<td>0 - Incremental regular update 1 - Incremental immediate update 2 - All incremental updates (regular and immediate) 3 - Full DDP 4 - Archived DDP</td>
<td>E, F</td>
<td>n</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Message</td>
<td>Text</td>
<td>Text message indicating the nature of the message</td>
<td>E, F</td>
<td>TEXT</td>
</tr>
<tr>
<td></td>
<td>TimeStamp</td>
<td>Date and time</td>
<td>Date and time when the message is transmitted</td>
<td>E, F</td>
<td>xs:dateTime</td>
</tr>
<tr>
<td></td>
<td>DDPFileVersionNum</td>
<td>Unique number</td>
<td>DDP version number used by the DDP server</td>
<td>E, F</td>
<td>n1..nn or n1..nn:n1..nn</td>
</tr>
<tr>
<td></td>
<td>DDPFile</td>
<td>attachment</td>
<td>Full DDP or an incremental update</td>
<td>E, F</td>
<td>Refer to DDP schema</td>
</tr>
<tr>
<td>Parameter provided by</td>
<td>Parameter</td>
<td>Value</td>
<td>Description</td>
<td>LRIT system communication segments (see figure 1)</td>
<td>Processed format (see paragraph 2.2.1.3)</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------</td>
<td>-------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>test</td>
<td>test</td>
<td>0, 1</td>
<td>Setting indicates if the message is a test message or a regular message</td>
<td>E, F</td>
<td>n</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 - Regular message</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 - Test message</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>schemaVersion</td>
<td></td>
<td>The release number of the XML schema associated with all the LRIT messages</td>
<td>E, F</td>
<td>n1...n, n1...n</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.2.9 System status message (Message 11)

2.2.9.1 Table 9 outlines the parameters associated with the System status message.

2.2.9.2 The System status message is sent by the IDE to all DCs and the DDP server in order to provide them with information pertaining to the operational status of the IDE, while the System status message sent by the DCs or the DDP server to the IDE provide similar information to the IDE.

2.2.9.3 The MessageType parameter indicates the type of the message. LRIT components such as the DCs should use this parameter to distinguish between the various types of messages listed in Table 1.

2.2.9.4 The MessageId parameter is a unique identification number that LRIT components should use to identify individual messages within the LRIT system. The MessageId is generated by linking the LRIT ID of the LRIT Component (IDE, DC, or DDP server), the date and time, and a 5-digit unique sequence number together. An example of a MessageId is 39992007013015552311111 where the LRIT ID of the LRIT Component = 3999, year = 2007, month = 01, day = 30, h = 15, min = 55, second = 23, and unique sequence number = 11111.

2.2.9.5 The TimeStamp parameter is the date and time when the originator transmits the message.

2.2.9.6 The SystemStatus parameter provides information pertaining to the operational status of the LRIT component (i.e. the IDE, DC or the DDP server) that transmitted the message. If the value is 0, then the LRIT component is functioning normally, while a value of 1 indicates that the component is not adhering to the revised Performance standards and/or the technical specifications.

2.2.9.7 The Message parameter is for the provision of text providing information in relation to the message. It might, for example, state that the IDE Operator has turned off the DDP version validation function of the IDE due to a catastrophic failure of the DDP server.

2.2.9.8 The Originator parameter is the LRIT ID of the LRIT component generating the message. This parameter is used to identify where the message originated.

2.2.9.9 The DDPVersionNum parameter is the version number of the DDP that is being used by the LRIT component.

2.2.9.10 The test parameter indicates whether the message is a test message intended for testing purposes only or if it is a regular message.

2.2.9.11 The schemaVersion parameter represents the release number associated with the set of XML schema files that define the LRIT messages. This parameter is informative only and no processing action is required by the receiving LRIT component.
### Table 9

**Summary of system status message**

*(Message 11)*

<table>
<thead>
<tr>
<th>Parameter provided by</th>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>LRIT system communication segments (see figure 1)</th>
<th>Processed format (see paragraph 2.2.1.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDE, DC or the DDP server</td>
<td>MessageType</td>
<td>11</td>
<td>Message type number: 11 - System status</td>
<td>D, F</td>
<td>nn</td>
</tr>
<tr>
<td></td>
<td>MessageId</td>
<td>Unique number</td>
<td>Unique message number generated by using: LRIT ID of the LRIT component, date and time and unique sequence number</td>
<td>D, F</td>
<td>nnnnYYYYMMDDHHmmssnnnnn</td>
</tr>
<tr>
<td></td>
<td>TimeStamp</td>
<td>Date and time</td>
<td>Date and time when the system status message is transmitted</td>
<td>D, F</td>
<td>xs:dateTime</td>
</tr>
<tr>
<td></td>
<td>DDPVersionNum</td>
<td>Unique number</td>
<td>DDP version number of the DDP used by the LRIT component</td>
<td>D, F</td>
<td>n1…nn:n1…nn</td>
</tr>
<tr>
<td></td>
<td>SystemStatus</td>
<td>0 or 1</td>
<td>0 - Normal function; 1 - Not able to provide functionality as described in the revised Performance standards and/or the technical specifications</td>
<td>D, F</td>
<td>n</td>
</tr>
<tr>
<td></td>
<td>Message</td>
<td>Text</td>
<td>Text message indicating the nature of the message</td>
<td>D, F</td>
<td>TEXT</td>
</tr>
<tr>
<td></td>
<td>Originator</td>
<td>LRIT ID</td>
<td>LRIT ID of the LRIT component</td>
<td>D, F</td>
<td>nnnn</td>
</tr>
<tr>
<td></td>
<td>test</td>
<td>0, 1</td>
<td>Setting indicates if message is a test message or a regular message</td>
<td>D, F</td>
<td>n</td>
</tr>
<tr>
<td></td>
<td>schemaVersion</td>
<td>Decimal number</td>
<td>The release number of the XML schema associated with all the LRIT messages</td>
<td>D, F</td>
<td>n1…nn:n1…nn</td>
</tr>
</tbody>
</table>
2.2.10 Journal message (Message 12)

2.2.10.1 Table 10 outlines the parameters associated with the Journal message.

2.2.10.2 Subject to the provisions of the revised Performance standards, if the IDC or an R/CDC is internally routeing LRIT information transmitted to them by ships whose Administration has determined that they should transmit LRIT information to the IDC or the R/CDC concerned, it should be creating internal journals for all such transactions, which should then be transmitted via a Journal message on a defined schedule as agreed upon by the IDE and the IDC and R/CDCs issuing the Journal message. The frequency of Journal messages should be one of the following: monthly, biweekly, weekly or daily. Each message should contain a file attachment of the journals for all of the internally routed LRIT information.

2.2.10.3 The MessageType parameter indicates the type of the message. LRIT components such as the DCs should use this parameter to distinguish between the various types of messages listed in table 1.

2.2.10.4 The MessageId parameter is a unique identification number that LRIT components should use to identify individual messages within the LRIT system. The MessageId is generated by linking the LRIT ID of the LRIT Data Centre, the date and time, and a 5 digit unique sequence number together. An example of a MessageId is 3999200701301655233333 where the LRIT ID of the LRIT Data Centre = 3999, year = 2007, month = 01, day = 30, h = 16, min = 55, second = 23, and unique sequence number = 33333.

2.2.10.5 The Message parameter is for the provision of text containing information in relation to the nature of the message.

2.2.10.6 The TimeStamp parameter is the date and time when the originator generated the message.

2.2.10.7 The Originator parameter is the LRIT ID of the LRIT component generating the message. This parameter should be used to identify where the message originated.

2.2.10.8 The JournalFile parameter is a file attachment containing the journal created by the DC sending the message.

2.2.10.9 The DDPVersionNum parameter is the version number of the DDP that is being used by the DC.

2.2.10.10 The test parameter indicates whether the message is a test message intended for testing purposes only or if it is a regular message.

2.2.10.11 The schemaVersion parameter represents the release number associated with the set of XML schema files that define the LRIT messages. This parameter is informative only and no processing action is required by the receiving LRIT component.
## Table 10
### Summary of Journal message
(Message 12)

<table>
<thead>
<tr>
<th>Parameter provided by</th>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>LRIT system communication segments (see figure 1)</th>
<th>Processed format (see paragraph 2.2.1.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R/CDC or IDC</td>
<td>MessageType</td>
<td>12</td>
<td>Message type number: 12 - Journal</td>
<td>D</td>
<td>nn</td>
</tr>
<tr>
<td></td>
<td>MessageId</td>
<td>Unique number</td>
<td>Unique message number generated by using: LRIT ID of the DC, date and time, and unique sequence number</td>
<td>D</td>
<td>nnnnYYYYMMDDHHmssnnnnn</td>
</tr>
<tr>
<td></td>
<td>Message</td>
<td>Text</td>
<td>Text message indicating the nature of the message</td>
<td>D</td>
<td>TEXT</td>
</tr>
<tr>
<td></td>
<td>TimeStamp</td>
<td>Date and time</td>
<td>Date and time when the message is transmitted</td>
<td>D</td>
<td>xs:dateTime</td>
</tr>
<tr>
<td></td>
<td>Orginator</td>
<td>LRIT ID</td>
<td>LRIT ID of the DC</td>
<td>D</td>
<td>nnnn</td>
</tr>
<tr>
<td></td>
<td>JournalFile</td>
<td>attachment</td>
<td>File attachment containing the journal created by the DC</td>
<td>D</td>
<td>See paragraph 2.3.10</td>
</tr>
<tr>
<td></td>
<td>DDPVersionNum</td>
<td>Unique number</td>
<td>DDP version number of the DDP used by the DC</td>
<td>D</td>
<td>n1...n1...n1...n</td>
</tr>
<tr>
<td></td>
<td>test</td>
<td>0, 1</td>
<td>Setting indicates if message is test message or regular LRIT message</td>
<td>D</td>
<td>n</td>
</tr>
<tr>
<td></td>
<td>schemaVersion</td>
<td>Decimal number</td>
<td>The release number of the XML schema associated with all the LRIT messages</td>
<td>D</td>
<td>n1...n1...n1...n</td>
</tr>
</tbody>
</table>
2.2.11 Pricing notification message (Message 13)

2.2.11.1 Pricing notification message (Message 13) has been removed from the LRIT system.

2.2.12 Pricing request message (Message 14)

2.2.12.1 Pricing request message (Message 14) has been removed from the LRIT system.

2.2.13 Update pricing file message (Message 15)

2.2.13.1 Update pricing file message (Message 15) has been removed from the LRIT system.

2.2.14 Geographical area update message (Message 16)

2.2.14.1 Table 11 outlines the parameters associated with the Geographical area update message.

2.2.14.2 The Geographical area update message should be sent by the LRIT Data User to the IDE or DDP server.

2.2.14.3 This message is used for:

.1 the technical validation of polygons by the IDE; or

.2 adding, replacing or deleting custom coastal geographical areas in the DDP by the LRIT Data User.

2.2.14.4 The **MessageType** parameter indicates the type of the message. LRIT components, such as the DCs, should use this parameter to distinguish between the various types of messages listed in table 1.

2.2.14.5 The **MessageId** parameter is a unique identification number that LRIT components should use to identify individual messages within the LRIT system. The MessageId is generated by linking the LRIT ID of the LRIT Data User, the date and time, and a 5 digit unique sequence number together. The unique sequence number should be generated by the LRIT Data User and the date and time should be the year, month, day, h, min and second when the parameter was generated. An example of a MessageId is 29992007013021552344444 where the LRIT ID of the LRIT Data User = 2999, year = 2007, month = 01, day = 30, h = 21, min = 55, second = 23, and unique sequence number = 44444.

2.2.14.6 The **ActionType** parameter indicates the type of action the LRIT Data User is requesting. If the value is 0, the request is sent to the IDE for the technical validation of the polygon(s). If the value is 1, the request is sent to the DDP server to add or replace the custom coastal geographical area(s) to the DDP. If the value is 2, the request is sent to the DDP server to delete the custom coastal geographical area(s) from the DDP.

2.2.14.7 The **GML file** parameter is a file attachment containing the polygon(s) created by the LRIT Data User.

2.2.14.8 The **AreaIds** is a list of one or more CustomCoastalArea identifiers that uniquely identifies the polygon(s) that the LRIT Data User wants to delete.

2.2.14.9 The **DataUserRequestor** parameter is the LRIT ID of the LRIT Data User originating the request message.
2.2.14.10 The TimeStamp parameter is the date and time associated with the generation of the message.

2.2.14.11 The DDPVersionNum parameter is the version number of the DDP that is being used by the DC sending the message at the time the message is sent.

2.2.14.12 The test parameter indicates whether the message is a test message intended for testing purposes only or if it is a regular message.

2.2.14.13 The schemaVersion parameter represents the release number associated with the set of XML schema files that define the LRIT messages. This parameter is informative only and no processing action is required by the receiving LRIT component.
<table>
<thead>
<tr>
<th>Parameter provided by</th>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>LRIT system communication segments (see figure 1)</th>
<th>Processed format (see paragraph 2.2.1.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRIT Data User</td>
<td>MessageType</td>
<td>16</td>
<td>Message type number: 16 – Geographical Area Update</td>
<td>D (when ActionType value is set to 0)</td>
<td>n</td>
</tr>
<tr>
<td></td>
<td>MessageId</td>
<td>Unique number</td>
<td>Unique message number generated by using: the LRIT Component ID of the data provider (Data User ID), date and time and unique sequence number</td>
<td>E (when ActionType value is set to 1 or 2)</td>
<td>nnnnYYYYMMDDHHmssnnnnnn</td>
</tr>
<tr>
<td></td>
<td>ActionType</td>
<td>0, 1, 2,</td>
<td>Action to be performed with the polygon(s): 0 – Technical validation of polygon(s) (i.e. all types of geographical areas) 1 – Add or replace custom coastal geographical area(s) 2 – Delete custom coastal geographical area(s)</td>
<td></td>
<td>n</td>
</tr>
<tr>
<td></td>
<td>GML file¹</td>
<td>Attachment</td>
<td>GML content with the polygon(s) to be submitted or validated where ActionType is 0 or 1</td>
<td></td>
<td>Described in section 4 of the Technical Specifications for the LRIT Data Distribution Plan</td>
</tr>
<tr>
<td></td>
<td>ArealIds²</td>
<td>List of one or more Geographical area identifiers</td>
<td>List of Unique identifiers of the geographical area(s) where ActionType is 2</td>
<td></td>
<td>List of CustomCoastalArea IDs as defined in table I-1 of the Technical specifications for the DDP</td>
</tr>
<tr>
<td></td>
<td>DataUserRequestor</td>
<td>LRIT ID</td>
<td>LRIT ID of the LRIT Data User originating the message</td>
<td></td>
<td>nnnn</td>
</tr>
<tr>
<td>Parameter provided by</td>
<td>Parameter</td>
<td>Value</td>
<td>Description</td>
<td>LRIT system communication segments (see figure 1)</td>
<td>Processed format (see paragraph 2.2.1.3)</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------</td>
<td>-----------</td>
<td>------------------------------------------------------------------------------</td>
<td>---------------------------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>DC</td>
<td>TimeStamp</td>
<td>Date and time</td>
<td>Date and time when an LRIT Data User transmits the message to its DC</td>
<td></td>
<td>xs:dateTime</td>
</tr>
<tr>
<td></td>
<td>DDPVersionNum</td>
<td>Unique number</td>
<td>DDP version number of the DDP used by the DC</td>
<td></td>
<td>n1...nn:n1...nn</td>
</tr>
<tr>
<td></td>
<td>Test</td>
<td>0, 1</td>
<td>Setting indicates if the message is a test message or a regular message</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>schemaVersion</td>
<td>Decimal number</td>
<td>The release number of the XML schema associated with all the LRIT messages.</td>
<td></td>
<td>n1...nn.n1...nn</td>
</tr>
</tbody>
</table>
2.2.15 Coastal State standing order update message (Message 17)

2.2.15.1 Table 12 outlines the parameters associated with the coastal State standing order update message.

2.2.15.2 The coastal State standing order update message should be sent by the LRIT Data User to the DDP server.

2.2.15.3 This message is used to update the coastal State standing order of the Contracting Government in accordance with the Technical specifications for the LRIT Data Distribution Plan.

2.2.15.4 The MessageType parameter indicates the type of the message. LRIT components such as the DCs should use this parameter to distinguish between the various types of messages listed in table 1.

2.2.15.5 The MessageId parameter is a unique identification number that LRIT components should use to identify individual messages within the LRIT system. The MessageId is generated by linking the LRIT ID of the LRIT Data User, the date and time, and a 5 digit unique sequence number together. The unique sequence number should be generated by the LRIT Data User and the date and time should be the year, month, day, h, min and second when the parameter was generated. An example of a MessageId is 29992007013021552344444 where the LRIT ID of the LRIT Data User = 2999, year = 2007, month = 01, day = 30, h = 21, min = 55, second = 23, and unique sequence number = 44444.

2.2.15.6 The StandingOrder parameter contains XML representing the coastal State standing order for the LRIT Data User to be put into immediate effect, in accordance with the coastalStateStandingOrderType defined in the XML Schemas. This identifies all the geographical areas associated with the standing order by their Area IDs, and for each geographical area optionally indicating the ship type(s) and/or the LRIT ID(s) of the Contracting Government(s) from which the LRIT information should not be provided. If this parameter is not specified, the coastal State standing order for the LRIT Data User order will be deleted.

2.2.15.7 The DataUserRequestor parameter is the LRIT ID of the LRIT Data User originating the message.

2.2.15.8 The TimeStamp parameter is the date and time associated with the generation of the message.

2.2.15.9 The DDPVersionNum parameter is the version number of the DDP that is being used by the DC sending the message at the time the message is sent.

2.2.15.10 The test parameter indicates whether the message is a test message intended for testing purposes only or if it is a regular message.

2.2.15.11 The schemaVersion parameter represents the release number associated with the set of XML schema files that define the LRIT messages. This parameter is informative only and no processing action is required by the receiving LRIT component.
### Table 12
Summary of coastal State standing order update message
(Message 17)

<table>
<thead>
<tr>
<th>Parameter provided by</th>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>LRIT system communication segments (see figure 1)</th>
<th>Processed format (see paragraph 2.2.1.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRIT Data User</td>
<td>MessageType</td>
<td>17</td>
<td>Message type number: 17 – coastal State standing order update</td>
<td>E</td>
<td>nnnnYYYYMMDDHHmmssnnnnn</td>
</tr>
<tr>
<td></td>
<td>MessageId</td>
<td>Unique number</td>
<td>Unique message number generated by using: the LRIT Component ID of the data provider (Data User ID), date and time and unique sequence number</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>StandingOrder</td>
<td>Text</td>
<td>Area IDs of the geographical areas, optionally indicating the ship type(s) and/or the LRIT ID(s) of the Contracting Government(s) from which the LRIT information should not be provided.</td>
<td>XML in accordance with the coastalStateStandingOrderType defined in the XML Schemas for the LRIT system (Types.xsd), or omitted entirely in order to indicate a deactivation of the standing order</td>
<td></td>
</tr>
<tr>
<td>DataUserRequestor</td>
<td>LRIT ID</td>
<td>LRIT ID of the LRIT Data User originating the message</td>
<td>nnnn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC</td>
<td>TimeStamp</td>
<td>Date and time</td>
<td>Date and time when an LRIT Data User transmits the message to its DC</td>
<td>xs:dateTime</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DDPVersionNum</td>
<td>Unique number</td>
<td>DDP version number of the DDP used by the DC</td>
<td>n1...nn:n1...nn</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test</td>
<td>0, 1</td>
<td>Setting indicates if the message is a test message or a regular message 0 - Regular message 1 - Test message</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td></td>
<td>schemaVersion</td>
<td>Decimal number</td>
<td>The release number of the XML schema associated with all the LRIT messages.</td>
<td>n1...nn:n1...nn</td>
<td></td>
</tr>
</tbody>
</table>
2.3 Message processing

2.3.1 General

2.3.1.1 All DCs and LRIT components within the LRIT system should process all request messages and file attachments as described in this section.

2.3.1.2 DCs that receive any LRIT message with the test parameter set to 1 can choose to either not process the message or perform unique processing in relation to a unique test case previously agreed with the DC sending the LRIT message.

2.3.1.3 DCs should disregard the DDPVersionNum parameter field when processing any LRIT message. DDP version number checking is done by the IDE.

2.3.1.4 The IDE should perform schema validation only on messages addressed to the IDE. If a message fails schema validation then the receiving component should generate and send either a SOAP fault or a receipt message with receipt code of 7 to the LRIT component that transmitted the LRIT message with a schema error.

2.3.1.5 All DCs and the DDP server should perform schema validation on all received LRIT messages. If a message fails schema validation, then the receiving component should generate and send either a SOAP fault or a receipt message with receipt code of 7 to the LRIT component that transmitted the LRIT message with a schema error.

2.3.1.6 The IDE and the DDP server, upon receipt of an LRIT message from a DC, should authenticate the identity of the DC by checking the LRIT ID in the PKI certificate and confirming that the originator is the DC associated to it.

2.3.1.7 DCs should verify that the PKI certificate of the IDE and the DDP are valid and contain the correct LRIT ID before exchanging messages with them. In case of a mismatch, the DC operator should notify the IDE or the DDP server operator, as appropriate, using the relevant contact details in the DDP.

2.3.2 DDP file processing

2.3.2.1 If a DC cannot properly process a DDP file as the result of DDP polygons not being conformant to the technical specification, then the DC should take the following actions:

.1 Send a receipt message to the DDP server with receipt code 8 (could not load DDP) as well as a descriptive text message describing the problem.

.2 Contact the IMO Secretariat off line in order to discuss the steps required to fix the problem.

.3 Perform processing based upon the DDP file but exclude/ignore all polygons (Custom coastal areas, internal waters, territorial seas, 1000Nm) of the Contracting Government whose entry contained the error as well as any of its coastal State standing orders contained in that DDP file.

.4 Update the DDP version number in all messages at the appropriate time and continue to process as normal.
2.3.2.2 If a DC cannot properly process a DDP file as the result of problems not related to DDP polygons not being conformant to the technical specification, then the DC should take the following actions:

.1 Send a receipt message to the DDP server with receipt code 8 (could not load DDP) as well as a descriptive text message describing the problem;

.2 Contact the IMO Secretariat off line in order to discuss the steps required to fix the problem. Both the IMO Secretariat and applicable DC should work to fix the problem as soon as possible;

.3 Perform processing based upon the DDP file to the extent possible given the nature of the problem;

.4 If the DDP update can be processed to the extent that the new DDP version number can be determined, update the DDP version number in all messages at the appropriate time and continue to process as normal; and

.5 It is recommended that DC request a Full DDP version after the DDP file has been corrected.

2.3.2.3 If the IDE cannot properly process a DDP file for any reason (recognizing that the IDE does not validate polygon data beyond XML schema compliance), then the IDE should take the following actions:

.1 Send a receipt message to the DDP server with receipt code 8 (could not load DDP) as well as a descriptive text message describing the problem;

.2 Contact the IMO Secretariat off line in order to discuss the steps required to fix the problem;

.3 Perform processing based upon the DDP file to the extent possible given the nature of the problem;

.4 If the DDP update can be processed to the extent that the new DDP version number can be determined, update the DDP version number in all messages at the appropriate time and continue to process as normal.

2.3.3 LRIT position report message processing

2.3.3.1 All LRIT position reports received by a DC from ships entitled to fly the flags of a Contracting Government(s) utilizing that DC (see figure 1, Communications Segment B) should be checked against all coastal geographical polygons contained within the DDP in order to determine if a particular Contracting Government associated with a coastal polygon is entitled to receive the position report. While checking the entitlement of Contracting Governments to receive a particular LRIT information, DCs should either use timestamp1 or timestamp4 parameters to determine the DDP version to be utilized.

2.3.3.2 DCs providing a stream of LRIT position reports to another DC at a specific rate may provide two subsequent position reports that are not spaced in time at the desired reporting rate (but within the rate) if the ship being tracked by the providing DC is also being tracked by other LRIT Data Users at different rates. This should be considered normal operation.
2.3.3.3 Figure 2 provides an example where a providing DC is providing another DC with a stream of position reports that are not all spaced in time at the intended tracking rate due to the ship being tracked by multiple LRIT Data Users at different rates. The flag, DC C and DC D are tracking the ship at the default rate of 6 h, while DC A is tracking the ship at a rate of 1 h. The position report at time 2 1/6 is determined to be within the coastal geographical polygon of Contracting Government B. Contracting Government B receives this position report and its second position report is received at time 6 1/6 even though it is intended to receive position reports at a rate of 6 h.

![Figure 2 Example of a DC providing another DC with position reports not all aligned to a given reporting rate](image)

2.3.4 Processing of request messages in the context of the DDP polygons

2.3.4.1 All DCs should use the coastal State standing order information contained within the DDP to determine when to start and stop tracking of a ship in the absence of any specific LRIT request message. The providing DC establishes entitlement of an LRIT Data User to receive position reports by performing the following tasks:

.1 check all coastal State standing orders polygons contained in the DDP to determine if the ship is located within the geographical areas established by the polygon;

.2 verify that the ship is not located within the internal waters of another Contracting Government (including non-metropolitan territories or special administrative regions listed in the DDP under the requesting Contracting Government) by checking all of the internal waters polygons contained within the DDP; and

.3 verify that the ship is not located in the territorial sea of the Contracting Government (including non-metropolitan territories or special administrative regions listed in the DDP under the providing Contracting Government) whose flag the ship is entitled to fly by checking the territorial seas polygon in the DDP.

2.3.4.2 Contracting Governments are able to indicate, for each polygon within their coastal State standing order, the flag(s) and/or type(s) of ship from which they do not wish to receive LRIT information, as a coastal State. The providing DC should verify separately for each polygon in the coastal State standing orders contained in the DDP that the flag and type of the ship is not excluded by the Contracting Government requesting the LRIT information as a coastal State.
2.3.4.3 Where two or more polygons with different filtering settings overlap within a standing order, the providing DC should make sure that duplicate LRIT information is not provided to the requestor, and that only the LRIT information from ships that are filtered out (by flag and ship type parameters) in both of the polygons are not provided to the requestor. Example: Polygons 1 and 2 are overlapping in the coastal State standing order of Contracting Government A. LRIT information from passenger ships, tankers and all ships flying the flag of Contracting Government Z were filtered out in Polygon 1. LRIT information from tankers were filtered out in Polygon 2. In this example:

.1 the DC providing LRIT information for Contracting Government Z would:

- not provide LRIT information for any ships flying the flag of Contracting Government Z in Polygon 1;
- provide LRIT information for all ships, except tankers, in Polygon 2; and
- provide LRIT information for all ships, except tankers, inside the overlapping area, but not send duplicate LRIT information.

.2 the DCs providing LRIT information for Contracting Governments other than Z would:

- provide LRIT information for all ships, except passenger ships and tankers in Polygon 1;
- provide LRIT information for all ships, except tankers, in Polygon 2; and
- provide LRIT information for all ships, except tankers, inside the overlapping area, but not send duplicate LRIT information.

**Figure 3**

*Example of a DC processing a coastal State standing order containing two polygons with different filtering settings*
2.3.4.4 A providing DC, after receiving a request message with access type set to coastal and a request type other than type 0 (restart/reset) or 8 (stop/do not start sending), should perform the following tasks to ensure that the requesting LRIT Data User is entitled to and should receive the requested information:

.1 verify that V/19-1.9.1 has not been exercised for this coastal State;

.2 check the seaward area of 1000 nm, territorial seas, or internal waters polygon(s) associated with the requesting LRIT Data User contained in the DDP to determine if the ship is located within the polygon(s);

.3 verify that the ship associated with the request is not located within the internal waters of another Contracting Government (including non-metropolitan territories or special administrative regions listed in the DDP under the requesting Contracting Government) by checking all of the internal waters polygons contained within the DDP; and

.4 verify that the ship is not located in the territorial sea of the Contracting Government (including non-metropolitan territories or special administrative regions listed in the DDP under the providing Contracting Government) whose flag the ship is entitled to fly by checking the territorial seas polygon in the DDP.

2.3.4.5 A request message with access type set to coastal will override the coastal State standing orders associated with the custom coastal State areas polygon in the DDP. Example: Contracting Government A has started receiving position reports associated with ship X as a result of coastal State standing orders in the DDP (custom coastal State area polygon). Contracting Government A sends the providing DC a request message with access type set to coastal, reporting rate of 1 h and a request duration equivalent to 2 days. The providing DC should send Contracting Government A position reports associated with the ship for the specified request duration of 2 days at a 1 h rate as long as the ship is within Contracting Government A's seaward area of 1000 nm, territorial seas, or internal waters polygons.

2.3.4.6 A providing DC, after receiving a request for archived information, should perform the same tasks as designated for the request message with access type set to coastal in order to determine if the requestor is entitled to receive the information. However, the providing DC should use the seaward area of 1000 nm polygons, internal waters polygons, and territorial seas polygons associated with the DDP that was active during the time the position reports were transmitted in order to determine if a requesting LRIT Data User is entitled to receive the archived information.

2.3.4.7 A providing DC, after receiving a request message with access type set to port, should check all the internal waters polygons (including internal waters polygons associated with non-metropolitan territories or special administrative regions listed in the DDP under the requesting Contracting Government) in the DDP to verify that the ship being tracked is not in the internal waters of another Contracting Government (or non-metropolitan territory or special administrative region even if they are listed, in the DDP, under the requesting Contracting Government) before sending the position reports to the requesting LRIT Data User. Refer to table 13 for additional details. The port State request message is suspended while the ship is located in the internal waters of another contracting government. When the ship exits the internal waters, the providing DC will reactivate sending position reports to the requestor at a rate that is the same or less frequent than the reporting rate specified by the port State request message. The requestor may have to send another port State request message in order to receive position reports at the reporting rate specified by the original port State request message.
2.3.4.8 When comparing the location of the ship against geographical polygons and other locations contained within the DDP, DCs should use an industry-standard GIS software application, or a custom-coded solution that implements well-established computational geometric algorithms. These different industry standard GIS tools include, but are not limited to, Oracle Spatial, SQL Server Spatial, PostGIS, ESRI, etc., and/or custom-coded solutions which utilize different computational geometric algorithms/methodologies. The most commonly used methodologies/algorithms that exist are Great Circle, Ellipsoidal and Rhumb line. For example Oracle Spatial uses Ellipsoidal methodology which is similar to Great Circle, with one significant difference. Rather than assuming a spherical Earth, ellipsoidal logic is based on a Reference Ellipsoid (a mathematical model of the Earth that takes into account the flattening that occurs at the Poles).

2.3.4.9 Given the different geometric algorithms/methodologies, when DCs process LRIT position reports there may on occasion be legitimate technical differences between LRIT components when determining which Contracting Governments are entitled to a particular ship position.

2.3.5 General processing of position request (Message type 4), SAR position request (Message type 5) and SURPIC message (Message type 6)

2.3.5.1 DCs should respond to position request messages (Message type 4), SAR position request messages (Message type 5) and SURPIC messages (Message type 6) with valid LRIT position report messages (Message types 1, 2 and 3) as listed in table 13.

Table 13

<table>
<thead>
<tr>
<th>MT 1</th>
<th>Position Request Message MT 4</th>
<th>SAR Position Request Message MT 5</th>
<th>SURPIC Request MT 6</th>
<th>Coastal State Standing Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Type</td>
<td>Access Type</td>
<td>Access Type</td>
<td>Access Type</td>
<td>Access Type</td>
</tr>
<tr>
<td>1 Coastal</td>
<td>VALID¹</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
</tr>
<tr>
<td>3 Port</td>
<td>Not valid</td>
<td>VALID²</td>
<td>Not valid</td>
<td>Not valid</td>
</tr>
<tr>
<td>4 SAR</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
</tr>
<tr>
<td>1 Coastal</td>
<td>VALID³</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
</tr>
<tr>
<td>3 Port</td>
<td>Not valid</td>
<td>VALID⁴</td>
<td>Not valid</td>
<td>Not valid</td>
</tr>
<tr>
<td>4 SAR</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
</tr>
<tr>
<td>1 Coastal</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
</tr>
<tr>
<td>3 Port</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
</tr>
<tr>
<td>4 SAR</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
</tr>
</tbody>
</table>

I:\CIRC\MSC\1\MSC.1-Circ.1259-Rev.9.docx
1. Only valid for Position Request Message with Access Type 1 and Request Type parameter 2-7, 9, 10 or 11.

2. Only valid for Position Request Message with Access Type 3-5 and Request Type parameter 2-7, 9, 10 or 11.

3. Only valid for Position Request Message with Access Type 1 and Request Type parameter 1, 7 or 9.

4. Only valid for Position Request Message with Access Type 3-5 and Request Type parameter 1, 7 or 9.

5. Only valid for SAR Position Request with Access Type 6 and Request Type parameters 1 and 9.

2.3.5.2 DCs that are complying with an existing LRIT request message for LRIT information on a particular ship should terminate the existing request message or suspend sending position report messages to the requestor if certain operational scenarios occur. Table 14 provides details on the events that would result in a processing DC terminating an existing request message or suspending of position reports. It also stipulates if a receipt message should be generated as well as indicating the particular receipt code that is required when a receipt message is necessary.
### Table 14

**Operational scenarios that terminate, suspend or modify a request message**

<table>
<thead>
<tr>
<th>Existing request message</th>
<th>Event</th>
<th>Action by processing DC</th>
<th>Receipt message</th>
<th>Receipt code</th>
</tr>
</thead>
</table>
| DC is complying with a request message with the following parameters:  
  - Message Type: 4  
  - Access Type: 1  
  - Request Types: 2, 3, 4, 5, 6, 10 or 11. (coastal State request with periodic reporting) | The current processing time matches or is later than the "stop" field associated with the "request duration" parameter in the existing request message (request expires) | • Existing request message terminates.  
  • Return to coastal State standing orders reporting | No | N/A |
| Ship reports a location that is NOT within the area of coastal State entitlement of the requesting Contracting Government (1000 nm, territorial seas, or internal waters) at some point in time during the request duration period | | • Existing request message terminates.  
  • Return to coastal State standing orders reporting | Yes | 0 (not entitled to data) |
| Ship reports a location that is within the area of coastal State entitlement of the requesting Contracting Government (1000 nm, territorial seas, or internal waters) but is located within the internal waters of another Contracting Government, or within the territorial sea of the Contracting Government whose flag the ship is entitled to fly | | • Existing request message terminates.  
  • Return to coastal State standing orders reporting | Yes | 0 (not entitled to data) |
| Requesting Contracting Government sends a new request message (Message Type 4, Access Type 1, Request Type 8) for the same ship associated with the existing request message | | • Existing request message terminates.  
  • Return to coastal State standing orders reporting | No | N/A |
<table>
<thead>
<tr>
<th>Existing request message</th>
<th>Event</th>
<th>Action by processing DC</th>
<th>Receipt message</th>
<th>Receipt code</th>
</tr>
</thead>
</table>
| Requesting Contracting Government sends a new request message (Message Type 4, Access Type 1, Request Type 2, 3, 4, 5, 6, 10, or 11) for the same ship associated with the existing request message | • Existing request message terminates immediately upon receipt of the new request message.  
• Return to coastal State standing order reports until start time associated with new request message becomes current time.  
• New request message starts with desired reporting rate (A single Contracting Government can only have one active coastal State request on each ship at a time) | No | N/A |
| Requesting Contracting Government sends a new request message (Message Type 4, Access Type 0, Request Type 0) for the same ship associated with the existing request message | • Existing request message terminates.  
• Return to coastal State standing orders reporting | No | N/A |
| DC is complying with a request message with the following parameters:  
• Message Type 4,  
• Access Type 1,  
• Request Type 8 (coastal State request for "stop/don't start sending positions") | | | |
| The current processing time matches or is later than the "stop" field associated with the "request duration" parameter in the existing request message (request expires) | • Existing "stop" request message terminates  
• Return to coastal State standing orders reporting | No | |
| Requesting Contracting Government sends a new request message (Message Type 4, Access Type 0, Request Type 0) for the same ship associated with the existing request message | • Existing "stop" request message terminates  
• Return to coastal State standing orders reporting | No | |
| Requesting Contracting Government sends a new request message (Message Type 4, Access Type 1, Request Type 2, 3, 4, 5, 6, 10 or 11) for the same ship associated with the existing request message | • Existing "stop" request message terminates  
• New request message starts with desired reporting rate | No | |
<table>
<thead>
<tr>
<th>Existing request message</th>
<th>Event</th>
<th>Action by processing DC</th>
<th>Receipt message</th>
<th>Receipt code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requesting Contracting Government sends a new request (message type 4, Access type 1, Request type 8) for the same ship associated with the existing request message</td>
<td>The current processing time matches or is later than the “stop” field associated with the “request duration” parameter in the existing request message (request expires)</td>
<td>Existing request message terminates</td>
<td>No</td>
<td>N/A</td>
</tr>
</tbody>
</table>
| DC is complying with a request message with the following parameters:  
  - Message Type 4,  
  - Access Type 3,  
  - Request Types: 2, 3, 4, 5, 6, 10 or 11 (port State request with distance trigger with periodic reporting) | Requesting Contracting Government sends a new request message (Message Type 4, Access Type 0, Request Type 0) for the same ship associated with the existing request message | Existing request message terminates                                                  | No              | N/A         |
| | Requesting Contracting Government sends a new request message (Message Type 4, Access Type 3 or 5, the same port, port facility, or place and Request Type 2, 3, 4, 5, 6, 10, or 11) for the same ship associated with the existing request message | Existing request message terminates immediately upon receipt of new request message.  
A single Contracting Government can only have one active port State request per port, port facility or place on each ship at a time | No              | N/A         |
<p>| | Requesting Contracting Government sends a new request message (Message Type 4, Access Type 3 or 5, the same port, port facility, or place and Request Type 8) for the same ship associated with the existing request message | Existing request message terminates                                                  | No              | N/A         |</p>
<table>
<thead>
<tr>
<th>Existing request message</th>
<th>Event</th>
<th>Action by processing DC</th>
<th>Receipt message</th>
<th>Receipt code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ship reports a location that is within the internal waters of a</td>
<td>• Reporting is temporarily suspended for existing request until the ship leaves the</td>
<td>Yes (only one</td>
<td>0 (not</td>
</tr>
<tr>
<td></td>
<td>Contracting Government other than the one that sent the request</td>
<td>internal waters of the other Contracting Government</td>
<td>receipt message</td>
<td>entitled to data)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• May choose to adjust the reporting rate of the ship's terminal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>During a period in which reporting has been temporarily suspended</td>
<td>• Reporting is reactivated with a reporting rate that is the same or less frequent</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>for the existing request, the ship reports a location that is not</td>
<td>than the reporting rate specified by the port State request message</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>within the internal waters of the other Contracting Government</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The current processing time matches or is later than the &quot;stop&quot;</td>
<td>• Existing request message terminates</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>DC is complying with a</td>
<td>field associated with the &quot;request duration&quot; parameter in the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>request message with</td>
<td>existing request message (request expires)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>the following parameters:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Message Type 4,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Access Type 5,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Request Types: 2, 3, 4, 5, 6, 10 or 11 (port State Request with</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Requesting Contracting Government sends a new request message</td>
<td>• Existing request message terminates</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>(Message Type 4, Access Type 0, Request Type 0) for the same ship</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>associated with the existing request message</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Requesting Contracting Government sends a new request message</td>
<td>• Existing request message terminates</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>(Message Type 4, Access Type 3 or 5, the same port, port facility,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>or place and Request Type 2, 3, 4, 5, 6, 10, or 11) for the same</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ship associated with the existing request message</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Existing request message terminates immediately upon receipt of new request message.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New request message starts with desired reporting rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(A single Contracting Government can only have one active port State request per port,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>port facility or place on each ship at a time)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing request message</td>
<td>Event</td>
<td>Action by processing DC</td>
<td>Receipt message</td>
<td>Receipt code</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------</td>
<td>-------------------------</td>
<td>-----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Requesting Contracting Government sends a new request message (Message Type 4, Access Type 3 or 5, the same port, port facility, or place and Request Type 8) for the same ship associated with the existing request message</td>
<td>• Existing request message terminates</td>
<td>No</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Ship reports a location that is within the internal waters of a Contracting Government other than the one that sent the request</td>
<td>• Reporting is temporarily suspended for existing request until the ship leaves the internal waters of the other Contracting Government • May choose to adjust the reporting rate of the ship's terminal.</td>
<td>Yes (only one receipt message at the beginning of the temporary suspension period)</td>
<td>0 (not entitled to data)</td>
<td></td>
</tr>
<tr>
<td>During a period in which reporting has been temporarily suspended for the existing request, the ship reports a location that is not within the internal waters of the other Contracting Government</td>
<td>• Reporting is reactivated with a reporting rate that is the same or less frequent than the reporting rate specified by the port State request message</td>
<td>No</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>
2.3.5.3 DCs have the option of processing the DataUserRequestor parameter of the SAR Position Request message in order to determine if the requestor is a SAR service entitled to receive the information requested. If a DC chooses to check the validity of a requestor then it should check the LRIT ID contained in the DataUserRequestor parameter against SAR service LRIT IDs in the DDP. If a DC chooses to reject a SAR Position request message based upon the LRIT ID in the DataUserRequestor parameter then the DC should send a receipt message with receipt code 0 (not entitled to data) to the requestor.

2.3.5.4 The CircularArea and RectangularArea parameters should not be populated in the same SURPIC request message. If both parameters are populated, then the providing DC should ignore the contents of the RectangularArea parameter and use the contents of the CircularArea parameter in responding to the SURPIC request message.

2.3.5.5 DCs have the option of processing the DataUserRequestor parameter of the SURPIC message (with an AccessType = 6) in order to determine if the requestor is a SAR service entitled to receive the information requested. If a DC chooses to check the validity of a requestor then it should check the LRIT ID contained in the DataUserRequestor parameter against the SAR service LRIT IDs in the DDP. If a DC chooses to reject a SURPIC message (with an AccessType = 6) based upon the LRIT ID in the DataUserRequestor parameter then the DC should send a receipt message with receipt code 0 (not entitled to data) to the requestor.

2.3.5.6 SURPIC request messages with Access Type 1 (coastal) should be processed in accordance with the entitlements which apply to Message Type 4 with Access Type 1. A requesting DC, when sending a SURPIC request message with Access Type 1, has the option of specifying, in the DataUserProvider field of the message, the LRIT ID of the Contracting Government associated with the ships it wishes to track. If DataUserProvider parameter is unspecified, then the IDE broadcasts the request message to all DCs. A requesting DC has also the option of specifying, in the the ShipType parameter, the type(s) of ship it wishes to track. If the ShipType parameter is unspecified, it should default to all ship types.

2.3.6 Processing of multiple requests to change the shipborne equipment transmitting interval

2.3.6.1 The requirements specified in this section are applicable to requests directed towards ship terminals that are programmed to transmit only one stream of positional information to their DC. Requests that are directed towards ship terminals that are programmed to transmit an asynchronous stream of data for each LRIT request may choose not to follow the requirements listed in this section if they ensure that the first position report associated with the stream of data is within the specified reporting rate plus 30 min and all position reports within the stream of data supplied to the requestor are spaced at the desired reporting time (i.e. all subsequent position reports are spaced at the time specified by the reporting rate).

2.3.6.2 DCs receiving multiple request messages from different requestors requiring the shipborne equipment to be programmed at different transmission intervals should set the shipborne equipment transmitting interval to the fastest requested periodic rate. For example, if Contracting Government A has transmitted a coastal State request with a reporting rate of 3 h for ship X, while Contracting Government B has issued a port State request for the same ship X with a reporting rate of 1 h, then the DC (ASP function) associated with ship X should set the transmission interval of ship X's shipborne equipment to 1 h.

2.3.6.3 DCs should handle requests for changing a ship’s transmission interval based upon when the DC receives the request. If, for example, a DC receives a request from LRIT Data
User A at 01:00, followed by a second request from LRIT Data User B at 02:00 and a third request from LRIT Data User C at 02:30, the order of processing for requests should be: LRIT Data User A, LRIT Data User B and LRIT Data User C. All position reports provided to each LRIT Data user should be synchronized with each other.

2.3.6.4 DCs\(^8\) should ensure that the first request message should establish the time base line for position reports relating to all subsequent request messages. Essentially, the position reports sent by the providing DC to all requesting DCs should be time synchronized to the position reports associated with the first request message. Thus, the default flag rate would establish the time base.

2.3.6.5 The providing DC should send a receipt message (receipt code 7) to any requesting DC if the providing DC cannot send the first position report within the requested duration time plus 30 min. The 30 min time requirement is required due to latency issues with the terminal. Under normal circumstances, the DC will always be able to send the first position to the requesting DC within the time frame; however, if for whatever reason, the providing DC cannot send the first position report within the time frame, then it should send a receipt message (receipt code 7) to the requiring DC. If, for example, a requesting DC has issued a request that stipulates the shipborne equipment should be set to a reporting rate of 1 h, then the providing DC should send a receipt message to the requesting DC if the first position report provided does not occur within 1 h and 30 min of the request being received. The request message will not be further processed after the receipt message is issued.

2.3.6.6 The providing DC should maintain the desired time interval amongst all data position reports when sending LRIT position reports in response to a request for LRIT information at a desired rate. If the providing DC cannot provide some of the position reports on time or some of the reports are missing, it should continue to send the LRIT position reports without sending any receipt message. It should also take the appropriate steps necessary in order to correct the problem. If, for example, a providing DC is sending LRIT position report messages at a rate of once an h but the 5th and 6th messages are late while the 10th position report is missing then the providing DC should continue to send the messages to the requestor at a rate as close to the desired one h rate without sending any receipt messages.

2.3.6.7 Figure 4 provides an example of a DC receiving two requests from two different DCs that require a transmission interval change to the LRIT shipborne equipment of a ship entitled to fly the flag of a Contracting Government utilizing the DC that receives the requests. The first request associated with DC A has a higher frequency transmission interval than that of the DC B request. The processing DC associated with the ship should process the requests as follows:

1. the DC to which the ship is transmitting LRIT information receives ship position information at time point -5 5/6;

2. the processing DC sets the requested shipborne equipment to 1 h as required by the request received from DC A. This request has taken place at time point -4/6;

3. DC B should receive its first position report at time 3 1/6 (Synchronized with 6 hr reports and 1 hr reports). Since the first position report is within the time frame associated with the request (3 h), a receipt message is not sent to DC B;

4. the processing DC, through its ASP, should set the shipborne equipment to a transmission interval of 3 h at time 9 1/6 since DC A’s request has expired; and

\(^8\) DC may delegate its responsibility to its ASP.
the processing DC should set the shipborne equipment back to a transmission interval of 6 h after DC B's request has expired at time point 12 1/6. The following transmission of LRIT information by the ship will occur at time point 18 1/6.

**Figure 4**

**Example of request for decrease in ship's transmission interval**

2.3.6.8 Figure 5 provides an example of a DC receiving two requests from two different DCs that require a transmission interval change to the shipborne equipment of a ship entitled to fly the flag of a Contracting Government utilizing the DC that receives the requests. The first request associated with DC A has a lower frequency transmission interval rate than that of DC B's request. The processing DC associated with the ship should process the requests as follows:

1. the DC to which the ship is transmitting LRIT information receives ship position information at time point -5 5/6;

2. the processing DC sets the requested shipborne equipment to 3 h as required by the request received from DC A. This request has taken place at time point -4 1/6;

3. the processing DC, after receiving a request from DC B at time 3 5/6, will configure the shipborne equipment to begin transmitting information at an interval of 1 h beginning at time 4 1/6. The terminal has to wait until time 4 1/6 to send its first position report, as opposed to sending a position report at time 3 5/6, in order to ensure that the requestor (i.e. the first request) receives all of its position reports on schedule. No receipt message should be sent to DC B since the first position report would be within the 1 1/2 h request duration message; and

4. the processing DC should set the shipborne equipment back to the default 6 h transmission interval after DC B's request expires at 11 1/6 and DC A's request expires at 9 1/6. The next flag's position report occurs at time point 12 1/6.
2.3.7 Processing of port State requests (AccessType 3) within Message 4

2.3.7.1 DCs that receive a request message with a valid time field populated in the request duration field and the AccessType set to 3 with a request type set to a value of 2, 3, 4, 5, 6, 10, or 11 should logically AND the Distance and Time parameters. Essentially, the DC should not start sending port State position reports until the ship associated with the request is within the distance stated in the distance field and the start time in the request duration is current.

2.3.8 Processing of Port State Request Messages in the Context of Special Administrative Regions and non-metropolitan territories

2.3.8.1 DCs that receive a port State request message should check to ensure that the port listed in the port parameter of the request message is a valid port associated with the Contracting Government specified by the DataUserRequestor parameter of the request message. Port validation for Contracting Governments should be achieved by checking the DDP for ports associated with the requesting Contracting Government.

2.3.8.2 The port should be considered a valid port for the requesting Contracting Government if, within the context of the DDP, the port is directly listed under the Contracting Government or if the port is listed under a special administrative region or non-metropolitan territory associated with the Contracting Government.

2.3.8.3 A port State request message transmitted by a special administrative region or non-metropolitan territory with the port parameter of the request message populated with a port directly listed under the Contracting Government associated with the special administrative region or the non-metropolitan territory should be considered not valid. A receipt message (receipt code 0) should be sent to the requestor indicating that the requestor is not entitled to the data.

---

AND indicates a logical operation.
2.3.9 Valid message parameter combinations for Messages 4 and 5

2.3.9.1 Table 15 provides information on message parameter combinations for LRIT position request messages (Messages 4 and 5). Parameters, grouped into AccessType and RequestType combinations, are classified as one of the following: required, optional or not valid.

2.3.9.2 DCs should disregard the contents of all fields that are indicated in table 15 as having not valid parameters when processing a Position request or SAR position request message from another DC.

2.3.9.3 The following message parameters are required for all possible message parameter combinations:

.1 MessageType;
.2 MessageId;
.3 IMONum;
.4 DataUserProvider;
.5 DataUserRequestor;
.6 TimeStamp;
.7 DDPVersionNum; and
.8 Test.
### Table 15
Clarification of valid message parameter combinations for Messages 4 and 5

<table>
<thead>
<tr>
<th>Access Type</th>
<th>Request Type</th>
<th>Port or port facility</th>
<th>Distance</th>
<th>Request Duration</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 0, Request type 1) is not valid.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 0, Request type 2) is not valid.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 0, Request type 3) is not valid.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 0, Request type 4) is not valid.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 0, Request type 5) is not valid.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 0, Request type 6) is not valid.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 0, Request type 7) is not valid.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 0, Request type 8) is not valid.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 0, Request type 9) is not valid.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 0, Request type 10) is not valid.</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 0, Request type 11) is not valid.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 1, Request type 0) is not valid.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Request duration is not valid since ship will be polled immediately.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access Type</td>
<td>Request Type</td>
<td>Port or port facility</td>
<td>Distance</td>
<td>Request Duration</td>
<td>Note</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------</td>
<td>-----------------------</td>
<td>----------</td>
<td>-----------------</td>
<td>------</td>
</tr>
<tr>
<td>6</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Optional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Request duration is not valid since most recent ship position will be sent.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>Not valid</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>0</td>
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<td>Not valid</td>
<td>This message combination (Access type 2, Request type 0) is not valid.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Request duration is not valid since ship will be polled immediately.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Not valid</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Not valid</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Not valid</td>
<td>Required</td>
<td></td>
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</tr>
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<td>5</td>
<td>Not valid</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Not valid</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Not valid</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Not valid</td>
<td>Optional</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Request duration is not valid since most recent ship position will be sent.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Not valid</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
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<td></td>
<td>11</td>
<td>Not valid</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 3, Request type 0) is not valid.</td>
<td></td>
</tr>
<tr>
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<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 3, Request type 1) is not valid.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Required</td>
<td>Optional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access Type</td>
<td>Request Type</td>
<td>Port or port facility</td>
<td>Distance</td>
<td>Request Duration</td>
<td>Note</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------</td>
<td>-----------------------</td>
<td>----------</td>
<td>------------------</td>
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<td></td>
</tr>
<tr>
<td>4</td>
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<td>Required</td>
<td></td>
<td>Optional</td>
<td></td>
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<tr>
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<td>Required</td>
<td>Required</td>
<td></td>
<td>Optional</td>
<td></td>
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<td>6</td>
<td>Required</td>
<td>Required</td>
<td></td>
<td>Optional</td>
<td></td>
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<tr>
<td>7</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 3, Request type 7) is not valid.</td>
</tr>
<tr>
<td>8</td>
<td>Required</td>
<td>Required</td>
<td></td>
<td>Optional</td>
<td></td>
</tr>
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<td>9</td>
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<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 3, Request type 9) is not valid.</td>
</tr>
<tr>
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<td>Required</td>
<td>Required</td>
<td></td>
<td>Optional</td>
<td></td>
</tr>
<tr>
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<td>Optional</td>
<td></td>
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<td>4</td>
<td>Required</td>
<td>Required</td>
<td></td>
<td>Optional</td>
<td></td>
</tr>
</tbody>
</table>

Note: This access type number reserved for possible future use.

<table>
<thead>
<tr>
<th>Access Type</th>
<th>Request Type</th>
<th>Port or port facility</th>
<th>Distance</th>
<th>Request Duration</th>
<th>Note</th>
</tr>
</thead>
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<tr>
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<td>Not valid</td>
<td>Not valid</td>
<td>This message combination (Access type 5, Request type 0) is not valid.</td>
</tr>
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<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Request duration is not valid since ship will be polled immediately.</td>
</tr>
<tr>
<td>2</td>
<td>Required</td>
<td>Not valid</td>
<td></td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Required</td>
<td>Not valid</td>
<td></td>
<td>Required</td>
<td></td>
</tr>
<tr>
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<td>Required</td>
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</tr>
<tr>
<td>6</td>
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<td>Not valid</td>
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<td></td>
</tr>
<tr>
<td>9</td>
<td>Required</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Request duration is not valid since most recent ship position will be sent.</td>
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<td>Required</td>
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<tr>
<td>Access Type</td>
<td>Request Type</td>
<td>Port or port facility</td>
<td>Distance</td>
<td>Request Duration</td>
<td>Note</td>
</tr>
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<td></td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Only valid for message type 5.</td>
<td></td>
</tr>
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<td>Not valid</td>
<td></td>
<td></td>
</tr>
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<td></td>
</tr>
<tr>
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</tr>
<tr>
<td></td>
<td>5</td>
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<td>Not valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Not valid</td>
<td>Not valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Only valid for message type 5.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Not valid</td>
<td>Not valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Not valid</td>
<td>Not valid</td>
<td>Only valid for message type 5.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Not valid</td>
<td>Not valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Not valid</td>
<td>Not valid</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.3.10 Processing Journal messages

2.3.10.1 The Journal message should be routinely transmitted on a defined schedule as agreed upon by the R/CDC and IDC issuing the Journal message and the IDE. The frequency of Journal messages should be one of the following: monthly, biweekly, weekly or daily.

2.3.10.2 The properties of the Journal file should feature the following:

1. binary attachment to the Journal message (Message 12); and
2. data compressed ZIP file containing XML files according to the format defined in the XML schemas (LritMessageLog.xsd).

2.3.10.3 The contents of the Journal file should:

1. include all messages internally routed within an R/CDC or the IDC; this should include messages exchanged between two LRIT Data Users of the R/CDC or the IDC;
2. not include any LRIT information contained within the LRIT position reports. The shipborne equipment parameter fields of a LRIT position report should be populated with dummy values;
3. include the element ReceivedTimestamp for each message to be populated with the time when the message was received by the R/CDC;
4. include the element SentTimestamp for each message to be populated with the time when the message was sent by the R/CDC; and
5. include the attribute positionSent for the Position Report message set to "true".

2.3.10.4 The IDE should process received Journal messages as follows:

1. store the Journal message (Message 12) as a single message in the IDE Journal;
2. open the attached ZIP file and extract all of the LRIT messages contained within; and
3. store all the messages contained in the ZIP file in the IDE Journal in a similar manner as other LRIT messages traversing through the IDE.

2.3.11 DCs providing services to a Contracting Government(s) other than that establishing the centre

2.3.11.1 Any NDC providing services to a Contracting Government(s) other than that establishing the centre should comply, and operate in accordance, with the requirements of the revised Performance standards and of the technical specifications for the LRIT system as a CDC (i.e. for all intent and purposes but not in name the NDC in question should be considered as a CDC) and should:
only internally route, if it decides to do so, LRIT information transmitted by
ships entitled to fly the flag of the Contracting Government which has
established it or is using its services. In such cases it should automatically
maintain journal(s) for all of the internally routed LRIT information and should
transmit such journals to the IDE at regular intervals in order to be combined
with the journal(s) maintained by the IDE; or

refrain from internally routeing any LRIT information, including those
transmitted by ships entitled to fly the flag of the Contracting Government
which has established it or is using its services in case it decides not to
automatically maintain journal(s) and transmit these to the IDE. In such cases
it should route all LRIT messages stemming from requests originating from
the Contracting Governments, which established it or were using the services
of the NDC through the IDE.

2.3.11.2 Any RDC or CDC providing services to a Contracting Government(s) other than those
establishing the centre, should comply, and operate in accordance, with the requirements of
the revised Performance standards and the technical specifications for the LRIT system as an
RDC or CDC (i.e. for all intent and purposes the RDC or CDC in question continue to be an
RDC or CDC) and in this respect it should consider the Contracting Government(s) to which it
provides services as one of those establishing the centre.

3 Communication protocol strategy

3.1 General

3.1.1 Overview

3.1.1.1 An illustration of the various communications links in the LRIT system is shown in
figure 6. LRIT messages flow through the LRIT system and along each communication link.
Communication protocols ensure that the messages are securely transported from one LRIT
component to the next.

3.1.1.2 All communications links should comply with the functional description as identified in
the Revised performance standards while the specific communications protocols stated in the
subsequent sections apply only to certain links as summarized in table 16. Communications
links 1, 2, 3, 4 and 6 do not have to implement the specific communications protocols detailed
in the subsequent sections.

Table 16

<table>
<thead>
<tr>
<th>Communications link</th>
<th>LRIT components connected</th>
<th>Adhere to specific communications protocols</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link Type 1</td>
<td>Ship to CSP land terminal</td>
<td>No</td>
</tr>
<tr>
<td>Link Type 2</td>
<td>CSP land terminal to CSP</td>
<td>No</td>
</tr>
<tr>
<td>Link Type 3</td>
<td>CSP to ASP</td>
<td>No</td>
</tr>
<tr>
<td>Link Type 4</td>
<td>ASP to NDC or R/CDC</td>
<td>No</td>
</tr>
<tr>
<td>Communications link</td>
<td>LRIT components connected</td>
<td>Adhere to specific communications protocols</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Link Type 5</td>
<td>ASP to IDC</td>
<td>Yes</td>
</tr>
<tr>
<td>Link Type 6</td>
<td>Contracting Government to NDC or R/CDC</td>
<td>No</td>
</tr>
<tr>
<td>Link Type 7</td>
<td>Contracting Government to IDC</td>
<td>Yes</td>
</tr>
<tr>
<td>Link Type 8</td>
<td>Any DC to IDE</td>
<td>Yes</td>
</tr>
<tr>
<td>Link Type 9</td>
<td>DDP Server to IDE</td>
<td>Yes</td>
</tr>
<tr>
<td>Link Type 10</td>
<td>Any DC to DDP Server</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Figure 6

LRIT communication links
3.2 Specific communications protocols

3.2.1 General

3.2.1.1 The communications protocols specified herein are standards based on the functional description of the communication strategy outlined in the revised Performance standards.

3.2.2 Physical layer

3.2.2.1 The physical medium that the LRIT messages transverse and the associated physical layer standards are not limited to one specific type or protocol. Thus, many different low-level mediums such as fibre optics, copper lines, microwave and their associated physical layer standard such as sonnet, OC192, T1, E1 are applicable.

3.2.3 Data link layer

3.2.3.1 The data link layer that sits on top of the physical layer is also not limited to one single standard. There are numerous data link layer protocols that are acceptable and might be used in the implementation of data communication between the various LRIT network components. Some examples of applicable standards are: Ethernet, ATM, ISDN and 802.X.

3.2.4 Network layer

3.2.4.1 The network layer should be based upon version 4 (IPv4) of the Internet Protocol specification. Later versions of the Internet Protocol should be reviewed for compliance prior to implementation. Each component (e.g. IDE, DCs) in the LRIT network should have its own unique URL/URI.

3.2.5 Transport layer

3.2.5.1 The transport layer should be based upon the Transmission Control Protocol (TCP).

3.2.6 Application layer

3.2.6.1 The application layer should use Transport Layer Security (TLS) and should communicate via XML-based SOAP messages between the various LRIT components. The communications protocol and version should be periodically reviewed by the LRIT Operational Governance Body in line with industry standards. If a change to the communication protocol and/or version is required, this should be communicated in advance to all LRIT components for simultaneous implementation. The SOAP messages are exchanged between SOAP nodes by binding to the HTTPS protocol as defined by SOAP 1.2.

3.3 Simple Object Access Protocol (SOAP) Overview

3.3.1 General

3.3.1.1 The application layer for exchanging LRIT messages amongst the LRIT components should be based upon version 1.2 of the SOAP (Simple Object Access Protocol) as defined by the World Wide Web consortium (W3C). SOAP is an application layer protocol that allows communications between nodes without requiring any specific communications network, operating system or programming language. SOAP Version 1.2 specification was available is http://www.w3.org/TR/soap12.
3.3.1.2 As detailed under the SOAP Binding section below, SOAP messages travel using HTTP as the underlying protocol. Although HTTP by definition is a request/response communication mechanism, it is suggested that designers and implementers adopt asynchronous patterns and reliable non-blocking mechanisms to receive the HTTP response message to ensure an optimum performance. From the application implementation perspective, messages travel one-way.

3.3.2 SOAP nodes

3.3.2.1 The LRIT components following the communications protocol strategy referenced in this section functionally operate as SOAP nodes. Two asynchronous one-way message connections are established between each connecting node. The LRIT messages as defined earlier flow between SOAP nodes across the communication links illustrated in figure 6.

3.3.2.2 There should only be two nodes associated with the relaying of any SOAP message: the initial sender and the ultimate receiver. Thus, there should be zero intermediary SOAP nodes in the routing path of any SOAP message.

3.3.2.3 SOAP messages should have the role attribute omitted or set to "http://www.w3.org/2003/05/soap-envelope/role/ultimateReceiver" to indicate that messages are sent to ultimate receivers and no intermediates.

3.3.2.4 SOAP forwarding mechanism is not used given that there are no intermediate nodes involved. Whenever a received SOAP message content is to be sent to a different location, a new SOAP message is to be constructed and sent via a SOAP node acting as initial sender. Any possible association or correlation that might be established between an inbound SOAP message and an outbound one is to be established and maintained at the application level by the Software application modules.

3.3.3 SOAP processing

3.3.3.1 Software application modules operating on LRIT components that must follow the communications protocol strategy should process SOAP messages as outlined in version 1.2 of the SOAP specification. As mentioned above, LRIT Software modules act as ultimate receivers and as such they should process the SOAP messages.

3.3.4 SOAP binding

3.3.4.1 SOAP messages should be exchanged between SOAP nodes by binding to the HTTP(s) protocol as defined by SOAP 1.2.

3.3.4.2 SOAP messages should be sent using the HTTP POST web method only. The body of an HTTP POST message should contain the message parameters embedded within a SOAP message structure.

3.3.4.3 The following is an example of an HTTP header. Note that SOAP 1.2 message bound to HTTP should have the Content-Type set to "application/soap+xml" (without quotes).

```
POST /LRITSample/Service HTTP/1.1
Host: localhost
Content-Type: application/soap+xml; charset=utf-8
Content-Length: length
```
3.3.4.4 SOAP messages containing file attachments should be prepared by:

.1 zipping the file attachment; and

.2 constructing and transmitting the SOAP message, with zipped attachment file, using the SOAP Message Transmission Optimization Mechanism (MTOM) as described at http://www.w3.org/TR/soap12-mtom/.

3.3.5 Additional considerations and other aspects

3.3.5.1 Data security (e.g. encryption), authentication and authorization are out of the scope of this sub-section and are to be managed by other layers.

3.3.5.2 In order to minimize complexity without jeopardizing security, data security should be accomplished by securing the channel of communication.

4 Data security within the LRIT network

4.1 General

4.1.1 Adherence to the Performance standards

4.1.1.1 Data security for LRIT information exchanged between the various LRIT components should be based upon the performance and functional requirements outlined in section 12 of the revised Performance standards.

4.1.1.2 Authorization, identification, authentication, confidentiality and integrity are the key functional concepts with respect to data security for the LRIT system. LRIT system availability should be addressed via conformance to the revised Performance standards.

4.1.2 Authorization

4.1.2.1 All LRIT information existing in the LRIT system should not be made accessible to all LRIT Data Users. Data authorization to LRIT Data Users should comply with the Regulation and the revised Performance standards. Each LRIT component within the network should ensure that the component with which it is communicating is authorized to receive the information being transmitted in accordance with the DDP.

4.1.3 Identification and authentication

4.1.3.1 The various LRIT components in the LRIT system should perform identification and authentication of each component before exchanging information using a standard authentication process.

4.1.4 Confidentiality

4.1.4.1 The data exchanged between LRIT components should be encrypted for protection and should not be disclosed to unauthorized entities during transit across the LRIT network. This should be accomplished by using standard digital cryptography techniques featuring an encryption strength equivalent to or better than 128 bits.
4.1.5 Integrity

4.1.5.1 The data exchanged between LRIT components should not be altered by any entity during transit across the LRIT system. Native TLS features providing integrity checks of the data transport should be used. This should be accomplished by using standard digital cryptography techniques featuring an encryption strength equivalent to or better than 128 bits.

4.2 Point to point data security strategy and protocol options

4.2.1 General

4.2.1.1 LRIT components within the LRIT system should communicate with one another through secure point to point communication links.

4.2.2 Application layer security

4.2.2.1 Each LRIT component that forms a point to point communications link should use Transport Layer Security (TLS version 1.1 or later) when exchanging LRIT information. The TLS specification is defined by the Internet Engineering Task Force in RFC 4346.

4.2.2.2 The TLS protocol provides communications security over the Internet. The protocol allows client/server applications to communicate in a way that is designed to prevent eavesdropping, tampering, or message forgery and addresses the security requirements for confidentiality and integrity.

4.2.3 Data confidentiality and integrity

4.2.3.1 Confidentiality and integrity is achieved via 128 bit (minimum) TLS encryption using a cryptographic Hash Message Authentication Code (HMAC) symmetric algorithm. The HMAC value protects both a message's integrity as well as its authenticity, by allowing verifiers (who also possess the secret key) to detect any changes to the message content. HMAC can be used with a variety of different hash algorithms.

4.2.3.2 Each LRIT component should use Key Hashing for Message Authentication Code (HMAC) when communicating across a TLS secured link. HMAC should ensure that data is not altered during transit and the data integrity is maintained.

4.2.3.3 HMAC can be used with a variety of different hash algorithms. TLS uses it in the handshake with two different algorithms, MD5 and SHA-1, denoting these as HMAC_MD5 (secret, data) and HMAC_SHA (secret, data). Additional hash algorithms can be defined by cipher suites and used to protect record data, but MD5 and SHA-1 are hard coded into the description of the handshaking for this version of the protocol.

4.2.4 Identification and authentication

4.2.4.1 Public – Private Key Cryptography – Before exchanging LRIT information, LRIT components connecting over the TLS link should use an industry standard, public – private (asymmetric) key infrastructure strategy to ensure positive identification and authentication of the LRIT components. The global industry standard public key infrastructure (PKI) certificate should be issued by a trusted party to ensure the vetting of, and authentication of, user identities. The Organization should ensure that the LRIT IDs are populated in the PKI certificate.
4.2.4.2 If either component detects an issue with the other LRIT component's PKI certificate, then exchange of data information should not occur.

5 Web Service Description Language (WSDL) documents

5.1 General

5.1.1 WSDL definitions for the IDE and DCs

5.1.1.1 The Web Service Description Language (WSDL) definitions for the IDE and DCs are contained in annex 6.

6 Message flow

6.1 Message flow diagrams

6.1.1 General

6.1.1.1 Various message flows are illustrated in figures 7, 8, 9, 10, 11, 12 and 13.
Figure 7
Message flow example
Periodic position report (Message 1)

Ship borne equipment automatically transmit unique identification number, position and associated date and time.

ASP A builds Position report message:
ASP ID = 0005
... (others parameters)

DC A check polygons in DDP:
Polygon match for standing orders (Coastal) of Contracting Government C
DC A builds Periodic position report message
Message Type = 1
DC ID = 3999
Response Type = 1
LRIT ID Data User Requestor = 0779
LRIT ID Data User Provider = 0777
... (others parameters) and route to IDE

IDE process Periodic position report message:
look at "LRIT ID Data User Requestor" and route to LRIT ID = 0779's DC

CSP A
LRIT ID = 0006
(optional)

Contracting Government A
NDC (DC A)
LRIT ID = 3999

Contracting Government C
NDC (DC C)
LRIT ID = 4999

Contracting Government B
NDC (DC B)
LRIT ID = 5999

Contracting Government A
NDC (DC A)
LRIT ID = 3999

LRIT Data User
Contracting Government A
LRIT ID = 0777

LRIT Data User
Contracting Government A
LRIT ID = 0777

LRIT Data User
Contracting Government B
LRIT ID = 0780

LRIT Data User
Contracting Government C
LRIT ID = 0779

LRIT Data User
Contracting Government C
LRIT ID = 0779

LRIT Data User
Contracting Government C
LRIT ID = 0779
Figure 8
Message flow example
Position request (Message 4) and Polled position report (Message 2)
**Figure 9**

Message flow example
SAR SURPIC request (Message Type 6 with Access Type 6), Receipt (Message 7) and SAR position report (Message 3)
Figure 10

Message flow example for requesting technical validation of polygon(s)
(Message 16 with Action Type 0) and Receipt message (Message 7)
Figure 11

Message flow example for uploading polygon(s)
(Message 16 with Action Type 1) and Receipt message (Message 7)
Figure 12

Message flow example for deleting polygon(s)
(Message 16 with Action Type 2) and Receipt message (Message 7)
Figure 13

Message flow example for updating coastal State standing order (Message 17) and Receipt message (Message 7)
## Table 17

Characters acceptable for inclusion in LRIT messages

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ANNEX 4

TECHNICAL SPECIFICATION FOR THE LRIT DATA DISTRIBUTION PLAN

Part I

Technical specifications

1 Introduction

1.1 This document presents the design and functionality of the LRIT Data Distribution Plan (DDP) implementation, and should always be read together with:

.1 regulation V/19-1;

.2 the revised Performance standards and functional requirements for the Long-range identification and tracking of ships;

.3 the Technical specifications for the International LRIT Data Exchange;

.4 the Technical specifications for communications within the LRIT system; and

.5 the XML schemas.

1.2 Unless expressly provided otherwise:

.1 Recipient components means the LRIT Data Centres (DCs) and the International LRIT Data Exchange (IDE);

.2 DDP server means the DDP module of the Global Integrated Shipping Information System (GISIS), including both the web-based human interface to DDP information and the SOAP Web service interface for recipient components as described in section 6;

.3 DDP information means data required to be contained in the DDP by either regulation V/19-1 or the revised Performance standards and to be communicated to all recipient components;

.4 Publishing means generating a new version of the DDP in response to changes to DDP information by Contracting Governments or other parties. DDP versions and publishing schedules are described in detail in section 2;

.5 Any reference to a Contracting Government automatically includes non-metropolitan areas to which the Contracting Government concerned has notified the Organization that it has extended the application of the 1974 SOLAS Convention;

.6 Any reference to non-metropolitan area(s) applies only as far as the non-metropolitan area(s) to which the Contracting Government concerned has extended the application of the 1974 SOLAS Convention.
1.3 The following notations are used in this document:
   .1  `<ElemName>` refers to an XML element named "ElemName";
   .2  `@attrName` refers to an XML attribute named "attrName".

1.4 The following sections of this document cover issues relating to:
   .1  the publishing and versioning of the DDP (section 2);
   .2  the format of the XML representations of DDP information (section 3);
   .3  the GML format for uploading geographical areas to the DDP (section 4);
   .4  constraints on polygons of geographical areas contained in the DDP (section 5);
   .5  the DDP server and its external interfaces (section 6).

2  DDP content, versioning and publishing

2.1 The information to be included in the DDP is specified in section 11.2 of the revised Performance standards.

**Types of DDP information**

2.2 Each item of DDP information is categorized into one of two types: regular or immediate.

2.2.1 The categorization distinguishes between DDP information that requires urgent implementation (immediate) from those which for technical reasons require a longer period of time to be implemented by recipient components or which can be processed in batches in order to increase the efficiency of the system (regular).

2.3 Items of DDP information categorized as regular are:
   .1  Contracting Governments, including non-metropolitan areas to which the application of the Convention has been extended;
   .2  Contact points (National, SAR Services, ASP, DC, IDE, DDP server, and LRIT Coordinator);
   .3  Geographical areas (internal waters, territorial sea, seaward outer boundary of 1,000 NM, custom coastal State areas for standing orders);
   .4  Ports under the jurisdiction of Contracting Governments;
   .5  Port facilities under the jurisdiction of Contracting Governments;
   .6  Places under the jurisdiction of Contracting Governments;
   .7  SAR Services of Contracting Governments;
   .8  ASP-related information;
.9 LRIT ID of the Data Centre used by a Contracting Government; and

.10 LRIT Coordinator-related information.

2.4 Items of DDP information categorized as *immediate* are:

.1 Exclusion orders pursuant to the provisions of regulation V/19-19.1;

.2 Operational information relating to LRIT Data Centres (web service endpoint (URL/URI) or contact details of the DC);

.3 Coastal State standing orders, where the geographical areas to be monitored have already been implemented by DCs. (Note that geographical areas, including custom coastal State areas, are regular DDP information, and generally take 24 h\textsuperscript{10} after publishing to be implemented by recipient components);

.4 Information relating to the IDE; and

.5 Information relating to the DDP server.

**Versions of the DDP**

2.5 Version numbers are used to uniquely identify the set of information contained within the DDP at a particular point in time.

2.6 The set of *regular* items of DDP information and the set of *immediate* items of DDP information are versioned independently of each other.

2.7 The term *regular version* is used when referring to a set of all *regular* DDP information, and has a unique *regular version number* associated with it. The term *immediate version* is used when referring to a set of all *immediate* DDP information, and has a unique *immediate version number* associated with it.

2.7.1 The *regular version number* and the *immediate version number* are each represented by a single integer number, starting with 1 for the first version and incrementing with each new version of the DDP resulting from changes to *regular* information and to *immediate* information respectively.

2.8 A *DDP version number* is composed of a *regular version number* and an *immediate version number*, forming the unique identifier of the complete set of all DDP information as implemented by all LRIT system components at a particular point in time.

2.8.1 A *DDP version number* has the following format:

\[
<\text{Regular version number}><\colon><\text{Immediate version number}>
\]

An example of a *DDP version number* is 22:67, indicating the version of the DDP implemented at a particular point in time which consists of the set of *regular* information at version 22, and the set of *immediate* information at version 67.

\[10\] Publishing and implementation times of the DDP for recipient components are specified below.
Publishing and implementation times

2.9 Changes to regular DDP information result in the publishing of a new regular version of the DDP.

2.9.1 Changes to regular information are batched daily, and published in a new regular version at 00:00 UTC on the day following that in which they were made.

2.10 Changes to immediate DDP information result in the publishing of a new immediate version of the DDP.

2.10.1 Changes to immediate information are published in a new immediate version of the DDP at the time the change is made within the DDP.

2.11 The specific time of publishing of a new regular version or immediate version of the DDP, and the corresponding time at which it should be implemented by all recipient components, are specified within the message transmitted by the DDP server (described in detail in section 3).

2.11.1 In general, a newly-published regular version of the DDP is implemented by all recipient components at 00:00 UTC on the day following the time of publishing of the regular version.

2.11.2 In general, a newly-published immediate version of the DDP is implemented by all recipient components one hour following the time of publishing of the immediate version.

Illustration of publishing and implementation times of the DDP

2.12 Figure I-1 provides an illustrative sample of publishing and implementation times of new versions of the DDP.

2.12.1 The upper-level\textsuperscript{11} markers indicate the time of publishing of new regular versions (indicated in the figure by a single-lined border) and immediate versions (double-lined border) of the DDP, along with their associated version numbers.

2.12.2 The lower-level markers\textsuperscript{12} indicate the time at which the published versions are implemented by DGs and the IDE within the LRIT system, along with the associated DDP version number in effect from that point in time.

2.12.3 In the example, the version of the DDP implemented within the LRIT system at 00:57 UTC on 2 June 2009 is 81:65 – that is, regular version 81 and immediate version 65 of the DDP is implemented within the LRIT system at that time.

2.12.4 Note that the immediate version number is incremented each time an immediate version of the DDP is published, which happens at the time a change is made to any immediate DDP information. The regular version number is incremented each time a regular version of the DDP is published, which happens at 00:00 UTC on the day following that in which a change is made to any regular DDP information.

\textsuperscript{11} Coloured yellow and orange, respectively, in the electronic version of this document.

\textsuperscript{12} Coloured blue in the electronic version of this document.
2.12.5 No regular version is published on 00:00 UTC on 3 June 2009, meaning that no changes were made to regular DDP information during 2 June 2009.

2.12.6 Figure I-1 illustrates how changes to regular and immediate DDP information are published and implemented independently of each other, together forming the DDP version number of the DDP which is implemented within the LRIT system at a particular point in time.
Figure I-1

New DDP versions and implementation times
(for explanations refer to paragraph 2.12 and table I-4)
3 XML representations of DDP information

3.1 Information contained within the DDP and changes to this information are communicated by the DDP server to recipient components in defined XML formats. XML data formats should use UTF-8 to encode Unicode characters in the English language.

3.2 The Communications specifications give the complete XML Schema definition applicable to the DDP, in the file DDP.xsd.

3.3 The two representations of DDP information are:

.1 Full DDP, which contains all DDP information at a specific DDP version number which is implemented within the LRIT system; and

.2 Incremental update, which details the changes resulting from the insertion, amendment or deletion of specific DDP information by Contracting Governments and other parties.

Datatypes used in the full DDP and incremental updates

3.4 In addition to primitive XML datatypes, several custom datatypes for representing DDP information are defined within the XML Schema for the DDP.

3.5 The following sub-paragraphs describe custom datatypes and the formats of their key values for representing DDP information within the full DDP and in incremental updates.

3.5.1 Geographical coordinates of points given within geographical polygons and positional elements (e.g. <Polygon> and <Position>) are given as follows:

.1 Coordinate order of longitude followed by latitude;

.2 Negative values indicate south or west cardinal directions and positive values indicate north or east, for latitudes and longitudes respectively; and

.3 All values are in decimal degrees, to two decimal places.

3.5.2 Datatypes representing unique identifiers:

.1 @locode of <Port> – A globally unique code for ports belonging to Contracting Governments, from the UN/LOCODE database. The code is a five-character string, where the first two characters form the ISO 3166-1:1997 Alpha-2 code for the Contracting Government or non metropolitan territory where the port is located. The subsequent three characters are usually three letters, but may contain digits where a temporary code has been assigned by the Organization pending formal assignment of a code by the UN ECE\(^\text{13}\) (who maintain UN/LOCODE);

.2 @placeCode of <Place> – A globally unique code for places under the jurisdiction of Contracting Governments. This is a six-character string where the first three letters are the ISO 3166-1:1997 Alpha-3 code of the Contracting Government or non metropolitan territory where the place is located, followed by three digits; and

\(^{13}\) The UN/LOCODE website is at: https://unece.org/trade/cefact/unlocode-code-list-country-and-territory
3. @imoPortFacilityNumber of <PortFacility> – The "IMO Port Facility Number" of the port facility, which is a globally unique identifier assigned by the Maritime Security module of GISIS to port facilities declared by Contracting Governments. This value is the concatenation of the UN/LOCODE of the port containing the facility and four digits, separated by a hyphen.

3.5.3 Datatypes relating to Contracting Governments and non-metropolitan territories (represented with <ContractingGovernment> and <Territory> respectively):

.1 @isoCode of <Name> – The ISO 3166-1:1997 Alpha-3 code of the Contracting Government or non-metropolitan territory. Where ISO-assigned codes are unavailable, codes have been assigned within the reserved codespace for custom applications and are as defined for use within GISIS;

.2 The elements <InternalWaters>, <TerritorialSea>, <SeawardAreaOf1000NM> and <CustomCoastalAreas> contain 0 or more elements of this type each describing a closed polygonal geographical area, subject to the restrictions set out in section 5. Each of these elements has an @areaID attribute uniquely identifying the area within the DDP (table I-1 sets out the format of the values of this attribute.)

.3 A <StandingOrder> for a Contracting Government within <CoastalStateStandingOrders> identifies a list of polygons defined in any of the <InternalWaters>, <TerritorialSea>, <SeawardAreaOf1000NM> or <CustomCoastalAreas> of that Contracting Government, which should be monitored by DCs as the areas for which the coastal State standing order is in effect. For each polygon identified in the standing order, a Contracting Government may optionally specify the flag(s) and/or type(s) of ships from which it does not wish to receive LRIT information as part of the standing order:

.1 If a <FilterFlag> element is defined within the polygon element in the standing order, it will contain a list of LRIT IDs of Contracting Governments that are not considered to be part of the coastal State standing order for that particular polygon. Therefore, LRIT information transmitted by ships flying the flag of those Contracting Governments listed in the <FilterFlag> element should not be sent in response to the polygon element in the standing order that contains that <FilterFlag> element definition.

.2 If a <FilterShipType> element is defined within the polygon element in the standing order, it will contain a list of ship type codes that are not considered to be part of the coastal State standing order for that particular polygon. Therefore, LRIT information transmitted by ships which type codes are listed in the <FilterShipType> element should not be sent in response to the polygon element in the standing order that contains that <FilterShipType> element definition. (Ship type codes are defined in paragraph 1.2.3.3 of the annex to this circular.)

.3 In the case of overlapping polygons within a coastal State standing order, see section 2.3.4 for the Technical specifications for communications with the LRIT system on the processing of of request messages in the context of DDP polygons.
.4 \(<\text{DataCentreID}>\) specifies the LRIT ID of the Data Centre serving the Contracting Government. The Data Centre specified is defined in \(<\text{DataCentre}>\) with the corresponding value of \(@\text{lritID}\) within \(<\text{DataCentres}>\).

3.5.4 Datatypes for information about DCs, the IDE, and the DDP server:

.1 \(<\text{DataCentre}>\):

.1 @lritID is the LRIT ID of the Data Centre;

.2 \(<\text{IDEInterfaceWebServiceLocation}>\) is the URI\(^{14}\) of the SOAP endpoint for connections by the IDE; and

.3 \(<\text{DDPInterfaceWebServiceLocation}>\) is the URI\(^{14}\) of the SOAP endpoint for connections from the DDP server.

.2 \(<\text{IDE}>\):

.1 @lritid is the LRIT ID of the IDE;

.2 \(<\text{DCInterfaceWebServiceLocation}>\) is the URI\(^{15}\) of the SOAP endpoint for connections by Data Centres; and

.3 \(<\text{DDPInterfaceWebServiceLocation}>\) is the URI\(^{15}\) of the SOAP endpoint for connections by the DDP server.

.3 \(<\text{DDPServer}>\):

.1 @lritId is the LRIT ID of the DDP server; and

.2 \(<\text{WebServiceLocation}>\) is the URI of the SOAP endpoint for connections by the IDE and by Data Centres.

3.5.5 Datatypes relating to Exclusions specified by Contracting Governments:

.1 An \(<\text{Exclusion}>\) specified by Contracting Government within \(<\text{Exclusions}>\) applies to the Contracting Government specified by \(<\text{ExcludedContractingGovernmentID}>\). This exclusion is in effect for the same duration as the DDP version containing it is implemented, unless modified by the optional \(<\text{From}>\) and \(<\text{Until}>\) elements.

.1 If a \(<\text{From}>\) element is specified within the \(<\text{Exclusion}>\), the Exclusion should be considered to be in effect from the time stated in the \(<\text{From}>\) element which should not be earlier than the time of implementation of the first version of the DDP that contains it; otherwise the Exclusion should be considered to be in effect from the time of implementation of the first version of the DDP that contains it.

\(^{14}\) The hostname (fully-qualified domain name) part of the URI specified for \(<\text{IDEInterfaceWebServiceLocation}>\) must exactly match the hostname part of the URI specified for \(<\text{DDPInterfaceWebServiceLocation}>\).

\(^{15}\) The hostname (fully-qualified domain name) part of the URI specified for \(<\text{DCInterfaceWebServiceLocation}>\) must exactly match the hostname part of the URI specified for \(<\text{DDPInterfaceWebServiceLocation}>\).
.2 If an <Until> element is specified within the <Exclusion>, the Exclusion should be considered to be in effect until the time stated in the <Until> element; otherwise it should be considered to be in effect until the time of implementation of the first version of the DDP that does not contain it.

.3 Text within the optional <Reason> element is for information only and requires no processing.

**Full DDP**

3.6 The full DDP is represented in a single XML file, with root element <DataDistributionPlan>. It contains all DDP information as implemented within the LRIT system at a particular point in time, and is identified by its unique DDP version number.

3.7 The following attributes in the root element of the full DDP specify the DDP version number and publishing and implementation times of the DDP being represented:

.1 @versionNum: The DDP version number of the full DDP represented (e.g. 45:210), as described in paragraph 2.8;

.2 @regularVersionPublishedAt: The time of publishing of the regular DDP information in this version of the DDP;

.3 @regularVersionImplementationAt: The time of implementation of the regular DDP information in this version of the DDP within the LRIT system;

.4 @immediateVersionPublishedAt: The time of publishing of the immediate DDP information in this version of the DDP; and

.5 @immediateVersionImplementationAt: The time of implementation of the immediate DDP information in this version of the DDP within the LRIT system.

**Incremental update**

3.8 An incremental update details the changes to DDP information between two specific versions of the DDP which are or have been implemented within the LRIT system, specified in an XML file with root element <DataDistributionPlan-IncrementalUpdate>.

3.9 An incremental update is applied to an initial version of the DDP (the base version) transforming it into a version of the DDP consolidating the changes contained within the update (the target version).

3.9.1 The following attributes in the root element of an incremental update indicate the base version of the DDP to which the updates must be applied, and resulting (target) version the DDP once all updates have been applied:

.1 @baseRegularVersionNum: The regular version number of the full DDP to which this update should be applied;

.2 @targetRegularVersionNum: The regular version number of the resulting full DDP after this update has been applied;
3 @baseImmediateVersionNum: The immediate version number of the full DDP to which this update should be applied; and

4 @targetImmediateVersionNum: The immediate version number of the resulting full DDP after this update has been applied.

3.9.2 The @baseRegularVersionNum and @targetRegularVersionNum attributes are present only if the update contains information regarding changes to regular DDP information. The @baseImmediateVersionNum and @targetImmediateVersionNum attributes are present only if the update contains information regarding changes to immediate DDP information.

3.10 The root element of an incremental update contains a series of zero or more <Regular> and <Immediate> elements, each of which details changes between two consecutive versions of the DDP.

3.11 The root element will contain no child elements if there are no changes applicable to the base and target versions specified for the incremental update.

3.12 A <Regular> element represents changes between one regular version of the DDP, and the regular version following it. Similarly, an <Immediate> element represents changes between one immediate version of the DDP and the immediate version following it.

3.12.1 Therefore, for incremental updates spanning multiple regular versions or multiple immediate versions, multiple <Regular> or <Immediate> elements are present, each one separately enumerating the changes between two consecutive versions, starting at the base version and ending with the target version of the incremental update.

3.13 The following attributes of the <Regular> and <Immediate> elements indicate the base and target version numbers before and after applying the changes detailed within them:

1 @baseRegularVersionNum (in <Regular> elements only): The regular version number of the DDP to which the changes in this element should be applied;

2 @baseImmediateVersionNum (in <Immediate> elements only): The immediate version number of the DDP to which the changes in this element should be applied;

3 @targetRegularVersionNum (in <Regular> elements only): The regular version number of the resulting DDP after the changes in this element have been applied;

4 @targetImmediateVersionNum (in <Immediate> elements only): The immediate version number of the resulting DDP after the changes in this element have been applied;

5 @targetPublishedAt: The time of publishing of the version represented by @targetRegularVersionNum or @targetImmediateVersionNum; and

6 @targetImplementationAt: The time of implementation of the version represented by @targetRegularVersionNum or @targetImmediateVersionNum.
3.14 The child elements of `<Regular>` and `<Immediate>` elements represent the operation to be performed on the specified item of DDP information:

.1 `<Insert>` – for the insertion of new information into the DDP;

.2 `<Update>` – for updates to existing information within the DDP; and

.3 `<Delete>` – for the deletion from the DDP of an element of information.

3.15 The order of operations listed within an *incremental update* is significant, and should be applied sequentially from the top downwards when updating existing DDP information.

3.15.1 It should not be assumed that the operations exactly represent atomic transactions on the DDP server.

**@xPath attribute in incremental update elements**

3.16 The value of `@xPath` is an XML Path Language\(^1\) value indicating the location of the item of DDP information within the *full DDP* of the specified base version where the change has occurred.

3.16.1 `@xPath` gives an absolute reference to an element within the *full DDP*. Thus, it always begins with "/DataDistributionPlan".

3.17 Usage and processing of the `@xPath` value is optional for implementers of recipient components, depending on their preferred methods for identifying the items of DDP information within their own systems which are affected by an *incremental update*.

3.18 For each of the operations, the value of `@xPath` is as follows:

.1 `<Insert>`: the node in the base *full DDP* under which the data has been inserted;

.2 `<Update>`: the node in the base *full DDP* whose contents have been changed; and

.3 `<Delete>`: the node in the base *full DDP* which has been deleted.

*Incrementable datatypes*

3.19 Tables I-1 and I-2 list the datatypes, defined in the XML Schema for the *full DDP*, which can be present within the insert, update and delete operations enumerated within an *incremental update*.

3.19.1 Table I-1 lists the datatypes corresponding to *regular* DDP information, which are the only datatypes that may be present within `<Regular>` elements of an *incremental update*.

3.19.2 Table I-2 lists the datatypes representing *immediate* DDP information, which are the only datatypes that may be present within `<Immediate>` elements of an *incremental update*.

3.20 The tables also specify unique identifiers for each of these datatypes, and the format of their values. These identifiers uniquely identify the corresponding item of DDP information within the *full DDP*.

---

16 The official W3C site describing this language is at: [www.w3.org/TR/xpath](http://www.w3.org/TR/xpath)
### Table I-1

#### Regular Datatypes

<table>
<thead>
<tr>
<th>Incrementable datatype</th>
<th>Identifier attribute</th>
<th>Parent element in Full DDP</th>
<th>Identifier format</th>
</tr>
</thead>
<tbody>
<tr>
<td>contractingGovernmentType</td>
<td>lritID</td>
<td>DataDistributionPlan</td>
<td>&lt;CG LRIT ID&gt;</td>
</tr>
<tr>
<td>contactPointType</td>
<td>contactID</td>
<td>SARService</td>
<td>CPSAR&lt;SAR LRIT ID&gt;_&lt;pk&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NationalPointsOfContact</td>
<td>CPN&lt;CG LRIT ID&gt;_&lt;pk&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ASPInfo</td>
<td>CPASPINF&lt;ASP LRIT ID&gt;_&lt;pk&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DataCentreInfo</td>
<td>CPDCINF&lt;CG LRIT ID&gt;_&lt;pk&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DataCentre</td>
<td>CPDC&lt;DC LRIT ID&gt;_&lt;pk&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IDE</td>
<td>CPIDE&lt;IDE LRIT ID&gt;_&lt;pk&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DDPServer</td>
<td>CPDDP&lt;DDP LRIT ID&gt;_&lt;pk&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRITCoordinator</td>
<td>CPLC&lt;LC LRIT ID&gt;_&lt;pk&gt;</td>
</tr>
<tr>
<td>Irit: polygonType</td>
<td>areaID</td>
<td>InternalWaters</td>
<td>GAIW&lt;CG LRIT ID&gt;_&lt;pk&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TerritorialSea</td>
<td>GATS&lt;CG LRIT ID&gt;_&lt;pk&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SeawardAreaOf1000NM</td>
<td>GAOT&lt;CG LRIT ID&gt;_&lt;pk&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CustomCoastalAreas</td>
<td>GACA&lt;CG LRIT ID&gt;_&lt;pk&gt;</td>
</tr>
<tr>
<td>portType</td>
<td>locoed</td>
<td>Ports</td>
<td>&lt;LOCODE&gt;</td>
</tr>
<tr>
<td>portFacilityType</td>
<td>imoPortFacilityNumber</td>
<td>PortFacilities</td>
<td>&lt;IMOPortFacilityNumber&gt;</td>
</tr>
<tr>
<td>placeType</td>
<td>placeCode</td>
<td>Places</td>
<td>&lt;PlaceCode&gt;</td>
</tr>
<tr>
<td>sarServiceType</td>
<td>lritID</td>
<td>SARServices</td>
<td>&lt;SAR LRIT ID&gt;</td>
</tr>
<tr>
<td>aspInfoType</td>
<td>aspInfoID</td>
<td>ContractingGovernment</td>
<td>ASPINF&lt;CG LRIT ID&gt;_&lt;pk&gt;</td>
</tr>
<tr>
<td>dataCentreInfoType</td>
<td>dcInfoID</td>
<td>ContractingGovernment</td>
<td>DCINF&lt;CG LRIT ID&gt;</td>
</tr>
<tr>
<td>aspType</td>
<td>lritID</td>
<td>ASPs</td>
<td>&lt;ASP LRIT ID&gt;</td>
</tr>
<tr>
<td>IritCoordinatorType</td>
<td>lritID</td>
<td>DataDistributionPlan</td>
<td>&lt;LC LRIT ID&gt;</td>
</tr>
</tbody>
</table>
### Table I-2

**Immediate Datatypes**

<table>
<thead>
<tr>
<th>Incrementable datatype</th>
<th>Identifier attribute</th>
<th>Parent element in Full DDP</th>
<th>Identifier format</th>
</tr>
</thead>
<tbody>
<tr>
<td>exclusionType</td>
<td>exclusionID</td>
<td>Exclusions</td>
<td>EXCL&lt;CG LRIT ID&gt; &lt;pk&gt;</td>
</tr>
<tr>
<td>dataCentreType</td>
<td>lritID</td>
<td>DataCentres</td>
<td>&lt;DC LRIT ID&gt;</td>
</tr>
<tr>
<td>coastalStateStandingOrderType</td>
<td>contractingGovernmentID</td>
<td>CoastalStateStandingOrders</td>
<td>&lt;CG LRIT ID&gt;</td>
</tr>
<tr>
<td>ideType</td>
<td>lritID</td>
<td>DataDistributionPlan</td>
<td>&lt;IDE LRIT ID&gt;</td>
</tr>
<tr>
<td>ddpserverType</td>
<td>lritID</td>
<td>DataDistributionPlan</td>
<td>&lt;DDP LRIT ID&gt;</td>
</tr>
</tbody>
</table>

**Explanatory note on the symbols used in tables I-1 and I-2:**

- `<pk>`: A positive integer
- `<CG LRIT ID>`: LRIT ID of Contracting Government
- `<SAR LRIT ID>`: LRIT ID of SAR Service
- `<ASP LRIT ID>`: LRIT ID of ASP
- `<DC LRIT ID>`: LRIT ID of Data Centre
- `<IDE LRIT ID>`: LRIT ID of the International LRIT Data Exchange
- `<DDP LRIT ID>`: LRIT ID of the Data Distribution Plan server
- `<LC LRIT ID>`: LRIT ID of the LRIT Coordinator
- `<LOCODE>`: UN/LOCODE of the port
- `<IMOPortFacilityNumber>`: IMO Port Facility Number of the port facility
- `<PlaceCode>`: Code for the place under the jurisdiction of a Contracting Government
4 Uploading information on geographical areas

4.1 Information on geographical areas within the DDP may be updated by Contracting Governments via the web interface of the DDP Server, or, in the case of custom coastal geographical areas, also via the DC serving the Contracting Government using Message Type 16.

4.1.1 In both cases, the geographical areas may be uploaded as a GML file with polygons representing: (1) the water landward of baselines (referred to as InternalWaters); (2) the territorial sea (referred to as TerritorialSea); (3) 1,000 nautical miles area (referred to as SeawardAreaOf1000NM); and (4) other custom definitions of geographical areas within the 1,000 nautical miles area (referred to as CustomCoastalAreas), which are for the purposes of the coastal State standing order.

4.2 The uploaded GML file must conform to the specifications given in this section in order to be successfully accepted and processed by the DDP server. The processing of the file is identical regardless of how it is uploaded to the DDP Server.

Format of the uploaded GML file

4.3 The uploaded file must be a valid GML document whose root node is of the gml:MultiSurface datatype.

4.4 Coordinate values representing polygons given within <gml:posList> must conform to the conventions described in paragraph 3.5.1, which are reproduced here:

.1 Coordinate order of longitude followed by latitude;
.2 Negative values indicate south or west cardinal directions and positive values indicate north or east, for latitudes and longitudes respectively; and
.3 All values are in decimal degrees, to two decimal places.

4.5 The @gml:id attribute of the root node must have one of the following values corresponding to the type of boundary information being uploaded:

.1 "InternalWaters";
.2 "TerritorialSea";
.3 "SeawardAreaOf1000NM"; or
.4 "CustomCoastalAreas"

4.6 The root node may contain any number of child elements of the GML Polygon datatype, each of which must be specified in accordance with the constraints given section 5.

4.7 The DDP server does not perform any validation of the geographical areas covered by the polygons defined within the uploaded file.

---

17 Geography Markup Language.
4.7.1 The DDP server only checks uploaded polygons against the constraints given in section 5 with respect to:

.1 Polygons being closed (i.e. first vertex matching the last);
.2 Precision of 2 decimal places in the decimal degree value of a coordinate;
.3 Latitudinal and longitudinal components of a coordinate being within the valid range of integer values for latitudes and longitudes respectively;
.4 The total number of polygons for each type of boundary; and
.5 The total number of vertices per polygon, depending on type of boundary.

4.8 The @gml:id attributes of these polygons may, optionally, be formed according to the formats set out in table I-1 for the lr:lr:lr:polygonType datatype.

4.8.1 If the @gml:id attribute of a polygon is valid according to the format defined for the type of boundary it defines, it will be processed by the DDP server as part of the upload process. Otherwise, the @gml:id of the polygon is treated as if it has not been specified.

4.8.2 When processing each uploaded polygon, the DDP Server will replace any existing geographical area whose Area ID matches the @gml:id attribute of the polygon with the information contained within the polygon. If the polygon does not specify a valid @gml:id value, it is added to the DDP as a new geographical area with a new unique Area ID generated by the DDP Server.

4.9 Each polygon may optionally include a @gml:description attribute, which is processed by the DDP server as the caption for that polygon (represented in an <lr:lrit:Caption>).

**Sample GML upload file**

4.10 The text following paragraph 4.10.1 constitutes a sample GML file representing the internal waters areas for Contracting Government with LRIT ID '1234' which may be uploaded to the DDP server.

4.10.1 This example is purely to illustrate the format of the expected upload file, and should not be considered as demonstrating a valid geographical area or polygon definition with regards to the <gml:posList> values used:

```xml
<?xml version="1.0" encoding="utf-8"?>
<gml:MultiSurface
 <gml:surfaceMembers>
  <gml:Polygon gml:id="GAIW1234_1">
   <gml:description>Area 1</gml:description>
   <gml:exterior>
    <gml:LinearRing>
     7.25 53.32 7.19 53.31 7.01 53.33 6.97 53.37 6.91 53.43 6.88 53.45 6.81 53.49 6.77 53.51 6.74 53.53 6.68 53.55 6.61 53.58 6.55 53.61 6.64 53.62 6.72 53.65 6.8 53.67 6.83 53.67 7.05 53.69 7.16 53.72 7.32 53.73 7.35 53.73 7.4 53.74 7.61 53.76 7.69 53.78 7.76 53.78 7.81 53.79 8.34 53.96 8.57 54.3 7.25 53.32 7.19 53.31 7.01 53.33 6.97
    </gml:LinearRing>
   </gml:exterior>
  </gml:Polygon>
 </gml:surfaceMembers>
</gml:MultiSurface>
```

I:\CIRC\MSC\MSC.1-Circ.1259-Rev.9.docx
Constraint on polygons of geographical areas

5.1 The following constraints, in addition to others specified in this section, should be adhered to when defining geographical areas within the DDP for a particular Contracting Government:

.1 *InternalWaters* polygons:

.1 The geographical coordinate points of all vertices should be in degrees and decimal degrees to 2 decimal places;

.2 The average separation between adjacent vertices should not be less than 6 nautical miles. For Contracting Governments which are also Small Island Developing States, the average separation between adjacent vertices could be reduced to less than 6 nautical miles, however it should not be reduced to less than 2 nautical miles;

---

18 The Committee, at its eighty-sixth session, agreed that:

.1 Contracting Governments which are State Parties to either the United Nations Convention on the Law of the Sea or the Convention on the Territorial Sea and the Contiguous Zone are expected to define the geographical areas for the internal waters and the territorial seas for which they wish to see included in the LRIT Data Distribution Plan in accordance with the provisions of the international treaty they are party to;

.2 Contracting Governments which are neither State Parties to the United Nations Convention on the Law of the Sea nor to the Convention on the Territorial Sea and the Contiguous Zone are expected to define the geographical areas for the internal waters and the territorial seas for which they wish to see included in the LRIT Data Distribution Plan in accordance with the provisions of international customary law as agreed during MSC 84;

.3 Contracting Governments, if they so wish, have the option to advise the Organization and all other Contracting Governments that they do not wish to provide geographical coordinates for either internal waters and/or territorial seas and as a result they allow the other Contracting Governments to receive LRIT information transmitted by all ships when within their internal waters and from ships entitled to fly their flag when located within their territorial waters; and

.4 regulation V/19-1.13 already provides that Contracting Governments may report to the Organization any case where they consider that provisions of this regulation or of any other related requirements established by the Organization have not been or are not being observed or adhered to.

19 The small islands developing States are listed by the United Nations at the following web address: https://www.un.org/ohrlls/content/list-sids
The total number of vertices for all polygons should not be more than 10,000 vertices; and
The total number of polygons should not be more than 1,000 polygons.

Territorial Seas polygons:

The geographical coordinate points of all vertices should be in degrees and decimal degrees to 2 decimal places;
The average separation between adjacent vertices should not be less than 6 nautical miles. For Contracting Governments which are also Small Island Developing States, the average separation between adjacent vertices could be reduced to less than 6 nautical miles, however it should not be reduced to less than 2 nautical miles;
The total number of vertices for all polygons should not be more than 10,000 vertices; and
The total number of polygons should not be more than 1,000 polygons.

Seaward Area of 1000 NM polygons:

The geographical coordinate points of all vertices should be in degrees and decimal degrees to two decimal places;
The minimum separation between adjacent vertices should not be less than 6 nautical miles (1% error rate) or the overall minimum average (mean) distance between adjacent vertices should not be less than 40 nautical miles;
The total number of vertices for all polygons should not be more than 1,000 vertices; and
The total number of polygons should not be more than 10 polygons.

Custom Coastal Areas polygon:

The geographical coordinate points of all vertices should be in degrees and decimal degrees to two decimal places;
The average separation between adjacent vertices should not be less than 600 m;
The total number of vertices for each polygon should not be more than 100 vertices;
The total number of polygons should not be more than 100 polygons; and

The small islands developing States are listed by the United Nations at the following web address: https://www.un.org/ohrlls/content/list-sids
.5 All polygons should be entirely within the area covered by the 
SeawardAreaOf1000NM and InternalWaters polygons.

5.2 In case any one of the geographical areas to be represented by the polygons referred 
to in paragraph 5.1 straddles the meridian of 180 degrees longitude, the geographical area in 
question should be represented by two polygons having a common boundary along 
the 180 degrees longitude.

5.3 All polygons within each set of InternalWaters, TerritorialSeas, SeawardAreaOf1000NM should be disjoint (i.e. no overlap between polygons within each set). The CustomCoastalArea polygons defined by any single Contracting Government may overlap 
within each set.

5.3.1 This constraint should be understood as not preventing adjacent polygons to have a 
common boundary defined by the same geographical coordinate points, provided the 
geographical area represented by the two polygons do not overlap.

5.4 All polygons should be technically valid simple polygons (i.e. a simple polygon is 
closed polygonal chain of line segments that do not cross each other). For any single polygon 
to be a technically valid simple polygon, the following should be true:

.1 The polygon should be continuous and closed (i.e. the first and last vertices 
should be identical), and should not contain any interior rings;

.2 The polygon should have at least four total vertices and three distinct vertices 
(i.e. the first and last vertices are identical);

.3 The sides of the polygon should not intersect. In other words, the polygon 
should not be self-intersecting; and

.4 The polygon should not contain duplicate vertices with the exception of the 
first and last vertices being identical.

5.5 Contracting Governments claiming archipelagic State status should define polygons 
in a manner that conforms with the purpose and the objectives of regulation V/19-1 and so as 
to allow Contracting Governments, in a port or coastal State capacity and in accordance with 
the provisions of regulation V/19-1, to request and be able to receive LRIT information 
transmitted by ships when located within waters which they might be claiming in an 
archipelagic State capacity.

6 The DDP server

6.1 The DDP server is the LRIT system component which holds all DDP information and 
provides the following two interfaces:

.1 secure, web-based access (the web interface) to Contracting Governments 
and other authorized users to view, insert, update and delete information, as 
appropriate; and

.2 a Web service interface in compliance with the standards specified within the 
Communications specifications, for the exchange of LRIT messages with the 
IDE and DCs.
6.2 The DDP server is implemented as module of the Global Integrated Shipping Information System (GISIS). With regards to LRIT and the DDP information, it integrates with GISIS in the following respects:

.1 The IMO Web Accounts\textsuperscript{21} system is used for securing user access to the system via a login and password, issued to authorized users with the appropriate roles assigned;

.2 Common coding systems from GISIS are used where applicable, in particular for country codes (based on ISO 3166 1:1997), ports (based on UN/LOCODE) and port facilities;

.3 Data from other GISIS modules relevant to the DDP are sourced directly from those modules. Specifically, this refers to information on port facilities from the Maritime Security module, and information on SAR services from the COMSAR module.

6.3 The users of the DDP module with respect to its web interface and the rights of access of each type of user are specified in table I-3 below.

<table>
<thead>
<tr>
<th>User</th>
<th>Enter</th>
<th>View</th>
<th>Print</th>
<th>Download</th>
<th>Implement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contracting Government</td>
<td>Yes(1)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>LRIT Data Centre</td>
<td>Yes(2)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>International LRIT Data</td>
<td>Yes(2)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Exchange</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LRIT Coordinator</td>
<td>Yes(2)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes(3)</td>
<td>Yes(4)</td>
</tr>
<tr>
<td>Application Service Provider</td>
<td>Yes(2)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Secretariat</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>---</td>
</tr>
</tbody>
</table>

Explanatory notes of terms used in table I-1:

Enter means making, and amending existing, entries manually and making and amending existing entries by uploading files or data.

View means viewing the data contained in the DDP.

Print means printing in a paper or file format the data contained in the DDP.

Download means downloading the data contained in the DDP in an XML\textsuperscript{22} format.

Implement means implementing the information provided by the data contained in the DDP in the functioning of an LRIT Data Centre (DC) or the International LRIT Data Exchange (IDE).

\textsuperscript{21} Information on the IMO Web Accounts system is given in Circular letter No.2892.

\textsuperscript{22} Extensible Markup Language (XML).
Yes(1) indicates that the right is restricted to information and data relating to the Contracting Government concerned.

Yes(2) indicates that the right is restricted to information of administrative nature relating to the DC, the IDE, the LRIT Coordinator or the Application Service Provider as the case may be.

Yes(3) indicates that the right is restricted to purposes relating to the functions to be performed by the LRIT Coordinator for example the performance review and audit of a DC or the IDE or in relation to matters relating to the provisions of regulation V/19-8.1 or V/19-1.9.

Yes(4) indicates that the LRIT Coordinator applies the information contained in the DDP in connection with the functions it performs which is different from the implementation of the DDP done by a DC or IDE.

6.4 Users authorized to access the web interface of DDP module of GISIS log in using the established procedures, via the Members' Area of GISIS, in order to access and/or modify DDP information as appropriate.

6.4.1 Additional procedures, other than those applicable to the administration of user accounts by the IMO Web Accounts administrator, apply in the case of authorization of users for access to the web interface of the DDP module.

6.5 In the case of DDP information contained within other GISIS modules, such as with the Maritime Security and COMSAR modules, users will need to have the appropriate authorizations for those modules in order to perform the necessary actions.

6.5.1 Authorizations to other GISIS modules are granted in accordance with existing procedures that have been established for them.

**Communications within the LRIT system**

6.6 The DDP server sends and receives LRIT SOAP messages, as defined in the Communications specifications, from the IDE and DCs directly. Messages to and from DCs are not relayed via the IDE.

6.7 The DDP server sends and/or accepts the following messages from recipient components:

1. *SystemStatus* (sent and received) – A *SystemStatus* message is transmitted to the IDE every 30 min, indicating the "health" of the DDP server. In addition, upon receipt of a *SystemStatus* from a DC, the DDP server will respond by sending a *SystemStatus* message back to the DC.

2. *Receipt* (sent and received) – *Receipt* messages are sent to any recipient component in the event of an error being encountered by the DDP server, as defined within the Technical specifications for communications within the LRIT system. The DDP server will accept *Receipt* messages from any recipient component, with any further processing.

---

23 Details to be issued under a separate cover.
.3 **DDPNotification** (sent only) – **DDPNotification** messages are sent by the DDP server upon the publishing either of a *regular version* or of an *immediate version* of the DDP.

Upon receipt of **DDPNotification**, recipient components should send a **DDPRequest** message to the DDP server the with the appropriate parameters in order to be sent an *incremental update* identifying the changes in DDP information.

.4 **DDPRequest** (received only) – **DDPRequest** messages may be sent by recipient components at any time in order to request either a *full DDP* at a particular version, current or archived, or an *incremental update* relative to the version they are currently implementing (see paragraph 6.7).

Recipient components should send a **DDPRequest** message upon, or shortly after, receipt of a **DDPNotification** message from the DDP server.

.5 **DDPUpdate** (sent only) – This message is sent by the DDP server (only) upon receipt of a **DDPRequest** message from recipient components. It contains as an attachment either a *full DDP* or an *incremental update*, depending on the parameters specified in the received **DDPRequest**.

.6 **Geographical Area Update** (received only) – **GeographicalAreaUpdate** messages may be sent by LRIT Data Users at any time in order to add, replace or delete custom coastal geographical areas of the Contracting Government. This message is equivalent to Contracting Governments updating their custom coastal geographical areas via the web interface of the DDP.

.7 **Coastal State standing order update** (received only) – **CoastalStateStandingOrderUpdate** messages may be sent by LRIT Data Users at any time in order to update the coastal State standing order of the Contracting Government. This message is equivalent to Contracting Governments updating their coastal State standing order via the web interface of the DDP.

6.8 When requesting *incremental updates*, the following values for the **UpdateType** parameter of the message may be specified:

.1 Regular Incremental updates – a request for changes to regular DDP information only, made between the most recently published regular version of the DDP and the regular version currently implemented by the requesting component (as specified in the request message);

.2 Immediate Incremental updates – a request for changes to immediate DDP information only, made between the most recently published immediate version and the immediate version currently implemented by the requesting component (as specified in the request message); and

.3 All Incremental updates – a request for all changes to both regular and immediate DDP information made between the most recently published regular versions and immediate version respectively, and the DDP version currently implemented by the requesting component (as specified in the request message).
6.9 With reference to the example timeline given in figure I-1 of section 2, table I-4, below, illustrates the contents of the incremental update sent by the DDP server in response to a DDPRequest message from a recipient component, depending on the version of the DDP it has implemented and the type(s) of update it is requesting:

**Table I-4**

**Illustrative example of the contents of the Incremental Update**
*(in relation to the information provided in figure I-1)*

<table>
<thead>
<tr>
<th>Example</th>
<th>DDP version implemented by requestor</th>
<th>Time of request (on 2 June)</th>
<th>Requested Update Type</th>
<th>Versions returned in Incremental Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>81:66</td>
<td>10:12</td>
<td>Immediate</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>81:65</td>
<td>05:15</td>
<td>Regular</td>
<td>82</td>
</tr>
<tr>
<td>3</td>
<td>81:65</td>
<td>05:15</td>
<td>Immediate</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>81:65</td>
<td>05:15</td>
<td>All updates</td>
<td>82</td>
</tr>
<tr>
<td>5</td>
<td>80:64</td>
<td>13:00</td>
<td>All updates</td>
<td>81, 82</td>
</tr>
</tbody>
</table>
Part II

Timeline for DDP activation, population and implementation

1 Establishment of the LRIT system

1.1 The LRIT system is to be established and should be operational at 00:00 UTC on 31 December 2008.

1.2 All Contracting Governments, pursuant to the provisions of regulation V/19-1.8.2 and taking the related provisions of the revised Performance standards, should communicate to the Organization and enter into the DDP all required information in order to enable the establishment of the LRIT system in a timely manner.

1.3 DCs and the IDE should download and implement the contents of the DDP in a timely manner before the LRIT system is scheduled to become operational.

1.4 Section 2 outlines the proposed timeline to be adopted with regards to the initial population of the DDP before the system becomes operational, and the timely downloading and implementation of the first version of the DDP by DCs and the IDE.

2 Timeline for the initial population and implementation of the DDP

2.1 The DDP will be made available for data population by Contracting Governments on 1 November 2008.

2.2 Contracting Governments should enter into the DDP all required information by 12:00 UTC on 19 December 2008.

2.3 The DDP web interface will not be available for Contracting Governments to insert or amend any information between 12:01 UTC on 19 December 2008 and 12:00 UTC on 5 January 2009.

2.3.1 This is to provide DCs and the IDE with a stable version of the DDP to download and implement by 00:00 UTC on 20 December 2008.

2.4 DCs and the IDE should download the version of the DDP which is current at 00:00 UTC on 20 December 2008.

2.5 By 00:00 UTC on 31 December 2008, the latest version (the one current at 00:00 UTC on 20 December 2008) of the DDP should be implemented by DCs and the IDE.

2.6 At 12:00 UTC on 5 January 2009, the DDP web interface will be made available again for Contracting Governments to insert or amend information in the DDP.

2.7 Subject to the provisions of paragraph 2.3, the LRIT system, including the DDP server, will be fully operational from 00:00 UTC on 31 December 2008. From this point in time, notifications of updates to the DDP (immediate and regular) will be transmitted as specified in this document.
2.8  Figure II-1, below, illustrates the timeline described above.

Figure II-1

DDP Implementation Timeline

Figure illustrating the implementation timeline
3 Implementation of the DDP as from 12:00 UTC on 5 January 2009

3.1 Table II-1 below sets out guidelines with regards to the implementation of the DDP by DCs and the IDE as from 12:00 UTC on 5 January 2009:

Table II-1

<table>
<thead>
<tr>
<th>No.</th>
<th>Case</th>
<th>Cut off time for including new entries and for amending existing ones</th>
<th>IDE and all DCs should implement the resulting new version of the DDP at</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Contracting Government enters information on any of its geographical areas (polygons defined as Internal Waters, Territorial Sea, Seaward Outer Boundary of 1000NM, or Custom Coastal Areas), or amends or deletes such entries</td>
<td>23:59 UTC daily 00:00 UTC daily</td>
<td>00:00 UTC the day after publishing</td>
<td>The functioning of the LRIT system should not be affected due to the failure of a Contracting Government to discharge its obligations under regulation V/19-1.8.2 in a timely manner</td>
</tr>
</tbody>
</table>

Note: The table below sets out in the column headed "Case" only the elements of the DDP which have an impact on the functioning of the LRIT system. Elements of the DDP which are of administrative or informative nature are not cited as they do not affect the functioning of the LRIT system.
<table>
<thead>
<tr>
<th>No.</th>
<th>Case</th>
<th>Cut off time for including new entries and for amending existing ones</th>
<th>Publishing time of the new version of the DDP</th>
<th>IDE and all DCs should implement the resulting new version of the DDP at</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Administration exercises its rights pursuant to the provision of regulation V/19-1.9.1, or amends or withdraws its decision to suspend the provision of LRIT information to the requesting DCs affected by its decision. (The Administration, if the circumstance so warrant, may direct the DC to which ships entitled to fly its flag transmit LRIT information to suspend the provision of LRIT information to the requesting DCs affected by its decision prior to communicating its decision to the Organization (or making the necessary entry in the DDP). In such a case the Administration should communicate its decision to the Organization (or make the necessary entry in the DDP) within one h as from the time it has directed so the DC concerned.)</td>
<td>Not applicable</td>
<td>One h after the time of publishing.</td>
<td>Regulation V/19-1.9.1 states that an Administration is able to exercise the right at any time. The obligation to comply becomes binding on all DCs as from the time the Organization informs Contracting Governments of receipt of such communication or as from a later time if such time is specified in the communication received by the Organization. DCs other than the DC serving the Administration are not affected. Regulation V/19-1.9.1 should not be read as allowing an Administration to reduce the 1,000 nautical miles distance and when invoked it entails the suspension of the provisions of LRIT information pursuant to regulation V/19-1.8.1.3. The DDP server should also notify (by email) the LRIT Coordinator.</td>
<td></td>
</tr>
</tbody>
</table>

An Immediate Version of the DDP will be published by the DDP server as soon as the Administration (or the Secretariat, in case of communications sent to the Organization) makes the related entry in the DDP.
<table>
<thead>
<tr>
<th>No.</th>
<th>Case</th>
<th>Cut off time for including new entries and for amending existing ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Publishing time of the new version of the DDP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IDE and all DCs should implement the resulting new version of the DDP at</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Comments</td>
</tr>
<tr>
<td>3</td>
<td>A State becoming a Contracting Government.</td>
<td>23:59 UTC daily</td>
</tr>
<tr>
<td></td>
<td></td>
<td>00:00 UTC daily</td>
</tr>
<tr>
<td></td>
<td></td>
<td>00:00 UTC the day after publishing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Convention enters into force with respect to that State three months after the deposit of the instrument of accession. The State may provide the information well in advance.</td>
</tr>
<tr>
<td>4</td>
<td>Contracting Government extends the application of the Convention to a non-metropolitan area where it did not previously apply, or terminates the application of the Convention to a non-metropolitan area where it previously applied.</td>
<td>23:59 UTC daily</td>
</tr>
<tr>
<td></td>
<td></td>
<td>00:00 UTC daily</td>
</tr>
<tr>
<td></td>
<td></td>
<td>00:00 UTC the day after publishing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Convention enters into force with respect to the non-metropolitan area as from the time of deposit of the declaration or as from the time stated in such declaration. Contracting Governments should time the deposit of such declarations accordingly. Alternatively, the Committee may agree that such declarations become effective at 12:00 UTC of the second day following the deposit of the declaration if they do not specify a later time.</td>
</tr>
<tr>
<td>5</td>
<td>Contracting Government establishes new search and rescue services or makes amendments to existing search and rescue services.</td>
<td>23:59 UTC daily</td>
</tr>
<tr>
<td></td>
<td></td>
<td>00:00 UTC daily</td>
</tr>
<tr>
<td></td>
<td></td>
<td>00:00 UTC the day after publishing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>As case 1</td>
</tr>
<tr>
<td>No.</td>
<td>Case</td>
<td>Cut off time for including new entries and for amending existing ones</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td>6</td>
<td>Contracting Government as a coastal State makes a change to the list of areas constituting its standing order, either to add or remove areas within which the Contracting Government is seeking the provision of LRIT information pursuant to the provisions of regulation V/19-1.8.1.3.</td>
<td>Not applicable ________ An Immediate Version of the DDP will be published by the DDP server as soon as the Administration makes the related entry in the DDP.</td>
</tr>
<tr>
<td>7</td>
<td>Contracting Government recognizes new ASPs or withdraws the recognition from previously recognized ASPs.</td>
<td>23:59 UTC daily ________ 00:00 UTC daily</td>
</tr>
<tr>
<td>No.</td>
<td>Case</td>
<td>Cut off time for including new entries and for amending existing ones</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td>8</td>
<td>Contracting Government establishes new LRIT Data Centre or changes the LRIT Data Centre from which it requests and receives LRIT information.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>9</td>
<td>Contracting Government changes particulars relating to its established Data Centre (e.g. its web service endpoint URI).</td>
<td>Not applicable</td>
</tr>
<tr>
<td>10</td>
<td>Contracting Government is including information on ports and port facilities located within its territory and on places under its jurisdiction to which ships which are required to comply with the provisions of regulation V/19-1 may enter or proceed to, or amend such information.</td>
<td>23:59 UTC daily</td>
</tr>
</tbody>
</table>
ANNEX 5
CRITERIA FOR THE LOCATION OF THE INTERNATIONAL LRIT DATA CENTRE
AND THE INTERNATIONAL LRIT DATA EXCHANGE

Physical location

1. The physical location of the IDC and IDE should be such so as to ensure that the IDC and IDE meet the availability requirements and provide the expected quality of service.

2. The physical location of the IDC and IDE, including any backup sites should be accessible to the LRIT Coordinator.

3. The IDC and IDE should have a disaster recovery site accessible every day of the year 24 h a day.

4. The IDC and IDE should have adequate physical security including protection from, inter alia, vandalism, environmental disasters and fire.

Communications infrastructure

5. The IDC should have access to reliable and adequate communication networks so as to have the needed links with Application Service Providers(s), Communications Service Provider(s), the IDE, other DCs and the DDP.

6. The IDE should have access to reliable and adequate communication networks so as to have the needed links with the IDC, other DCs and the DDP.

7. The IDC and IDE should have access to reliable and adequate communication networks to enable the LRIT Coordinator to have remote access to the IDC and the IDE.

8. The IDC and IDE should be able to accommodate multiple internet service providers (ISP).

9. The ISP links should be, if possible, fibre optic with satellite communications for backup. However, terrestrial microwave communications may also serve in a backup capacity.

10. The IDC and IDE should have the required redundant firewalls to ensure the required data integrity.

11. Although it is expected that communications links with the IDC and IDE will likely be over the Internet, leased lines may also be used; however, in no case should broadcast connections be used for any links within the LRIT system.

12. All communications links should have adequate and scaleable data bandwidth.

Supply of power

13. The IDC and IDE should be provided with an adequate power from a main, transitional and emergency power source so as to ensure their uninterrupted functioning and in order to meet the availability requirements.
Equipment and spare parts

14 The IDC and IDE should have local backup servers with seamless switch-over between servers locally.

15 The IDC and IDE should also have remote backup servers which should have close to seamless switch-over.

16 The IDC and IDE should have redundancy in IDC and IDE equipment.

17 The main and backup equipments and systems of the IDC and IDE should be geographically distributed to the extent that is practically and reasonably possible.

18 The IDC and IDE should be provided with an adequate supply of spare parts or should have arrangements in place which ensure the prompt and timely delivery of any needed spare parts.

Availability

19 The IDC and IDE should operate 24 h a day seven days a week with an availability of 99.9% over the year and 95% over any day. Availability should be measured by using the information of LRIT System status messages contained in the IDE Journal.

Observation

20 The above criteria, although they have been developed in relation to location of the IDC and IDE, should be considered as applying equally to all DCs and the DDP.
ANNEX 6

XML SCHEMAS

LRIT XML Resources ReadMe file

Release Version: 2.1
Release Date: 20 Sep 2017

XSDs

<table>
<thead>
<tr>
<th>File</th>
<th>Version</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>CoastalStateStandingOrderUpdate.xsd</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>DDP.xsd</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>DDPNotification.xsd</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>DDPRequest.xsd</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>DDPUpdate.xsd</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>GeographicalAreaUpdate.xsd</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>JournalReport.xsd</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>LritMessageLog.xsd</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>Receipt.xsd</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>ShipPositionReport.xsd</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>ShipPositionRequest.xsd</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>SURPICRequest.xsd</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>SystemStatus.xsd</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>Types.xsd</td>
<td>2.1</td>
<td>20 Sep 2017</td>
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</table>

WSDLs

<table>
<thead>
<tr>
<th>File</th>
<th>File Version</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC.wsd1</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>DDP.wsd1</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>IDE-DC.wsd1</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
<tr>
<td>IDE-DDP.wsd1</td>
<td>2.1</td>
<td>20 Sep 2017</td>
</tr>
</tbody>
</table>

Note:

**Release Version** is incremented if any file within this set is updated. This is the number that should be placed in the `schemaVersion` attribute of all LRIT SOAP messages.

Each file in this set has its own **File Version** number to track changes to that file, independently of the **Release Version** and other files within the set. This number is not used in any LRIT SOAP message.

Changelog

-----------

22 Aug 2008 - **Release Version 1.0**

-----------
* First versioned release of the LRIT XML files.
24 Sept 2008 - **Release Version 1.1**

* Updated DDP.xsd to:
  - Remove Exclusion as a Regular datatype
  - Add DDPserver and IDE as Immediate datatypes, and LRITCoordinator as Regular
  - Remove "minOccurs = 0" on names of ports, facilities and places

* Updated DDPUpdate.xsd to:
  - Add Referenceld element with reference message ID

24 Oct 2008 - **Release Version 1.2**

* Updated DDP.xsd to:
  - Add "minOccurs=0" for Data Centre contact points
  - Add Internal Waters to coastalStateStandingOrderAreasIDType
* Updated DDPRequest.xsd to:
  - Add Referenceld element with optional reference message ID
* Updated PricingRequest.xsd to:
  - Add Referenceld element with optional reference message ID
* Updated PricingUpdate.xsd to:
  - Add Referenceld element with reference message ID
* Updated SARSURPICRequest.xsd to:
  - Restrict maximum number of positions to 4
  - Corrected coordinate patterns for circular and rectangular areas
* Updated ShipPositionReport.xsd to:
  - Restore CSPID parameter
* Updated Types.xsd to:
  - Define CSP LRIT ID type for update to ShipPositionReport.xsd

07 Dec 2010 - **Release Version 1.3**

* Updated Types.xsd to:
  - Changed percentageValueType restriction to 
    "&lt;xs:pattern value="[0-9]+(\.[0-9]{1,2})"/""
  - Changed priceValueType restriction to
    "&lt;xs:pattern value="[0-9]+(\.[0-9]{1,4})"/""


* Added CoastalStateStandingOrderUpdate.xsd

* Updated DC.wsdl:
  - Renamed SARSURPIC to SURPIC
  - Deleted import of DDPRequest namespace (not used and should not have been in this WSDL)
  - Deleted all references to obsolete pricing-related functionality

* Updated DDP.wsdl:
  - Added namespace and binding for GeographicalAreaUpdate
  - Added namespace and binding for CoastalStateStandingOrderUpdate

* Updated DDP.xsd:
  - Using new definition of coastalStateStandingOrderType (defined in Types.xsd)
  - Updated schema version to 2.0
* Updated DDPNotification.xsd:
  - Updated schema version to 2.0

* Updated DDPRequest.xsd:
  - Updated schema version to 2.0

* Updated DDPUpdate.xsd:
  - Updated schema version to 2.0

* Added GeographicalAreaUpdate.xsd

* Updated IDE-DC.wsdl:
  - Changed SARSURPIC to SURPIC
  - Added namespace and binding for GeographicalAreaUpdate
  - Deleted all references to obsolete pricing-related functionality

* Updated JournalReport.xsd:
  - Schema version set to 2.0

* Updated LritMessageLog.xsd (and included this file in the archive for the first time):
  - Changed SARSURPIC to SURPIC
  - Deleted all references to obsolete pricing-related functionality
  - Updated schema version to 2.0

* Deleted PricingFile.xsd

* Deleted PricingNotification.xsd

* Deleted PricingRequest.xsd

* Deleted PricingUpdate.xsd

* Updated Receipt.xsd:
  - Added new ReceiptCodes relating to geographical area update and coastal State standing order update
  - Updated schema version to 2.0

* Deleted SARSURPICRequest.xsd (succeeded by SURPICRequest.xsd)

* Updated ShipPositionReport.xsd:
  - Added ShipType as an element of LRIT information to be sent
  - Updated schema version to 2.0

* Updated ShipPositionRequest.xsd:
  - Schema version set to 2.0

* Added SURPICRequest.xsd (supercedes SARSURPICRequest.xsd)

* Updated SystemStatus.xsd:
  - Updated schema version to 2.0
* Updated Types.xsd:
  - Refactored common types relating to geographical area update and coastal State standing order update messages
  - Removed pricing-related type declarations: pricingVersionNumType;
    percentageValueType (this was not referenced in any XSD or WSDL);
    priceValueType; currencyType
  - Updated schema version to 2.0

20 Sep 2017 - Release Version 2.1
=====================================================================
* Update to SURPICRequest.xsd to:
  - Add Request Duration element with start time and end time.
XSD files

CoastalStateStandingOrderUpdate.xsd file

<!--
File: CoastalStateStandingOrderUpdate.xsd
File Version: 2.1
Date: 20 Sep 2017
-->  
<xs:schema version="2.1"
    xmlns:xsl="http://www.w3.org/2001/XMLSchema"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    elementFormDefault="qualified">

    <xs:simpleType name="messageTypeType">
        <xs:restriction base="xs:integer">
            <xs:enumeration value="17"/>
        </xs:restriction>
    </xs:simpleType>

    <xs:element name="CoastalStateStandingOrderUpdate">
        <xs:complexType>
            <xs:sequence>
                <xs:element name="MessageType" type="messageTypeType"/>
                <xs:element name="MessageId" type="lrit:msgIDType"/>
                <xs:element name="StandingOrder" type="lrit:coastalStateStandingOrderType" minOccurs="0"/>
                <xs:element name="DataUserRequestor" type="lrit:lritIDType"/>
                <xs:element name="TimeStamp" type="xs:dateTime"/>
                <xs:element name="DDPVersionNum" type="lrit:ddpVersionNumType"/>
            </xs:sequence>
            <xs:attribute name="test" type="lrit:testType" use="optional" default="0"/>
            <xs:attribute name="schemaVersion" type="xs:decimal" use="required"/>
        </xs:complexType>
    </xs:element>

</xs:schema>
DDP.xsd file

File: DDP.xsd
File Version: 2.1
Date: 20 Sep 2017

<xs:schema version="2.0"
targetNamespace="http://gisis.imo.org/XML/LRIT/ddp/2008"
xmllns="http://gisis.imo.org/XML/LRIT/ddp/2008"
xmllns:xsi="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified">


<xs:simpleType name="iso3166-1Alpha3CodeType">
  <xs:restriction base="xs:string">
    <xs:pattern value="[A-Z][0-9]{3}"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="mmsiType">
  <xs:restriction base="xs:string">
    <xs:pattern value="[0-9]{9}"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="contactIDType">
  <xs:restriction base="xs:string">
    <xs:pattern value="CPN1[0-9]{3}_[0-9]+"/>
    <xs:pattern value="CPDCINF1[0-9]{3}_[0-9]+"/>
    <xs:pattern value="CPASPINF1[0-9]{3}_[0-9]+"/>
    <xs:pattern value="CPSAR2[0-9]{3}_[0-9]+"/>
    <xs:pattern value="CPDC3[0-9]{3}_[0-9]+"/>
  </xs:restriction>
</xs:simpleType>
<xs:pattern value="CPASP4[0-9][3-0-9]+"/>
<xs:pattern value="CPDDP0001[0-9]+"/>
<xs:pattern value="CPIDE0002[0-9]+"/>
<xs:pattern value="CPLC0003[0-9]+"/>
</xs:restriction>
</xs:simpleType>
<xs:simpleType name="dcInfoIDType">
<xs:restriction base="xs:string">
<xs:pattern value="DCINF1[0-9][3]+" />
</xs:restriction>
</xs:simpleType>
<xs:simpleType name="aspInfoIDType">
<xs:restriction base="xs:string">
<xs:pattern value="ASPINF1[0-9][3][0-9]+" />
</xs:restriction>
</xs:simpleType>
<xs:simpleType name="exclusionIDType">
<xs:restriction base="xs:string">
<xs:pattern value="EXCL1[0-9][3][0-9]+" />
</xs:restriction>
</xs:simpleType>
<xs:simpleType name="sarFacilityTypeType">
<xs:restriction base="xs:string">
<xs:enumeration value="RB"/>
<xs:enumeration value="RV"/>
<xs:enumeration value="SRG"/>
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<xs:enumeration value="UIU"/>
<xs:enumeration value="DUIU"/>
<xs:enumeration value="FFU"/>
</xs:restriction>
</xs:simpleType>
<xs:complexType name="dataCentreType">
    <xs:complexContent>
        <xs:restriction base="xs:complexType">
            <xs:sequence>
                <xs:element name="contactPointType">
                    <xs:complexType name="contactPointType">
                        <xs:sequence>
                            <xs:element name="Type">
                                <xs:simpleType>
                                    <xs:restriction base="xs:string">
                                        <xs:enumeration value="Primary"/>
                                        <xs:enumeration value="Alternate"/>
                                        <xs:enumeration value="Operational"/>
                                    </xs:restriction>
                                </xs:simpleType>
                            </xs:element>
                            <xs:element name="Title">
                                <xs:simpleType name="TitleType">
                                    <xs:restriction base="xs:string">
                                        <xs:enumeration value="Mr"/>
                                        <xs:enumeration value="Mrs"/>
                                        <xs:enumeration value="Ms"/>
                                        <xs:enumeration value="Miss"/>
                                        <xs:enumeration value="Dr"/>
                                        <xs:enumeration value="Prof"/>
                                    </xs:restriction>
                                </xs:simpleType>
                            </xs:element>
                            <xs:element name="FirstName"/>
                            <xs:element name="LastName"/>
                            <xs:element name="Department"/>
                            <xs:element name="Position"/>
                            <xs:element name="AddressLine1"/>
                            <xs:element name="AddressLine2"/>
                            <xs:element name="AddressLine3"/>
                            <xs:element name="AddressCity"/>
                            <xs:element name="AddressState"/>
                            <xs:element name="AddressCountry"/>
                            <xs:element name="Telephone"/>
                            <xs:element name="Fax"/>
                            <xs:element name="Email"/>
                            <xs:element name="Website"/>
                        </xs:sequence>
                    </xs:complexType>
                </xs:element>
                <xs:attribute name="contactID" type="contactIDType" use="required"/>
            </xs:sequence>
        </xs:restriction>
    </xs:complexContent>
</xs:complexType>
<xs:element name="Telephone" type="xs:string" minOccurs="0" maxOccurs="unbounded"/>
<xs:element name="Fax" type="xs:string" minOccurs="0" maxOccurs="unbounded"/>
<xs:element name="Email" type="xs:string" minOccurs="0" maxOccurs="unbounded"/>
<xs:element name="Telex" type="xs:string" minOccurs="0" maxOccurs="unbounded"/>
<xs:element name="OtherLandlineComms" type="xs:string" minOccurs="0"/>
<xs:element name="AvailableFacilities" type="sarFacilityTypeListType" minOccurs="0"/>
<xs:element name="ContactPoint" type="contactPointType" minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
<xs:attribute name="lirit:sarServiceLRITIDType" use="required"/>
</xs:complexType>
<xs:complexType name="asplInfoType">
<xs:sequence>
<xs:element name="ASPID" type="lrit:aspLRITIDType"/>
<xs:element name="Conditions" type="xs:string" minOccurs="0"/>
<xs:element name="ContactPoint" type="contactPointType" minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
<xs:attribute name="asplInfoID" type="asplInfoIDType" use="required"/>
</xs:complexType>
<xs:complexType name="placeType">
<xs:sequence>
<xs:element name="Name" type="xs:string"/>
<xs:element name="Position" type="lrit:posType"/>
</xs:sequence>
<xs:attribute name="placeCode" type="lrit:placeCodeType" use="required"/>
</xs:complexType>
<xs:complexType name="portFacilityType">
<xs:sequence>
<xs:element name="Name" type="xs:string"/>
<xs:element name="Position" type="lrit:posType"/>
<xs:attribute name="imoPortFacilityNumber" type="lrit:imoPortFacilityNumberType" use="required"/>
</xs:sequence>
</xs:complexType>
<xs:complexType name="portType">
<xs:sequence>
<xs:element name="Name" type="xs:string"/>
<xs:element name="Position" type="lrit:posType"/>
<xs:attribute name="locode" type="lrit:locodeType" use="required"/>
</xs:sequence>
</xs:complexType>
<xs:complexType name="regularIncrementableType">
  <xs:choice>
    <xs:element name="ContractingGovernment" type="contractingGovernmentType"/>
    <xs:element name="Territory" type="territoryType"/>
    <xs:element name="ContactPoint" type="contactPointType"/>
    <xs:element name="ASPInfo" type="aspInfoType"/>
    <xs:element name="SARService" type="sarServiceType"/>
    <xs:element name="Port" type="portType"/>
    <xs:element name="PortFacility" type="portFacilityType"/>
    <xs:element name="Place" type="placeType"/>
    <xs:element name="Polygon" type="lrit:polygonType"/>
    <xs:element name="DataCentreInfo" type="dataCentreInfoType"/>
    <xs:element name="ASP" type="aspType"/>
    <xs:element name="LRITCoordinator" type="lritCoordinatorType"/>
  </xs:choice>
  <xs:attribute name="xPath" type="xs:string" use="required"/>
</xs:complexType>

<xs:complexType name="immediateIncrementableType">
  <xs:choice>
    <xs:element name="StandingOrder" type="lrit:coastalStateStandingOrderType"/>
    <xs:element name="Exclusion" type="exclusionType"/>
    <xs:element name="DataCentre" type="dataCentreType"/>
    <xs:element name="DDPServer" type="ddpServerType"/>
    <xs:element name="IDE" type="ideType"/>
  </xs:choice>
  <xs:attribute name="xPath" type="xs:string" use="required"/>
</xs:complexType>

<xs:complexType name="contractingGovernmentType">
  <xs:sequence>
    <xs:element name="Name">
      <xs:complexType>
        <xs:simpleContent>
          <xs:extension base="xs:string">
            <xs:attribute name="isoCode" type="iso3166-1Alpha3CodeType"/>
          </xs:extension>
        </xs:simpleContent>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
</xs:complexType>
<xs:complexType>
  <xs:element name="NationalPointsOfContact">
    <xs:complexType>
      <xs:sequence>      
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="ContactPoint" type="contactPointType" minOccurs="0" maxOccurs="unbounded"/>
    <xs:complexType>
      <xs:sequence>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DataCentreInfo" type="dataCentreInfoType"></xs:element>
  <xs:element name="ASPInfo" type="aspInfoType" minOccurs="0" maxOccurs="unbounded"></xs:element>
  <xs:element name="SARServices">
    <xs:complexType>
      <xs:sequence>      
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="SARServices" type="sarServiceType" minOccurs="0" maxOccurs="unbounded"></xs:element>
    </xs:complexType>
  </xs:element>
  <xs:element name="Ports">
    <xs:complexType>
      <xs:sequence>      
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="Port" type="portType" minOccurs="0" maxOccurs="unbounded"></xs:element>
    </xs:complexType>
  </xs:element>
  <xs:element name="PortFacilities">
    <xs:complexType>
      <xs:sequence>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="PortFacility" type="portFacilityType" minOccurs="0" maxOccurs="unbounded"></xs:element>
    </xs:complexType>
  </xs:element>
  <xs:element name="Places">
    <xs:complexType>
      <xs:sequence>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:complexType>
<xs:element name="Place" type="placeType" minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="InternalWaters">
<xs:complexType>
<xs:sequence>
<xs:element name="Polygon" type="lrit:polygonType" minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="TerritorialSea">
<xs:complexType>
<xs:sequence>
<xs:element name="Polygon" type="lrit:polygonType" minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="SeawardAreaOf1000NM">
<xs:complexType>
<xs:sequence>
<xs:element name="Polygon" type="lrit:polygonType" minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="CustomCoastalAreas">
<xs:complexType>
<xs:sequence>
<xs:element name="Polygon" type="lrit:polygonType" minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
</xs:complexType>
</xs:element>

<xs:attribute name="lritID" type="lrit:contractingGovernmentLRITIDType" use="required"/>
</xs:complexType>
<xs:complexType name="territoryType">
<xs:complexContent>
<xs:extension base="contractingGovernmentType">
</xs:complexContent>
</xs:complexType>
<xs:attribute name="contractingGovernmentID" type="lrit:contractingGovernmentLRITIDType" use="required"/>
</xs:extension>
</xs:complexType>
</xs:element>
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</xs:complexType>
<xs:element name="ASP" type="aspType" minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="DDPServer" type="ddpServerType"/>
<xs:element name="IDE" type="ideType"/>
<xs:element name="LRITCoordinator" type="lritCoordinatorType"/>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="DataDistributionPlan-IncrementalUpdate">
<xs:complexType>
<xs:sequence>
<xs:element name="Regular" minOccurs="0" maxOccurs="unbounded">
<xs:complexType>
<xs:choice minOccurs="0" maxOccurs="unbounded">
<xs:element name="Delete" type="regularIncrementableType"/>
<xs:element name="Insert" type="regularIncrementableType"/>
<xs:element name="Update" type="regularIncrementableType"/>
</xs:choice>
<xs:attribute name="baseRegularVersionNum" type="xs:int" use="required"/>
<xs:attribute name="targetRegularVersionNum" type="xs:int" use="required"/>
<xs:attribute name="targetPublishedAt" type="xs:dateTime" use="required"/>
<xs:attribute name="targetImplementationAt" type="xs:dateTime" use="required"/>
</xs:complexType>
</xs:element>
<xs:element name="Immediate" minOccurs="0" maxOccurs="unbounded">
<xs:complexType>
<xs:choice minOccurs="0" maxOccurs="unbounded">
<xs:element name="Delete" type="immediateIncrementableType"/>
<xs:element name="Insert" type="immediateIncrementableType"/>
<xs:element name="Update" type="immediateIncrementableType"/>
</xs:choice>
<xs:attribute name="immediateVersionNum" type="xs:decimal" use="required"/>
<xs:attribute name="immediateVersionPublishedAt" type="xs:dateTime" use="required"/>
<xs:attribute name="immediateVersionImplementationAt" type="xs:dateTime" use="required"/>
</xs:complexType>
</xs:element>
</xs:element>
DDPNotification.xsd file

File: DDPNotification.xsd
File Version: 2.1
Date: 20 Sep 2017

<x:schema version="2.1"
targetNamespace="http://gisis.imo.org/XML/LRIT/ddpNotification/2008"
xmlns="http://gisis.imo.org/XML/LRIT/ddpNotification/2008"
xmllns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified">


<x:simpleType name="messageTypeType">
  <xs:restriction base="xs:integer">
    <xs:enumeration value="8"/>
  </xs:restriction>
</x:simpleType>

<xs:simpleType name="messageTypeType">
    <xs:restriction base="xs:integer">
        <xs:enumeration value="9"/>
    </xs:restriction>
</xs:simpleType>

<xs:element name="DDPRequest" type="DDPRequestType"/>
<xs:complexType name="DDPRequestType">
    <xs:sequence>
        <xs:element name="MessageType" type="messageTypeType"/>
        <xs:element name="MessageId" type="lrit:msgIDType"/>
        <xs:element name="ReferenceId" type="lrit:refIDType"/>
        <xs:element name="UpdateType">
            <xs:simpleType>
                <xs:restriction base="xs:integer">
                    <xs:enumeration value="0"/>
                    <xs:enumeration value="1"/>
                    <xs:enumeration value="2"/>
                    <xs:enumeration value="3"/>
                    <xs:enumeration value="4"/>
                </xs:restriction>
            </xs:simpleType>
        </xs:element>
    </xs:sequence>
</xs:complexType>

<xs:element name="ArchivedDDPVersionNum" type="lrit:ddpVersionNumType" minOccurs="0"/>
<xs:element name="ArchivedDDPTimeStamp" type="xs:dateTime" minOccurs="0"/>
<xs:element name="Originator" type="lrit:lritIDType"/>
<xs:element name="TimeStamp" type="xs:dateTime"/>
<xs:element name="DDPVersionNum" type="lrit:ddpVersionNumType"/>
</xs:sequence>
<xs:attribute name="test" type="lrit:testType" use="optional" default="0"/>
<xs:attribute name="schemaVersion" type="xs:decimal" use="required"/>
</xs:complexType>
</xs:schema>
**DDPUpdate.xsd file**

```xml
<xs:element name="DDPUpdate" type="DDPUpdateType"/>
<xs:complexType name="DDPUpdateType">
  <xs:sequence>
    <xs:element name="MessageID" type="lrit:msgIDType"/>
    <xs:element name="ReferenceID" type="lrit:msgIDType"/>
  </xs:sequence>
</xs:complexType>
```

```xml
<xs:complexType name="DDPUpdateType">
  <xs:sequence>
    <xs:element name="MessageID" type="lrit:msgIDType"/>
    <xs:element name="ReferenceID" type="lrit:msgIDType"/>
  </xs:sequence>
</xs:complexType>
```
<xs:schema>
  
  <xs:complexType name="DDPFile">
    <xs:sequence>
      <xs:element name="Message" type="lrit:messageType"/>
      <xs:element name="TimeStamp" type="xs:dateTime"/>
      <xs:element name="DDPFileVersionNum" type="lrit:ddpVersionNumOrIncrementalVersionType"/>
      <xs:element name="DDPFile" type="xs:base64Binary" xmime:expectedContentTypes="application/zip"/>
    </xs:sequence>
    <xs:attribute name="test" type="lrit:testType" use="optional" default="0"/>
    <xs:attribute name="schemaVersion" type="xs:decimal" use="required"/>
  </xs:complexType>
</xs:schema>
GeographicalAreaUpdateRequest.xsd file

File: GeographicalAreaUpdate.xsd
File Version: 2.1
Date: 20 Sep 2017

<xs:schema version="2.1"

targetNamespace="http://gisis.imo.org/XML/LRIT/geographicalAreaUpdate/2014"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:xmime="http://www.w3.org/2005/05/xmlmime"
elementFormDefault="qualified">


<xs:simpleType name="messageTypeType">
    <xs:restriction base="xs:integer">
        <xs:enumeration value="16"/>
    </xs:restriction>
</xs:simpleType>

<xs:element name="GeographicalAreaUpdate">
    <xs:complexType>
        <xs:sequence>
            <xs:element name="MessageType" type="messageTypeType"/>
            <xs:element name="MessageId" type="lrit:msgIDType"/>
            <xs:element name="ActionType">
                <xs:simpleType>
                    <xs:restriction base="xs:integer">
                        <xs:enumeration value="0"/>
                        <xs:enumeration value="1"/>
                        <xs:enumeration value="2"/>
                    </xs:restriction>
                </xs:simpleType>
            </xs:element>
        </xs:sequence>
    </xs:complexType>
</xs:element>
JournalReport.xsd file
<!--
File: JournalReport.xsd
File Version: 2.1
Date: 20 Sep 2017
--> 

  <xs:simpleType name="messageTypeType">
    <xs:restriction base="xs:integer">
      <xs:enumeration value="12"/>
    </xs:restriction>
  </xs:simpleType>
</xs:schema>
LritMessageLog.xsd file
<!--
File: LritMessageLog.xsd
File Version: 2.1
Date: 20 Sep 2017
-->
<xs:schema version="2.1"
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:systemStatus="http://gisis.imo.org/XML/LRIT/systemStatus/2008"
<xs:complexType name="PositionReportLogType">
  <xs:sequence>
    <xs:element ref="posrep:ShipPositionReport"/>
    <xs:attribute name="positionSent" type="xs:boolean" use="required"/>
  </xs:sequence>
</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:SURPICRequest"/>
      <xs:element ref="receipt:Receipt"/>
      <xs:element ref="systemStatus:SystemStatus"/>
      <xs:element ref="journalReport:JournalReport"/>
      <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" />

Receipt.xsd file
<!--
File: Receipt.xsd
File Version: 2.1
Date: 20 Sep 2017
-->
<xs:schema
version="2.1"
targetNamespace="http://gisis.imo.org/XML/LRIT/receipt/2008"
xmns="http://gisis.imo.org/XML/LRIT/receipt/2008"
elementFormDefault="qualified">

  <xs:simpleType name="messageTypeType">
    <xs:restriction base="xs:integer">
      <xs:enumeration value="7"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:simpleType name="receiptCodeType">
    <xs:restriction base="xs:integer">
    </xs:restriction>
  </xs:simpleType>
</xs:schema>
<xs:element name="Receipt">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="MessageType" type="messageTypeType"/>
      <xs:element name="MessageId" type="lrit:msgIDType"/>
      <xs:element name="ReferenceId" type="lrit:refIDType"/>
      <xs:element name="ReceiptCode" type="receiptCodeType"/>
      <xs:element name="Destination" type="lrit:lritIDType"/>
      <xs:element name="Originator" type="lrit:lritIDType"/>
      <xs:element name="Message" type="lrit:messageType"/>
      <xs:element name="TimeStamp" type="xs:dateTime"/>
      <xs:element name="DDPVersionNum" type="lrit:ddpVersionNumType"/>
    </xs:sequence>
    <xs:attribute name="test" type="lrit:testType" use="optional" default="0"/>
    <xs:attribute name="schemaVersion" type="xs:decimal" use="required"/>
  </xs:complexType>
</xs:element>
ShipPositionReport.xsd file

```xml
<xs:schema version="2.1"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified">

  <xs:simpleType name="messageTypeType">
    <xs:restriction base="xs:integer">
      <xs:enumeration value="1"/>
      <xs:enumeration value="2"/>
      <xs:enumeration value="3"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:complexType name="ShipPositionReportType">
    <xs:sequence>
      <xs:element name="Latitude" type="lrit:latitudeType"/>
      <xs:element name="Longitude" type="lrit:longitudeType"/>
      <xs:element name="TimeStamp1" type="xs:dateTime"/>
      <xs:element name="ShipborneEquipmentId" type="xs:string"/>
      <xs:element name="ASPID" type="lrit:aspLRITIDType"/>
      <xs:element name="CSPId" type="lrit:cspLRITIDType" minOccurs="0"/>
      <xs:element name="MessageType" type="messageTypeType"/>
      <xs:element name="MessageId" type="lrit:msgIDType"/>
      <xs:element name="ReferenceId" type="lrit:refIDType"/>
      <xs:element name="IMONum" type="lrit:imoNumType"/>
      <xs:element name="MMSINum" type="lrit:mmsiNumType" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```
<xs:simpleType name="accessTypeType">
    <xs:restriction base="xs:integer">
        <xs:enumeration value="0"/>
        <xs:enumeration value="1"/>
        <xs:enumeration value="2"/>
        <xs:enumeration value="3"/>
        <xs:enumeration value="5"/>
        <xs:enumeration value="6"/>
        <xs:enumeration value="7"/>
        <xs:enumeration value="8"/>
        <xs:enumeration value="9"/>
        <xs:enumeration value="10"/>
        <xs:enumeration value="11"/>
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="requestTypeType">
    <xs:restriction base="xs:integer">
        <xs:enumeration value="0"/>
        <xs:enumeration value="1"/>
        <xs:enumeration value="2"/>
        <xs:enumeration value="3"/>
        <xs:enumeration value="4"/>
        <xs:enumeration value="5"/>
        <xs:enumeration value="6"/>
        <xs:enumeration value="7"/>
        <xs:enumeration value="8"/>
        <xs:enumeration value="9"/>
        <xs:enumeration value="10"/>
        <xs:enumeration value="11"/>
    </xs:restriction>
</xs:simpleType>

<xs:complexType name="requestDurationType">
    <xs:attribute name="startTime" type="xs:dateTime" use="optional"/>
    <xs:attribute name="stopTime" type="xs:dateTime" use="optional"/>
</xs:complexType>

<xs:simpleType name="distanceType">
    <xs:restriction base="xs:integer">
        <xs:minInclusive value="0"/>
        <xs:maxInclusive value="9999"/>
    </xs:restriction>
</xs:simpleType>
<xs:schema version="2.1">
  <xs:element name="ShipPositionRequest" type="ShipPositionRequestType"/>
  <xs:complexType name="ShipPositionRequestType">
    <xs:sequence>
      <xs:element name="MessageType" type="messageTypeType"/>
      <xs:element name="MessageId" type="lrit:msgIDType"/>
      <xs:element name="IMONum" type="lrit:imoNumType"/>
      <xs:element name="DataUserProvider" type="lrit:lritIDType"/>
      <xs:element name="AccessType" type="accessTypeType"/>
      <xs:choice minOccurs="0">
        <xs:element name="Port" type="lrit:locodeType"/>
        <xs:element name="PortFacility" type="lrit:imoPortFacilityNumberType"/>
        <xs:element name="Place" type="lrit:placeCodeType"/>
      </xs:choice>
      <xs:element name="Distance" type="distanceType"/>
      <xs:element name="RequestType" type="requestTypeType"/>
      <xs:element name="RequestDuration" type="requestDurationType" minOccurs="0"/>
      <xs:element name="DataUserRequestor" type="lrit:lritIDType"/>
      <xs:element name="TimeStamp" type="xs:dateTime"/>
      <xs:element name="DDPVersionNum" type="lrit:ddpVersionNumType"/>
    </xs:sequence>
    <xs:attribute name="test" type="lrit:testType" use="optional" default="0"/>
    <xs:attribute name="schemaVersion" type="xs:decimal" use="required"/>
  </xs:complexType>
</xs:schema>

SURPICRequest.xsd file
<!--
File: SURPICRequest.xsd
File Version: 2.1
Date: 20 Sep 2017
-->
targetNamespace="http://gisis.imo.org/XML/LRIT/surpicRequest/2017"
xmlns="http://gisis.imo.org/XML/LRIT/surpicRequest/2017"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified">


<xs:simpleType name="messageTypeType">
  <xs:restriction base="xs:integer">
    <xs:enumeration value="6"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="accessTypeType">
  <xs:restriction base="xs:integer">
    <xs:enumeration value="1"/>
    <xs:enumeration value="6"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="requestTypeType">
  <xs:restriction base="xs:integer">
    <xs:enumeration value="7"/>
    <xs:enumeration value="9"/>
  </xs:restriction>
</xs:simpleType>

<xs:complexType name="requestDurationType">
  <xs:attribute name="startTime" type="xs:dateTime" use="optional"/>
  <xs:attribute name="stopTime" type="xs:dateTime" use="optional"/>
</xs:complexType>

<xs:simpleType name="circularAreaType">
  <xs:restriction base="xs:string">
    <xs:pattern value="()|(((0-8)[0-9].[0-5][0-9].[nNsS])|(90.00.[nNsS]))|([[0-1][0-7][0-9].[0-5][0-9].[eEwW]])|([[0][8-9][0-9].[0-5][0-9].[eEwW]])|(180.00.[eEwW]))">
</xs:simpleType>
<xs:simpleType name="rectangularAreaType">
  <xs:restriction base="xs:string">
    <xs:pattern value="(((0-8\[0\-9\].\[0\-9\].\[nNsS\])(90\.00\.\[nNs\]));(((0-1\[0\-7\].\[0\-9\].\[0\-5\].\[0\-9\].\[eEw\]);(0\[8\-9\].\[0\-9\].\[0\-5\].\[0\-9\].\[eE\]);((180\.00\.\[eE\])")/"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="numberOfPositionsType">
  <xs:restriction base="xs:integer">
    <xs:minInclusive value="1"/>
    <xs:maxInclusive value="4"/>
  </xs:restriction>
</xs:simpleType>

<xs:element name="SURPICRequest">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="MessageType" type="messageTypeType"/>
      <xs:element name="MessageId" type="lrit:msgIDType"/>
      <xs:element name="AccessType" type="accessTypeType"/>
      <xs:element name="DataUserProvider" type="lrit:lritIDType" minOccurs="0"/>
      <xs:choice>
        <xs:element name="CircularArea" type="circularAreaType"/>
        <xs:element name="RectangularArea" type="rectangularAreaType"/>
      </xs:choice>
      <xs:element name="ShipTypes" minOccurs="0"/>
      <xs:complexType>
        <xs:list itemType="lrit:shipTypeType"/>
      </xs:complexType>
      <xs:element name="NumberOfPositions" type="numberOfPositionsType" minOccurs="0"/>
      <xs:element name="DataUserRequestor" type="lrit:lritIDType"/>
      <xs:element name="RequestType" type="requestTypeType" minOccurs="0"/>
      <xs:element name="RequestDuration" type="requestDurationType" minOccurs="0"/>
      <xs:element name="TimeStamp" type="xs:dateTime"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
SystemStatus.xsd file

File: SystemStatus.xsd
File Version: 2.1
Date: 20 Sep 2017

<xs:schema version="2.1"
targetNamespace="http://gisis.imo.org/XML/LRIT/systemStatus/2008"
xmlns="http://gisis.imo.org/XML/LRIT/systemStatus/2008"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified">
  <xs:simpleType name="messageTypeType">
    <xs:restriction base="xs:integer">
      <xs:enumeration value="11"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="systemStatusIndicatorType">
    <xs:restriction base="xs:integer">
      <xs:enumeration value="0"/>
      <xs:enumeration value="1"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="SystemStatus" type="SystemStatusType"/>
<xs:complexType name="SystemStatusType">
    <xs:sequence>
        <xs:element name="MessageType" type="messageTypeType"/>
        <xs:element name="MessageId" type="lrit:msgIDType"/>
        <xs:element name="TimeStamp" type="xs:dateTime"/>
        <xs:element name="DDPVersionNum" type="lrit:ddpVersionNumType"/>
        <xs:element name="SystemStatus" type="systemStatusIndicatorType"/>
        <xs:element name="Message" type="lrit:messageType"/>
        <xs:element name="Originator" type="lrit:lritIDType"/>
    </xs:sequence>
    <xs:attribute name="test" type="lrit:testType" use="optional" default="0"/>
    <xs:attribute name="schemaVersion" type="xs:decimal" use="required"/>
</xs:complexType>
</xs:schema>
Types.xsd file

<!--
File: Types.xsd
File Version: 2.1
Date: 20 Sep 2017
-->
<xs:schema

version="2.1"
targetNamespace="http://gisis.imo.org/XML/LRIT/types/2008"
xmlns="http://gisis.imo.org/XML/LRIT/types/2008"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified">

<xs:simpleType name="lritIDType">
    <xs:restriction base="xs:string">
        <xs:pattern value="[0-4][0-9][3]"/>
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="contractingGovernmentLRITIDType">
    <xs:restriction base="lritIDType">
        <xs:pattern value="[1][0-9][3]"/>
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="sarServiceLRITIDType">
    <xs:restriction base="lritIDType">
        <xs:pattern value="[2][0-9][3]"/>
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="dataCentreLRITIDType">
    <xs:restriction base="lritIDType">
        <xs:pattern value="[3][0-9][3]"/>
    </xs:restriction>
</xs:simpleType>

</xs:schema>
<xs:simpleType name="aspLRITIDType">
  <xs:restriction base="lritIDType">
    <xs:pattern value="[4][0-9][0-9]"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="cspLRITIDType">
  <xs:restriction base="lritIDType">
    <xs:pattern value="[4][0-9][0-9]"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="ddpServerLRITIDType">
  <xs:restriction base="lritIDType">
    <xs:enumeration value="0001"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="ideLRITIDType">
  <xs:restriction base="lritIDType">
    <xs:enumeration value="0002"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="lritCoordinatorLRITIDType">
  <xs:restriction base="lritIDType">
    <xs:enumeration value="0003"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="msgIDType">
  <xs:restriction base="xs:string">
    <xs:pattern value="([0-9][4])([0-9][0-2][0-9])([0-1-9][1-2][0-9])([0-1][0-9][0-9][3][0-1])([0-1][0-9][2][0-3])([0-5][0-9])([0-5][0-9])([0-9][0-9][5])"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="refIDType"/>
<xs:simpleType name="longitudeType">
    <xs:restriction base="xs:string">
        <xs:length value="11"/>
        <xs:pattern value="([0-1][0-7][0-9].[0-5][0-9][0-9].[0-9][0-9]).[eEwW]|([0-9][0-9].[0-5][0-9][0-9].[0-9][0-9][0-9][0-9]).[eEwW]|(180.00.00.[eEwW])"/>
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="latitudeType">
    <xs:restriction base="xs:string">
        <xs:length value="10"/>
        <xs:pattern value="([0-8][0-9].[0-5][0-9][0-9].[0-9][0-9].[nNsS]|90.00.00.[nNsS])"/>
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="messageType">
    <xs:restriction base="xs:string">
        <xs:maxLength value="256"/>
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="ddpVersionNumType">
    <xs:restriction base="xs:string">
        <xs:pattern value="[0-9]+:[0-9]+"/>
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="ddpIncrementalVersionNumType">
    <xs:restriction base="xs:string">
        <xs:pattern value="[0-9]+"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="polygonPosListType">
    <xs:restriction base="xs:string">
        <xs:pattern value="s*(s*-[0-9]{1,3}\.[0-9]{2})*s+-?[0-9]{1,3}\.\[0-9]{2}\s*([s*-[0-9]{1,3}\.[0-9]{2}]*s+)-?[0-9]{1,2}\.[0-9]{2}\s*[s*-[0-9]{1,3}\.\[0-9]{2}]\s*2,\)="/>
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="shipTypeType">
    <xs:restriction base="xs:string">
        <xs:pattern value="[0-9][0-9]"/>
    </xs:restriction>
</xs:simpleType>

<xs:simpleType name="areaIDType">
    <xs:restriction base="xs:string">
        <xs:pattern value="GA(IW|TS|OT|CA)1[0-9]{3}_[0-9]+"/>
    </xs:restriction>
</xs:simpleType>

<xs:complexType name="coastalStateStandingOrderType">
    <xs:sequence>
        <xs:element name="Polygon" minOccurs="1" maxOccurs="unbounded">
            <xs:complexType>
                <xs:sequence>
                    <xs:element name="FilterFlag" minOccurs="0">
                        <xs:simpleType>
                            <xs:list itemType="contractingGovernmentLRITIDType"/>
                        </xs:simpleType>
                    </xs:element>
                    <xs:element name="FilterShipType" minOccurs="0">
                        <xs:simpleType>
                            <xs:list itemType="shipTypeType"/>
                        </xs:simpleType>
                    </xs:element>
                </xs:sequence>
                <xs:attribute name="areaID" type="areaIDType"/>
            </xs:complexType>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:element name="contractingGovernmentID" type="contractingGovernmentLRITIDType"/>
</xs:complexType>
</xs:schema>
WSDL files

DC.wsdl file

<!--
File: DC.wsdl
File Version: 2.1
Date: 20 Sep 2017
-->
<wsdl:definitions
  name="dc"
  targetNamespace="http://gisis.imo.org/XML/LRIT/2008"
  xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/
  xmlns:systemStatus="http://gisis.imo.org/XML/LRIT/systemStatus/2008"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/"
>
<wsltypes>
  <xs:schema elementFormDefault="qualified" targetNamespace="http://gisis.imo.org/XML/LRIT/2008">

    <xs:simpleType name="responseType">
      <xs:restriction base="xs:string">
        <xs:enumeration value="Success"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:schema>
</wsdl:types>
<wsdl:message name="DDPNotificationRequest">
  <wsdl:part name="params" element="ddpNotification:DDPNotification"/>
</wsdl:message>

<wsdl:message name="DDPNotificationResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsdl:message name="DDPUpdateRequest">
  <wsdl:part name="params" element="ddpUpdate:DDPUpdate"/>
</wsdl:message>

<wsdl:message name="DDPUpdateResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsdl:message name="SystemStatusRequest">
  <wsdl:part name="params" element="systemStatus:SystemStatus"/>
</wsdl:message>

<wsdl:message name="SystemStatusResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsdl:portType name="dcPortType">
  <wsdl:operation name="ShipPositionReport">
    <wsdl:input message="tns:ShipPositionRequestRequest"/>
    <wsdl:output message="tns:ShipPositionReportResponse"/>
  </wsdl:operation>

  <wsdl:operation name="ShipPositionRequest">
    <wsdl:input message="tns:ShipPositionRequestRequest"/>
    <wsdl:output message="tns:ShipPositionReportResponse"/>
  </wsdl:operation>

  <wsdl:operation name="SURPICRequest">
    <wsdl:input message="tns:SURPICRequestRequest"/>
    <wsdl:output message="tns:SURPICRequestResponse"/>
  </wsdl:operation>

  <wsdl:operation name="Receipt">
    <wsdl:input message="tns:ReceiptRequest"/>
    <wsdl:output message="tns:ReceiptResponse"/>
  </wsdl:operation>
</wsdl:portType>
<wsdl:operation name="DDPNotification">
    <wsdl:input message="tns:DDPNotificationRequest"/>
    <wsdl:output message="tns:DDPNotificationResponse"/>
</wsdl:operation>

<wsdl:operation name="DDPUpdate">
    <wsdl:input message="tns:DDPUpdateRequest"/>
    <wsdl:output message="tns:DDPUpdateResponse"/>
</wsdl:operation>

<wsdl:operation name="SystemStatus">
    <wsdl:input message="tns:SystemStatusRequest"/>
    <wsdl:output message="tns:SystemStatusResponse"/>
</wsdl:operation>

</wsdl:portType>

<wsdl:binding name="dcServiceBinding" type="tns:dcPortType">
    <soap12:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
    <wsdl:operation name="ShipPositionReport">
        <soap12:operation soapAction=""/>
        <wsdl:input>
            <soap12:body use="literal"/>
        </wsdl:input>
        <wsdl:output>
            <soap12:body use="literal"/>
        </wsdl:output>
    </wsdl:operation>

    <wsdl:operation name="ShipPositionRequest">
        <soap12:operation soapAction=""/>
        <wsdl:input>
            <soap12:body use="literal"/>
        </wsdl:input>
        <wsdl:output>
            <soap12:body use="literal"/>
        </wsdl:output>
    </wsdl:operation>

    <wsdl:operation name="SURPICRequest">
        <soap12:operation soapAction=""/>
        <wsdl:input>
            <soap12:body use="literal"/>
        </wsdl:input>
        <wsdl:output>
            <soap12:body use="literal"/>
        </wsdl:output>
    </wsdl:operation>
</wsdl:binding>
<wsdl:output>
  <soap12:body use="literal"/>
</wsdl:output>
</wsdl:binding>

<wsdl:service name="dcService">
  <wsdl:port name="dcPort" binding="tns:dcServiceBinding">
    <soap12:address location="http://localhost:8080/dc"/>
  </wsdl:port>
</wsdl:service>
</wsdl:definitions>

DDP.wsdl file

<!--
File: DDP.wsdl
File Version: 2.1
Date: 20 Sep 2017
-->
<wsdl:definitions name="ddp"
  targetNamespace="http://gisis.imo.org/XML/LRIT/2008"
  xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
  xmlns:systemStatus="http://gisis.imo.org/XML/LRIT/systemStatus/2008"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/">

<wsdl:types>
  <xs:schema elementFormDefault="qualified" targetNamespace="http://gisis.imo.org/XML/LRIT/2008">
  </xs:schema>
</wsdl:types>

<xs:simpleType name="responseType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="Success"/>
    </xs:restriction>
</xs:simpleType>

<xs:element name="Response">
    <xs:complexType>
        <xs:sequence>
            <xs:element name="response" type="tns:responseType"/>
        </xs:sequence>
    </xs:complexType>
</xs:element>
</xs:schema>

<wSDL:types>
    <wSDL:message name="DDPRequestRequest">
        <wSDL:part name="params" element="ddpRequest:DDPRequest"/>
    </wSDL:message>
    <wSDL:message name="DDPRequestResponse">
        <wSDL:part name="params" element="tns:Response"/>
    </wSDL:message>
    <wSDL:message name="ReceiptRequest">
        <wSDL:part name="params" element="receipt:Receipt"/>
    </wSDL:message>
    <wSDL:message name="ReceiptResponse">
        <wSDL:part name="params" element="tns:Response"/>
    </wSDL:message>
    <wSDL:message name="SystemStatusRequest">
        <wSDL:part name="params" element="systemStatus:SystemStatus"/>
    </wSDL:message>
</wSDL:types>
<wsdl:operation name="SystemStatus">
  <wsdl:input message="tns:SystemStatusRequest"/>
  <wsdl:output message="tns:SystemStatusResponse"/>
</wsdl:operation>

<wsdl:operation name="GeographicalAreaUpdate">
  <wsdl:input message="tns:GeographicalAreaUpdateRequest"/>
  <wsdl:output message="tns:GeographicalAreaUpdateResponse"/>
</wsdl:operation>

<wsdl:operation name="CoastalStateStandingOrderUpdate">
  <wsdl:input message="tns:CoastalStateStandingOrderUpdateRequest"/>
  <wsdl:output message="tns:CoastalStateStandingOrderUpdateResponse"/>
</wsdl:operation>

<wsdl:operation name="DDPRequest">
  <wsdl:input message="tns:DDPRequestRequest"/>
  <wsdl:output message="tns:DDPRequestResponse"/>
</wsdl:operation>

<wsdl:operation name="Receipt">
  <wsdl:input message="tns:ReceiptRequest"/>
  <wsdl:output message="tns:ReceiptResponse"/>
</wsdl:operation>

<wsdl:operation name="GeographicalAreaUpdateRequest">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:operation>

<wsdl:operation name="GeographicalAreaUpdateResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:operation>

<wsdl:operation name="CoastalStateStandingOrderUpdateRequest">
  <wsdl:part name="params" element="coastalStateStandingOrderUpdate:CoastalStateStandingOrderUpdate"/>
</wsdl:operation>

<wsdl:operation name="CoastalStateStandingOrderUpdateResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:operation>

<wsdl:operation name="SystemStatusRequest">
  <wsdl:input message="tns:SystemStatusRequest"/>
  <wsdl:output message="tns:SystemStatusResponse"/>
</wsdl:operation>

<wsdl:operation name="SystemStatusResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:operation>

<wsdl:operation name="GeographicalAreaUpdateRequest">
  <wsdl:part name="params" element="geographicalAreaUpdate:GeographicalAreaUpdate"/>
</wsdl:operation>

<wsdl:operation name="GeographicalAreaUpdateResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:operation>
<wsdl:input message="tns:GeographicalAreaUpdateRequest"/>
<wsdl:output message="tns:GeographicalAreaUpdateResponse"/>
</wsdl:operation>

<wsdl:operation name="CoastalStateStandingOrderUpdate">
<wsdl:input message="tns:CoastalStateStandingOrderUpdateRequest"/>
<wsdl:output message="tns:CoastalStateStandingOrderUpdateResponse"/>
</wsdl:operation>

<wsdl:binding name="ddpServiceBinding" type="tns:ddpPortType">
<soap12:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>

<wsdl:operation name="DDPRequest">
<soap12:operation soapAction=""/>
<wsdl:input>
<soap12:body use="literal"/>
</wsdl:input>
<wsdl:output>
<soap12:body use="literal"/>
</wsdl:output>
</wsdl:operation>

<wsdl:operation name="Receipt">
<soap12:operation soapAction=""/>
<wsdl:input>
<soap12:body use="literal"/>
</wsdl:input>
<wsdl:output>
<soap12:body use="literal"/>
</wsdl:output>
</wsdl:operation>

<wsdl:operation name="SystemStatus">
<soap12:operation soapAction=""/>
<wsdl:input>
</wsdl:input>
</wsdl:operation>
Ide-Dc.wsdl file
<lx>
  File: IDE-DC.wsdl
  File Version: 2.1
  Date: 20 Sep 2017
</lx>

<wsdl:definitions
  name="ide"
  targetNamespace="http://gisis.imo.org/XML/LRIT/2008"
  xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
  xmlns:systemStatus="http://gisis.imo.org/XML/LRIT/systemStatus/2008"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/">
  <wsdl:types
    elementFormDefault="qualified" targetNamespace="http://gisis.imo.org/XML/LRIT/2008">
    <xs:schema
      xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/">
      <xs:complexType name="responseType">
        <xs:complexType>
          <xs:restriction base="xs:string">
            <xs:enumeration value="Success"/>
          </xs:restriction>
        </xs:complexType>
      </xs:simpleType>
      <xs:element name="Response">
        <xs:complexType>
<xs:sequence>
  <xs:element name="response" type="tns:responseType"/>
</xs:sequence>
</xs:complexType>
</xs:element>
</xs:schema>

<wsdl:message name="ShipPositionReportRequest">
  <wsdl:part name="params" element="posrep:ShipPositionReport"/>
</wsdl:message>
<wsdl:message name="ShipPositionReportResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsdl:message name="ShipPositionRequestRequest">
  <wsdl:part name="params" element="posreq:ShipPositionRequest"/>
</wsdl:message>
<wsdl:message name="ShipPositionRequestResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsdl:message name="SURPICRequestRequest">
  <wsdl:part name="params" element="surpic:SURPICRequest"/>
</wsdl:message>
<wsdl:message name="SURPICRequestResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsdl:message name="ReceiptRequest">
  <wsdl:part name="params" element="receipt:Receipt"/>
</wsdl:message>
<wsdl:message name="ReceiptResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsdl:message name="DDPUpdateResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>
<wsdl:message name="SystemStatusRequest">
  <wsdl:part name="params" element="systemStatus:SystemStatus"/>
</wsdl:message>

<wsdl:message name="SystemStatusResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsdl:message name="JournalReportRequest">
  <wsdl:part name="params" element="journalReport:JournalReport"/>
</wsdl:message>

<wsdl:message name="JournalReportResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsdl:message name="GeographicalAreaUpdateRequest">
  <wsdl:part name="params" element="geographicalAreaUpdate:GeographicalAreaUpdate"/>
</wsdl:message>

<wsdl:message name="GeographicalAreaUpdateResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsdl:portType name="idePortType">
  <wsdl:operation name="ShipPositionReport">
    <wsdl:input message="tns:ShipPositionReportRequest"/>
    <wsdl:output message="tns:ShipPositionReportResponse"/>
  </wsdl:operation>

  <wsdl:operation name="ShipPositionRequest">
    <wsdl:input message="tns:ShipPositionRequestRequest"/>
    <wsdl:output message="tns:ShipPositionRequestResponse"/>
  </wsdl:operation>

  <wsdl:operation name="SURPICRequest">
    <wsdl:input message="tns:SURPICRequestRequest"/>
    <wsdl:output message="tns:SURPICRequestResponse"/>
  </wsdl:operation>

  <wsdl:operation name="Receipt">
    <wsdl:input message="tns:ReceiptRequest"/>
  </wsdl:operation>
</wsdl:portType>
<wsdl:input>
  <soap12:body use="literal"/>
</wsdl:input>
<wsdl:output>
  <soap12:body use="literal"/>
</wsdl:output>
</wsdl:operation>

<wsdl:operation name="Receipt">
  <soap12:operation soapAction=""/>
  <wsdl:input>
    <soap12:body use="literal"/>
  </wsdl:input>
  <wsdl:output>
    <soap12:body use="literal"/>
  </wsdl:output>
</wsdl:operation>

<wsdl:operation name="SystemStatus">
  <soap12:operation soapAction=""/>
  <wsdl:input>
    <soap12:body use="literal"/>
  </wsdl:input>
  <wsdl:output>
    <soap12:body use="literal"/>
  </wsdl:output>
</wsdl:operation>

<wsdl:operation name="JournalReport">
  <soap12:operation soapAction=""/>
  <wsdl:input>
    <soap12:body use="literal"/>
  </wsdl:input>
  <wsdl:output>
    <soap12:body use="literal"/>
  </wsdl:output>
</wsdl:operation>

<wsdl:operation name="GeographicalAreaUpdate">
  <soap12:operation soapAction=""/>
  <wsdl:input>
    <soap12:body use="literal"/>
  </wsdl:input>
  <wsdl:output>
    <soap12:body use="literal"/>
  </wsdl:output>
</wsdl:operation>
IDE-DDP.wsdl file

File: IDE-DDP.wsdl
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<wsdl:definitions
  xmlns:ide="ide"
  targetNamespace="http://gisis.imo.org/XML/LRIT/2008"
  xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/
  xmlns:systemStatus="http://gisis.imo.org/XML/LRIT/systemStatus/2008"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/">

  <wsdl:types
    elementFormDefault="qualified" targetNamespace="http://gisis.imo.org/XML/LRIT/2008">
  </wsdl:types>

</wsdl:definitions>

<xs:simpleType name="responseType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Success"/>
  </xs:restriction>
</xs:simpleType>

<xs:element name="Response">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="response" type="tns:responseType"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
</xs:schema>

<wsd:message name="ReceiptRequest">
  <wsdl:part name="params" element="receipt:Receipt"/>
</wsdl:message>

<wsd:message name="ReceiptResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsd:message name="DDPNotificationRequest">
  <wsdl:part name="params" element="ddpNotification:DDPNotification"/>
</wsdl:message>

<wsd:message name="DDPNotificationResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsd:message name="DDPUpdateRequest">
  <wsdl:part name="params" element="ddpUpdate:DDPUpdate"/>
</wsdl:message>

<wsd:message name="DDPUpdateResponse">
  <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>
<wsdl:message name="SystemStatusRequest">
    <wsdl:part name="params" element="systemStatus:SystemStatus"/>
</wsdl:message>

<wsdl:message name="SystemStatusResponse">
    <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsdl:portType name="ideDDPPortType">
    <wsdl:operation name="Receipt">
        <wsdl:input message="tns:ReceiptRequest"/>
        <wsdl:output message="tns:ReceiptResponse"/>
    </wsdl:operation>
    <wsdl:operation name="DDPNotification">
        <wsdl:input message="tns:DDPNotificationRequest"/>
        <wsdl:output message="tns:DDPNotificationResponse"/>
    </wsdl:operation>
    <wsdl:operation name="DDPUpdate">
        <wsdl:input message="tns:DDPUpdateRequest"/>
        <wsdl:output message="tns:DDPUpdateResponse"/>
    </wsdl:operation>
    <wsdl:operation name="SystemStatus">
        <wsdl:input message="tns:SystemStatusRequest"/>
        <wsdl:output message="tns:SystemStatusResponse"/>
    </wsdl:operation>
</wsdl:portType>

<wsdl:binding name="ideDDPServiceBinding" type="tns:ideDDPPortType">
    <soap12:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
    <wsdl:operation name="Receipt">
        <soap12:operation soapAction="/"/>
        <wsdl:input>
            <soap12:body use="literal"/>
        </wsdl:input>
        <wsdl:output>
            <soap12:body use="literal"/>
        </wsdl:output>
    </wsdl:operation>
</wsdl:binding>
<wsdl:operation name="DDPNotification">
  <soap12:operation soapAction=""/>
  <wsdl:input>
    <soap12:body use="literal"/>
  </wsdl:input>
  <wsdl:output>
    <soap12:body use="literal"/>
  </wsdl:output>
</wsdl:operation>

<wsdl:operation name="DDPUpdate">
  <soap12:operation soapAction=""/>
  <wsdl:input>
    <soap12:body use="literal"/>
  </wsdl:input>
  <wsdl:output>
    <soap12:body use="literal"/>
  </wsdl:output>
</wsdl:operation>

<wsdl:operation name="SystemStatus">
  <soap12:operation soapAction=""/>
  <wsdl:input>
    <soap12:body use="literal"/>
  </wsdl:input>
  <wsdl:output>
    <soap12:body use="literal"/>
  </wsdl:output>
</wsdl:operation>

</wsdl:binding>

<wsdl:service name="ideDDPService">
  <wsdl:port name="ideDDPPort" binding="tns:ideDDPServiceBinding">
    <soap12:address location="http://localhost:8080/ideDDP"/>
  </wsdl:port>
</wsdl:service>

</wsdl:definitions>