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LONG-RANGE IDENTIFICATION AND TRACKING SYSTEM

TECHNICAL DOCUMENTATION
(PART I)

INTERIM REVISED TECHNICAL SPECIFICATIONS FOR THE LRIT SYSTEM
(Version 5)

1 The Maritime Safety Committee (the Committee), at its eighty-eighth session (24 November to 3 December 2010), considered and approved amendments to the technical specifications for the LRIT system agreed by the *Ad Hoc* LRIT Group (the Group) at its ninth session (MSC 88/26, paragraph 6.14 refers). The present circular incorporates the aforesaid amendments, as well as the amendments approved by the Committee, at its eighty-sixth session (27 May to 5 June 2009), regarding a new version of the XML schemas and the entitlement of Search and Rescue (SAR) services of SOLAS Contracting Governments to request and receive archived LRIT (MSC 86/26, paragraphs 6.50 and 6.51 refer).

2 The Long-range identification and tracking system – Technical documentation (Part I)* (the Technical specifications) 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 The Committee had recognized that, in order to ensure the continuation of the establishment and the continuous operation of the LRIT system, it might be necessary to consider and adopt further amendments to the Technical specifications, in particular, in the light of the results the developmental and integration testing of LRIT Data Centres and during the operation of the LRIT system. To this end the Committee had established a process for the

* The Long-range identification and tracking system – Technical documentation (Part I) is available in English only in accordance with the decision of MSC 84.

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consideration of proposed amendments through correspondence (refer to annex 3 to MSC.1/Circ.1294/Rev.2 on Long-range identification and tracking system – Technical documentation (Part II)) or by the Group.

4 The XML Schemas set out in the Technical specifications 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 might request them from the Secretariat by sending an e-mail 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.

6 The United States, which had established the International LRIT Data Exchange on an interim basis, is invited to bring the present circular to the attention of those engaged in the operation and/or maintenance of the International LRIT Data Exchange.

7 Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom (the proposing Contracting Governments), which had submitted a proposal for the establishment, maintenance and operation of the International LRIT Data Exchange as from 2011, are invited to bring the present circular to the attention of those engaged in the operation and/or maintenance of the International LRIT Data Exchange.

8 SOLAS Contracting Governments, LRIT Data Centres acting through SOLAS Contracting Government(s) which have established them, the International LRIT Data Exchange acting through the United States or the proposing Contracting Governments, as the case may be, and the LRIT Coordinator are also invited to bring to the attention of the Committee, at the earliest opportunity, the results of the experience gained from the use of the technical specifications set out in annex for consideration of any action to be taken.

9 This circular revokes MSC.1/Circ.1259/Rev.3 issued on 21 May 2010 and any reference to MSC.1/Circ.1259, MSC.1/Circ.1259/Rev.1, MSC.1/Circ.1259/Rev.2 or MSC.1/Circ.1259/Rev.3 should be read as reference to the present circular.

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ANNEX
(English only)

LONG-RANGE IDENTIFICATION AND TRACKING SYSTEM

TECHNICAL DOCUMENTATION
(PART I)

INTERIM REVISED TECHNICAL SPECIFICATIONS FOR THE LRIT SYSTEM
(Version 5)

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 Performance standards) adopted by resolution MSC.263(84).

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 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 operations 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 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 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 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 WGS84 datum), time and identification, as described in Table 1 of the 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 pass along 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 State[1], port State[2], coastal State[3] 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), perform administrative functions, and review and audit the performance of certain components of the LRIT system.

1.2.2.11 Figure 1 provides a high-level illustration of the basic LRIT system architecture.

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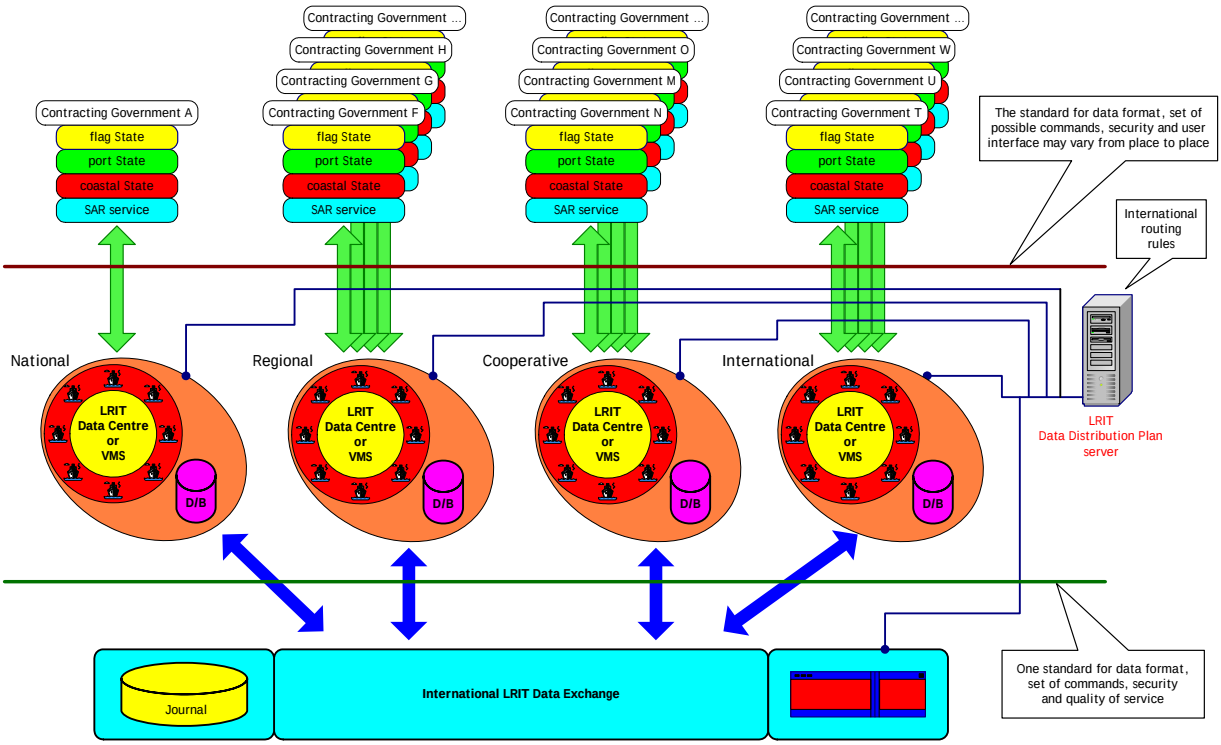
1 The term *flag State* is used for simplicity and refers to the cases when a Contracting Government is requesting LRIT information pursuant to the provisions of regulation V/19-1.8.1.1.

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.

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.

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 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
.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	SAR SURPIC	Search and Rescue 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 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 mappin2 g information contained in the DDP.

3 System architecture/High level design of the IDE

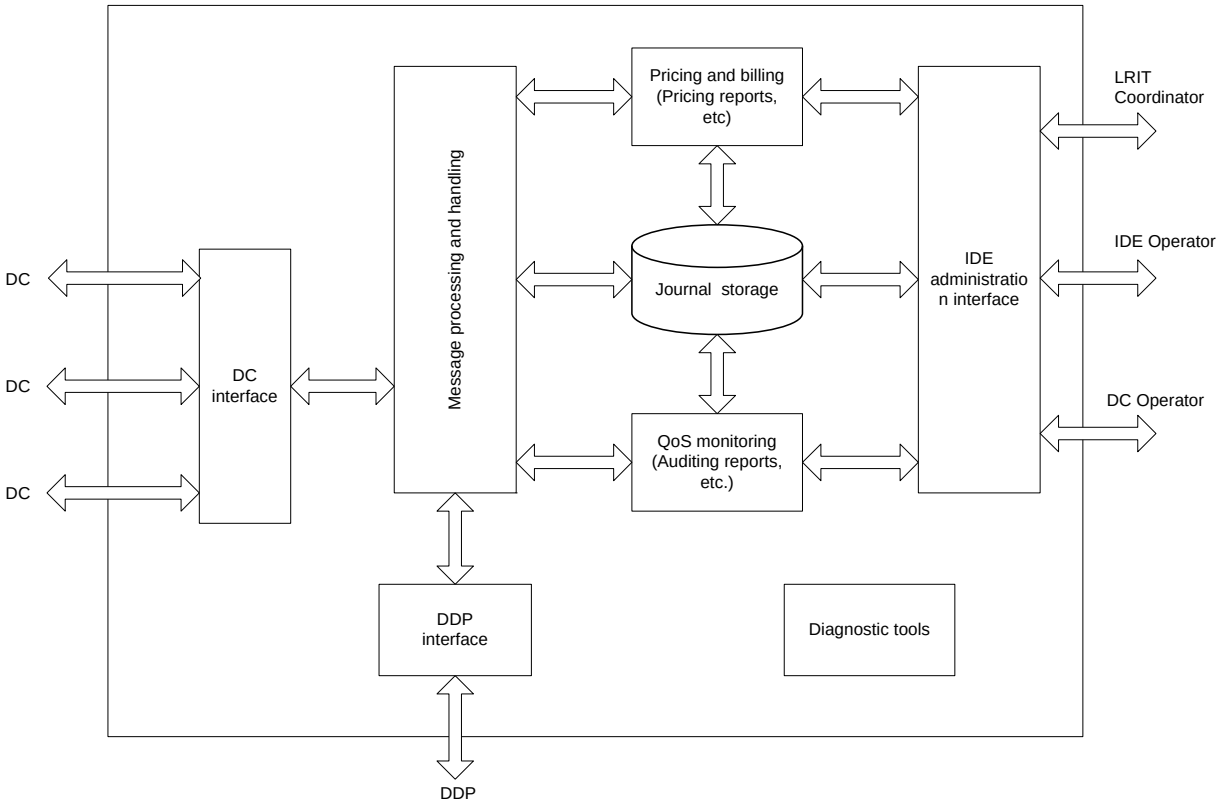
3.1 High level overview of system architecture

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 1-15) and indicates whether the message is routed between DCs or broadcast to all DCs.

Table 1

Summary of LRIT messages [1]

Type	*Name*	*Description/Purpose*	*TX [2]*	*RX [2]*	*Broadcast*
LRIT information (position report) messages					
1	Periodic position report	Regular periodic position reports	DC2	IDE	No
			IDE	DC1	
2	Polled position report	Position report as a result of a poll request	DC2	IDE	No
			IDE	DC1	
3	SAR position report	Position report as a result of a SAR request	DCx	IDE	No
			IDE	DC1	
LRIT request messages					
4	Position request	To enable a DC to request LRIT information for ships being monitored by another DC	DC1	IDE	No
			IDE	DC2	
5	SAR position request	To enable a DC to request LRIT information, as a SAR user, for ships being monitored by another DC	DC1	IDE	No
			IDE	DC2	
6	SAR SURPIC request	SAR request for position of ships in a specific area, broadcast via the IDE to all DCs	DC1	IDE	Yes
			IDE	DCx	

Type	*Name*	*Description/Purpose*	*TX* [2]	*RX* [2]	*Broadcast*
Other messages					
7	Receipt	To enable a LRIT component to confirm the processing of a LRIT message	DC2	IDE	No
			IDE	DC1	
			DDP server	DC1 IDE	
			DC1 IDE	DDP server	
8	DDP notification	Notification that an updated version of the DDP file is available	DDP server	IDE	Yes
			IDE	DCx	
9	DDP request	Request for current full copy of the DDP or incremental copy	DC1 IDE	DDP server	No
10	DDP update	This is a routine update of the DDP by the DDP server to the IDE	DDP server	DC1 IDE	Does not get routed by the IDE
11	System status	To enable the IDE to communicate a status message every 30 min to each DC and the DDP server advising that the system is "healthy" and receive status messages from the DCs and the DDP server	IDE	DCx DDP server	Yes
			DC2 DDP server	IDE	
12	Journal	Routine monthly, biweekly, weekly or daily message from a R/CDC or the IDC to the IDE containing its Journal	R/CDC1 and IDC	IDE	No
13	Pricing notification	Notification that a new pricing list for inter-DC charges is in place	IDE	DCx	Yes
14	Pricing request	Request for updated pricing list	DC1	IDE	No
15	Pricing update	Updated pricing list file	DC2 IDE	IDE DC1	No

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.

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, and 7 where *ReceiptCode* = 1 (no ship in SAR SURPIC area)) regardless of the DDP version used, should always be routed. 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 15) 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 9 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:

Message Type	***Direction***	***Message Handling action***
Message Types 1 to 6 and Message Type 7 not addressed to IDE	Received	The IDE should forward the LRIT message to the intended recipient and journal the message.
	Sent	The recipient component should not process or take any action in response to the message.
Message Type 7 Addressed to IDE	Received	The IDE should journal the message.
	Sent	The recipient component should not process or take any action in response to the message.
Message Type 8 – DDP Notification	Received	Normal – the IDE should broadcast to all Data Centres and journal.
	Sent	The recipient component should not process or take any action in response to the message.
Message Type 9 – DDP Request	Sent	The recipient component should not process or take any action in response to the message.
Message Type 10 – DDP Update	Received	The IDE should journal the message.
Message Type 11 – System Status	Received	The IDE should journal the message.
	Sent	The recipient component should not process or take any action in response to the message.
Message Type 12 – Journal	Received	The IDE should not process the message, but should journal it.
Message Type 13 – Pricing Notification	Sent	The recipient component should not process or take any action in response to the message.
Message Type 14 – Pricing Request	Received	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.
Message Type 15 – Pricing Update	Received	The IDE should not process the update but should broadcast a Pricing Notification, with the test indicator set to "1" to all Data Centres. The Pricing Update message and all Pricing Notifications sent should be stored in the journal.
	Sent	The recipient component should not process or take any action in response to the message.

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. SAR 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 on line); 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

.5 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, process all system status messages by updating the system status (i.e. if no message from a DC or the DDP server, generate a warning to the IDE Operator), archiving 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 The IDE should process the pricing messages by:

.1 receiving pricing update messages (Message 15) from the DCs;

.2 on receipt of Message 15, sending updated pricing notifications to all DCs by means of the pricing notification message (Message 13) automatically;

.3 receiving pricing request messages (Message 14) from DCs;

.4 on receipt of Message 14, building and transmitting pricing files through the pricing update message (Message 15) to the requesting DC(s); and

.5 archiving all messages in the Journal(s).

3.3.8.2 Further to paragraph 0, the IDE should reject a pricing update and send a receipt message (Message 7) to the originator if:

.1 the attached pricing file fails schema validation; or

.2 the effective date within the pricing file is not a date in the future, as this would violate pricing data consistency.

3.3.8.3 The pricing update should go into effect at 00:00 UTC of the effective date within the pricing file.

3.3.8.4 The pricing file contained within the pricing update message from the IDE should include the pricing lists that are currently in effect or should become effective in the future for all LRIT Data Users.

3.3.8.5 Each LRIT Data User should have a maximum of one currently effective and one future effective price list at any given time. A newly received pricing update should supersede any pending future pricing update for that LRIT Data User.

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 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 0, 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. For this the DC Operator should use a web interface;

.2 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

.3 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);

.7 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);

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

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

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

.11 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);

.12 Query the IDE for Pricing information (IDE operator, DC operator, LRIT Coordinator):

.1 Pricing file should be downloadable in XML format; and

.2 Pricing history should be selectable by data user;

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

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

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

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

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

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

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

.3 DDP contacts are able to self administer their login accounts;

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

.16 support the functionality described in annex 2 to the annex of MSC.1/Circ.1294/Rev.2 (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 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 0, 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 5 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

Parameters	***Data field***
Rx [2] TimeStamp	Time [1] of receiving a message Not available for messages only transmitted by the IDE and not routed
Tx [3] TimeStamp	Time [1] of transmitting the message (routeing to the appropriate DC) Not available for messages only received by the IDE and not routed
Message contents	Complete message contents except for the Shipborne equipment parameters of Messages 1, 2 and 3

Notes:

[1] All times should be indicated as Universal Co-ordinated 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.

3.9 Pricing functionality

3.9.1 General

3.9.1.1 The IDE should have the capability of:

.1 receiving pricing files by means of the pricing update message from all DCs;

.2 compiling a table of all prices and routeing to all DCs; and

.3 archiving to the Journal.

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 7 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 re-calibration 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

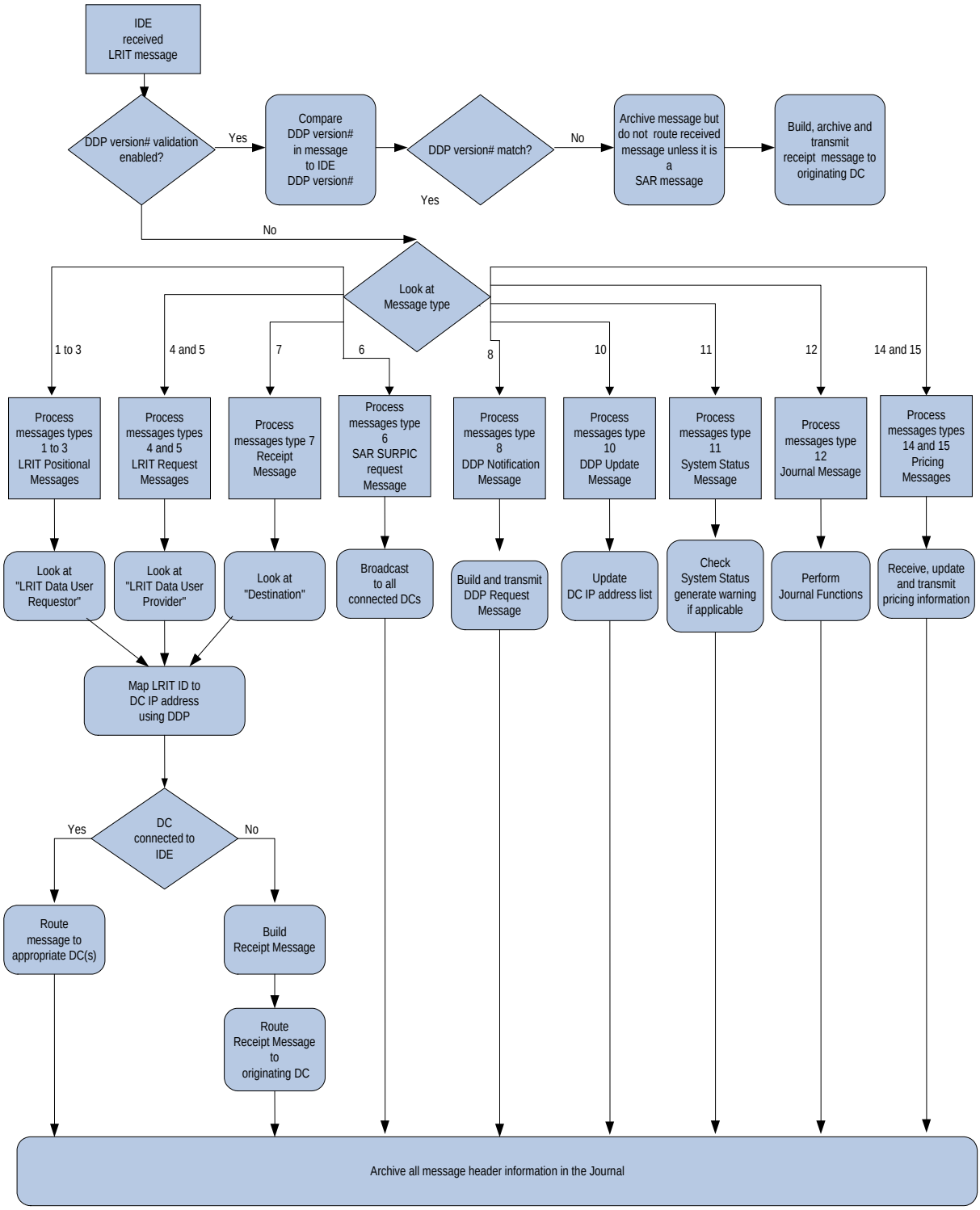
5.1 General

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



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.

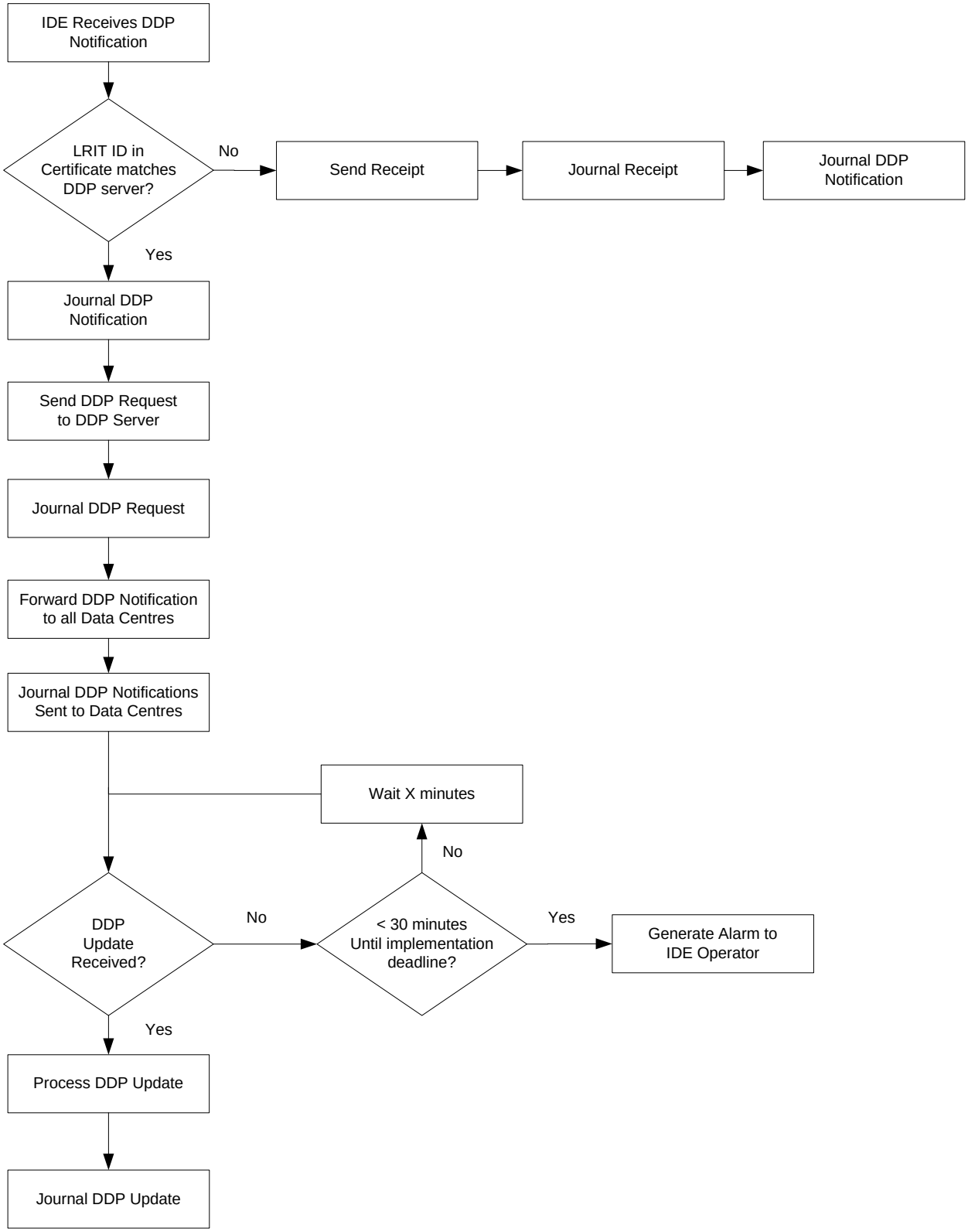
.8 The IDE verifies that the LRIT ID in the PKI certificate is that of the DDP server – if not, a Receipt, receipt code 7, is generated and an alarm will be generated to trigger manual action by the IDE Operator.

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

6.1.1.2 The process described in paragraph 0 is illustrated in figure 3.

Figure 3

IDE handling of DDP notifications and updates flow chart



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.

8 IDE handling of pricing update messages

8.1 General

8.1.1 Overview

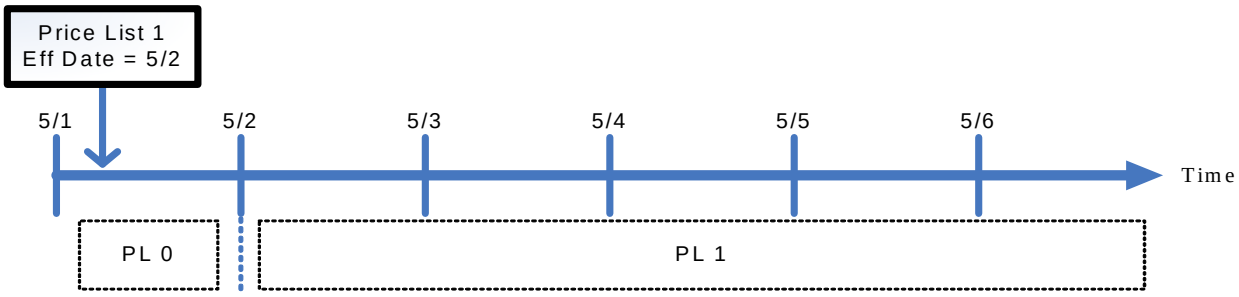
8.1.1.1 This section provides additional detail with respect to the IDE handling of pricing update by describing various possible scenarios. The scenarios below describe the processing logic performed when a pricing update is received by the IDE. In the scenarios, each major tick mark implies a new day. The price lists have been assigned numbers for the purpose of identification within the scenarios. These numbers are provided for illustration only and are not intended to indicate a use of pricing version numbers.

8.1.2 Scenario 1: Price lists become effective at 00:00 UTC of the effective date

8.1.2.1 Price list 1 is issued on 5/1 at 06:00 with an effective date of 5/2. The IDE should broadcast a pricing notification message (Message 13) to all DCs after processing the pricing update message (Message 15) successfully. A subsequent pricing request message (Message 14) received by the IDE should return a pricing update message (Message 15) containing price lists 0 and 1 along with the current and future pricing lists for all other LRIT Data Users.

Figure 4

Scenario 1



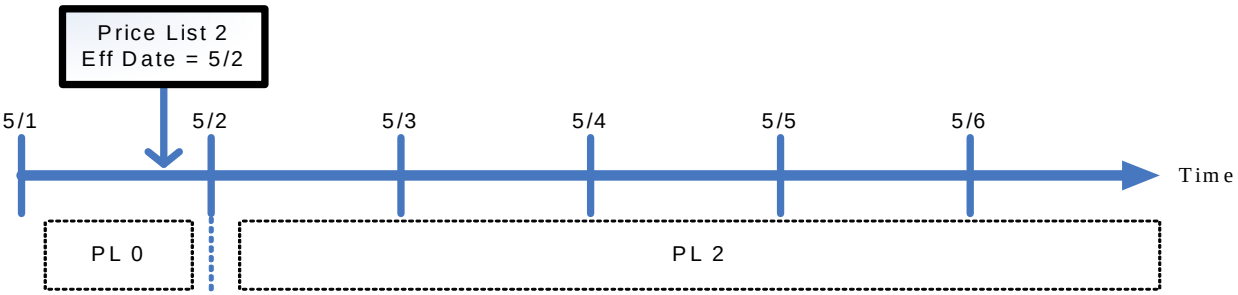
8.1.3 Scenario 2: There can be a maximum of one current and one future price list per data provider (same effective date as previous price list)

8.1.3.1 Price list 2 is issued on 5/1 at 18:00 with an effective date of 5/2. The IDE should broadcast a pricing notification message (Message 13) to all DCs after processing the pricing update message (Message 15) successfully.

8.1.3.2 A subsequent pricing request message (Message 14) received by the IDE should return a pricing update message (Message 15) containing price lists 0 and 2 along with the current and future price lists for all other LRIT Data Users. Since a maximum of one future price list is allowed per data provider, price list 2 overrides price list 1. Price list 1 should never become effective.

Figure 5

Scenario 2



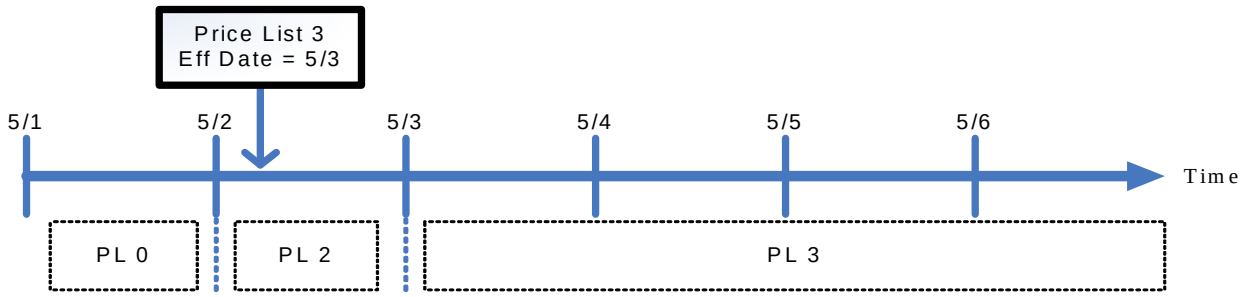
8.1.4 Scenario 3: There can be a maximum of one current and one future price list per data provider (previous future price list is now effective)

8.1.4.1 Price list 3 is issued on 5/2 at 06:00 with an effective date of 5/3. The IDE should broadcast a pricing notification message (Message 13) to all DCs after processing the pricing update message (Message 15) successfully.

8.1.4.2 A subsequent pricing request message (Message 14) received by the IDE should return a pricing update message (Message 15) containing price lists 2 and 3 along with the current and future price lists for all other LRIT Data Users. Price list 0 is no longer sent because it is no longer effective. Price list 2 is the current price list and price list 3 is the future price list for this LRIT Data User.

Figure 6

Scenario 3



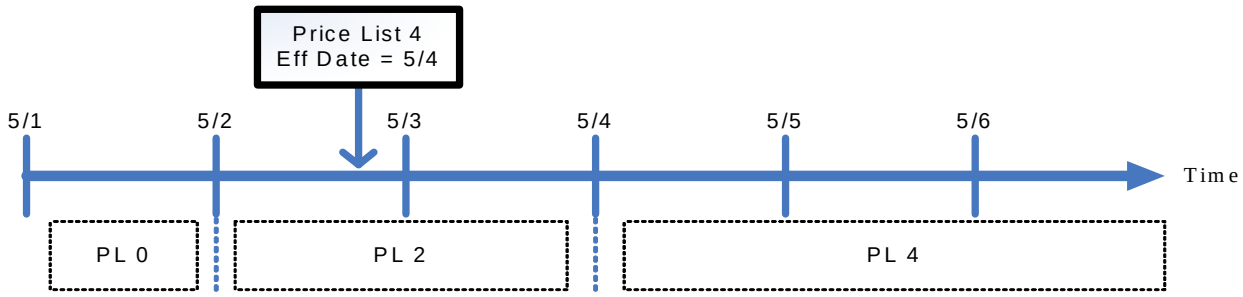
8.1.5 Scenario 4: There can be a maximum of one current and one future price list per data provider (not the same effective date as previous price list)

8.1.5.1 Price list 4 is issued on 5/2 at 18:00 with an effective date of 5/4. The IDE should broadcast a pricing notification message (Message 13) to all DCs after processing the pricing update message (Message 15) successfully.

8.1.5.2 A subsequent pricing request message (Message 14) received by the IDE should return a pricing update message (Message 15) containing price lists 2 and 4 along with the current and future price lists for all other LRIT Data Users. Since a maximum of one future price list is allowed per LRIT Data User, price list 4 overrides price list 3. Price list 3 should never become effective.

Figure 7

Scenario 4



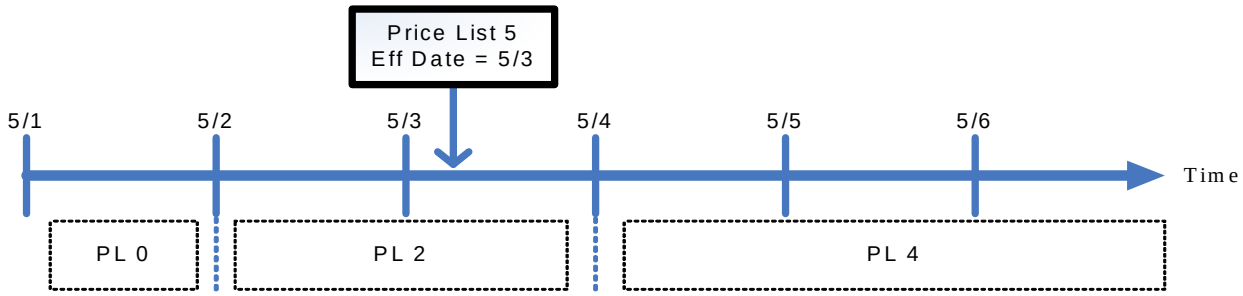
8.1.6 Scenario 5: Price lists must have an effective date in the future

8.1.6.1 Price list 5 is issued on 5/3 at 06:00 with an effective date of 5/3. Price list 5 should be rejected by the IDE and a receipt message (Message 7) with a receipt code of 7 should be sent back to the originator. Price lists take effect at 00:00 UTC of the effective date. 00:00 UTC of 5/3 is in the past therefore the effective date is invalid. The effective date must be greater then the current date in order to keep pricing consistent. The pricing notification message (Message 13) should not be sent to the DCs since the pricing update was rejected.

8.1.6.2 A subsequent pricing request message (Message 14) to the IDE should return a pricing update message (Message 15) containing price lists 2 and 4 for this LRIT Data User along with the current and future price lists for all other LRIT Data Users. Price list 0 is no longer sent since the price list is no longer effective.

Figure 8

Scenario 5



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.

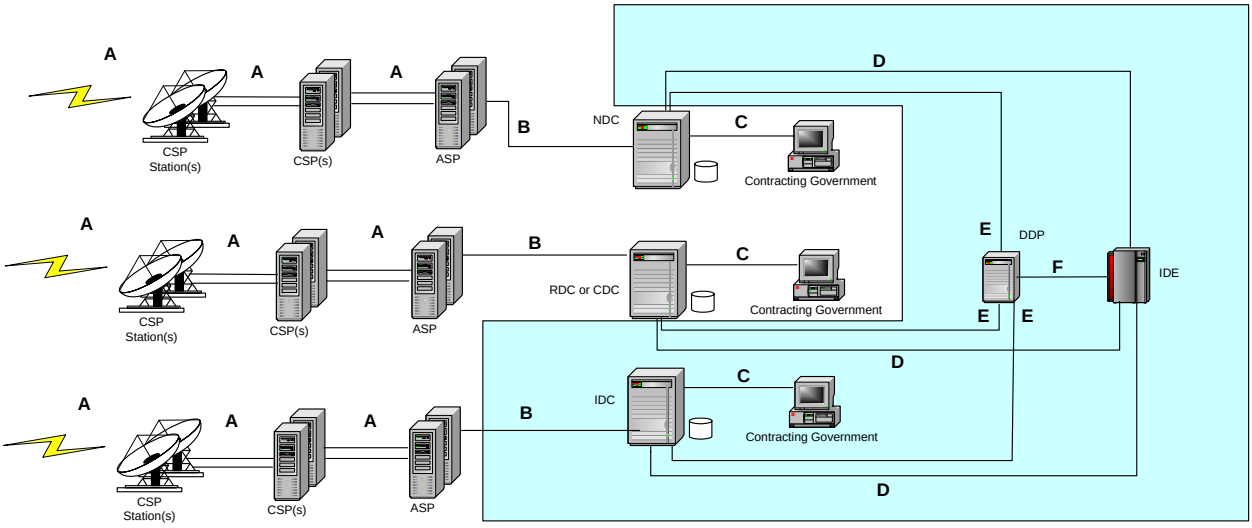
2.1.2.6 Each LRIT component (with the exception of the shipborne equipment, which has its own unique identifier) and each LRIT Data User has its own unique LRIT identifier (LRIT ID) that enables other components within the LRIT system to identify that particular component or user. The Organization should 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

Type	***Name***	***Description/Purpose***
LRIT position report messages		
1	Periodic position report	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.
2	Polled position report	On-demand position report[4] containing LRIT information, transmitted in response to receipt of a one time poll request, a most recent position request or an archived LRIT information request.
3	SAR position report	Position report containing LRIT information provided to a SAR service as a result of a SAR position request or a SAR SURPIC request.
LRIT request messages		
4	Position request	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.
5	SAR position request	Request by a SAR service to: poll the position of a specific ship (i.e on-demand polling command)[5], or request the most recent position report in the database transmitted by a given ship.
6	SAR SURPIC request	Request by a SAR service for the provision of the most recent position reports already in a DC's database, within a specific geographical area.

1 Refer to on demand reports as defined in Note (1) in Table 1 of the Performance standards.
2 Refer to pre-scheduled position reports as defined in Note (2) in Table 1 of the Performance standards.
3 Preset intervals are the intervals specified in paragraph 4.4 of the Performance standards.
4 Refer to on demand reports as defined in Note (1) in Table 1 of the Performance standards.
5 Refer to on demand reports as defined in Note (1) in Table 1 of the Performance standards.
6 Refer to pre-scheduled position reports as defined in Note (2) in Table 1 of the Performance standards.

Type	***Name***	***Description/Purpose***
Other messages		
7	Receipt	Acknowledges receipt of a message that cannot be processed for some reason
8	DDP notification	Advises the IDE and all DCs that a new version of the DDP has been published and is available for download
9	DDP request	Request for a copy of the DDP or for an incremental update
10	DDP update	Transmits the requested version of the DDP including archived ones
11	System status	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
12	Journal	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
13	Pricing notification	Advises that a new pricing list has been published and is available for download from the IDE
14	Pricing request	Request for a copy of the latest pricing file
15	Update pricing file	Transmits the latest pricing file

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 13 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 $n_1 \ldots n_n$ - indicates 1 to n ASCII decimal digits;

.3 *c* - indicates1 ASCII alphabetic character;

.4 $c_1 \ldots c_n$ – indicates 1 to n ASCII alphabetic characters;

.5 *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:

'-'? yyyy '-' mm '-' dd 'T' hh ':' mm ':' ss ('.' s+)? (zzzzzz)?

Where:

- '-'? 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;
- '.' 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.

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 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 and the LATIN-1 character set.

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

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

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

2.2.2.23 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)

Parameter provided by	**Parameter**	**Values**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
Shipborne equipment	Latitude	Latitude	GNSS latitude position of ship (based on the WGS84 datum) in degrees, minutes and decimal minutes to two decimal places N (North) /S (South)	B, C, D	nn.nn.nn.c
	Longitude	Longitude	GNSS longitude position of ship (based on the WGS84 datum in degrees, minutes and decimal minutes to two decimal places E (East) /W (West)	B, C, D	nnn.nn.nn.c
	TimeStamp1	Date and time	Date and time associated with the GNSS position	B, C, D	xs:dateTime
	ShipborneEquipmentId	Unique number	Identifier used by the shipborne equipment	B, C, D	$c_1 \ldots c_n$
ASP [1] or DC	ASPId	LRIT ID	LRIT ID of the ASP that received the LRIT information	B, C, D	nnnn
	CSPId	LRIT ID	LRIT ID of the CSP that transmitted the LRIT information	B, C, D	nnnn (optional in the schema)
	MessageType	1, 2, 3	Message type number: 1 - Periodic report 2 - Polled report 3 - SAR report	B, C, D	nn

Parameter provided by	**Parameter**	**Values**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
	MessageId	Unique number	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	B, C, D	nnnnYYYYMMDDHHmmssnnnnn
	ReferenceId	Empty, MessageId	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	B, C, D	nnnnYYYYMMDDHHmmssnnnnn
	IMONum	IMO#	IMO ship identification number of the ship being tracked	B, C, D	nnnnnnn
	MMSINum	MMSI#	MMSI of the ship being tracked	B, C, D	nnnnnnnnn
	TimeStamp2	Date and time	Date and time the ASP receives the message	B, C, D	xs:dateTime
	TimeStamp3	Date and time	Date and time the ASP transmits the message	B, C, D	xs:dateTime
DC	DCId	LRIT ID	LRIT ID of the DC receiving the LRIT information	D, C	nnnn
	TimeStamp4	Date and time	Date and time when the DC receives the message	D, C	xs:dateTime
	TimeStamp5	Date and time	Date and time when the DC sends the message	D, C	xs:dateTime
	ResponseType	1, 2, 3, 4	One of the following values should be added by the DC when the message is transmitted: 1 - Coastal 2 - Flag 3 - Port 4 - SAR	D, C	n

Parameter provided by	**Parameter**	**Values**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
	DataUserRequestor	LRIT ID	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	D, C	nnnn
	ShipName	Name	Name of the ship associated with the LRIT information	D, C	TEXT
	DataUserProvider	LRIT ID	LRIT ID of the LRIT Data User (i.e. the Administration) associated with that ship	D, C	nnnn
	DDPVersionNum	Unique number	DDP version number of the DDP used by a DC	D, C	$n_1...n_n:n_1...n_n$
	test	0, 1	Setting indicates if the message is a test message or a regular LRIT message: 0 - Regular message 1 - Test message	D, C	n
	schemaVersion	Decimal number	The release number of the XML schema associated with all the LRIT messages	D, C	$n_1...n_n.n_1...n_n$

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 ships, 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; or 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.

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)

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
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	nnnnYYYYMMDDHHmmssnnnnn
	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

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
	Port, PortFacility, or Place	UN/LOCODE, IMO unique port facility number, or place code	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	B, C, D	$c_1 \ldots c_n$
	Distance	nautical miles	Distance in nautical miles from the port or port facility where tracking should commence. Parameter is only valid for *AccessType* 3	B, C, D	nnnn
	RequestType	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	Request type[5]: 0 - Restart/reset [3] 1 - One time poll of ship [4] 2 - 15 min periodic rate 3 - 30 min periodic rate 4 - 1 h periodic rate 5 - 3 h periodic rate 6 - 6 h periodic rate 7 - Archived LRIT information request 8 - Stop / don't start sending position reports 9 - Most recent position report 10 - 12 h periodic rate 11 - 24 h periodic rate	B, C, D	nn
	RequestDuration	Start time and/or stop time	START refers to the time when LRIT position reports are requested to begin. If not specified, it defaults to the current time 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)	B, C, D	xs:dateTime

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
	DataUserRequestor	LRIT ID	LRIT ID of the LRIT Data User originating the request	B, C, D	nnnn
	TimeStamp	Date and time	Date and time when an LRIT Data User transmits the message to its DC	B, C, D	xs:dateTime
DC	DDPVersionNum	Unique number	DDP version number of the DDP used by the DC	D, C	$n_1...n_n:n_1...n_n$
	test	0, 1	Setting indicates if the message is a test message or a regular message 0 - Regular message 1 - Test message	D, C	n
	schemaVersion	Decimal number	The release number of the XML schema associated with all the LRIT messages.	D, C	$n_1...n_n.n_1...n_n$

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 SAR SURPIC request message (Message 6)

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

2.2.4.2 NDCs and R/CDCs should format the SAR 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 SAR 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 SAR SURPIC messages in a processed format as specified in table 4.

2.2.4.4 This message requests the most recent LRIT information from the databases within the DCs. It is intended to provide SAR services with the ability to obtain a picture of the ships in a given geographical area where search and rescue operations are to be conducted.

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 *SARCircularArea* parameter defines the circular geographical area within which the SAR service 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 SAR service 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.

2.2.4.8 The *SARRectangularArea* parameter defines the rectangular geographical area within which the SAR service 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 SAR service 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.

2.2.4.8.1 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).

2.2.4.8.2 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 SAR service needs to submit a SURPIC that crosses either the North Pole or the South Pole, a circular area should be used.

2.2.4.9 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 SAR service. The number of positions must be from 1 to 4. Once a DC has received a SAR SURPIC request message, it should check the last position report it has on every ship registered to that DC. If the timestamp associated with that position report is within the past 24 h and the position report is within the geographical area established by the SAR 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.

2.2.4.10 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.

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

2.2.4.12 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.

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

2.2.4.14 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 4

Summary of SAR SURPIC request
(Message 6)

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
LRIT Data User [1]	MessageType	6	Message type number: 6 - SAR SURPIC request	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	C, D	nnnnYYYYMMDDHHmmssnnnnn
	SARCircularArea	Centre:Radius	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	C, D	nn.nn.c:nnn.nn.c:nnn
	SARRectangularArea	SouthWest:Offset	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	C, D	nn.nn.c:nnn.nn.c: nn.nn.N:nnn.nn.E
	NumberOfPositions	1, 2 ,3, 4	The number of position reports received from ships within the area during the past 24 h that the SAR service wishes to receive	C, D	n
	DataUserRequestor	LRIT ID	LRIT ID of the LRIT Data User originating the request	C, D	nnnn

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
	TimeStamp	Date and time	Date and time when the LRIT Data User transmits the message to the DC	C, D	xs:dateTime
DC	DDPVersionNum	Unique number	DDP version number of the DDP used by the DC	C, D	$n_1..n_n:n_1..n_n$
	test	0, 1	Setting indicates if the message is a test message or a regular message 0 - Regular message 1 - Test message	C, D	n
	schemaVersion	Decimal number	The release number of the XML schema associated with all the LRIT messages	C, D	$n_1...n_n.n_1...n_n$

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 in order to acknowledge the receipt of a message that 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 informing the originating LRIT component why the message could not be processed.

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 SAR SURPIC request message if a DC that is processing a SAR SURPIC request message determines that there are no ships within the geographical area specified in the SAR 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 content stating how long the ship has not been responding;

.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; and

.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.

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:

Type	Name	Destination parameter
1-3	Position reports	LRIT Data User provider
4-5	Position requests	LRIT Data User requestor
6	SAR SURPIC request	LRIT Data User requestor
7	Receipt	Originator
8	DDP notification	Destination should always be the DDP server LRIT ID
9	DDP request	Originator
10	DDP update	Destination should always be the DDP server LRIT ID
11	System Status	Originator
12	Journal message	Originator
13	Pricing Notification	Destination should always be the IDE LRIT ID
14	Pricing Request	Originator
15	Pricing Update	If the referenced Pricing Update was sent from a DC to the IDE, the DC's LRIT ID should be used. If the referenced Pricing Update was sent from the IDE to a DC, the IDE's LRIT ID should be used.

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)

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
DC, IDC ASP, IDE, DDP server, LRIT Data User	MessageType	7	Message type number: 7 - Receipt message	B, C, D, E, F	nn
	MessageId	Unique number	Unique message number generated by using: LRIT ID of the LRIT component, date and time and unique sequence number	B, C, D, E, F	nnnnYYYYMMDDHHmmssnnnnn
	ReferenceId	MessageId of the associated message	MessageId of the associated message that has been received	B, C, D, E, F	nnnnYYYYMMDDHHmmssnnnnn
	ReceiptCode	0, 1, 2, 3, 4, 5, 6, 7, 8, 9	0 - Not entitled to data 1 - No ships in SAR SURPIC area 2 - IDE not available 3 - DC not available 4 - CSP not available 5 - Ship not responding 6 - Ship not available 7 - System fault 8 - Could not load DDP 9 - Incorrect DDP version, message discarded	B, C, D, E, F	nn
	Destination	LRIT ID	LRIT ID of the intended recipient of the message	B, C, D, E, F	nnnn
	Originator	LRIT ID	LRIT ID of the LRIT component generating the mesage	B, C, D, E, F	nnnn

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
	Message	Text	Text message indicating the nature of the message	B, C, D, E, F	TEXT
	TimeStamp	Date and time	Date and time when the LRIT component transmits the message	B, C, D, E, F	xs:dateTime
	DDPVersionNum	Unique number	DDP version number of the DDP used by the LRIT component [1]	B, C, D, E, F	$n_1..n_n:n_1..n_n$
	test	0, 1	Setting indicates if the message is a test message or a regular message 0 - Regular message 1 - Test message	B, C, D, E, F	n
	schemaVersion	Decimal number	The release number of the XML schema associated with all the LRIT messages	B, C, D, E, F	$n_1...n_n.n_1...n_n$

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)

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
DDP Server	MessageType	8	Message type number: 8 - DDP notification	D, F	nn
	MessageId	Unique number	Unique number generated by using: LRIT ID of the DDP server, date and time and unique sequence number	D, F	nnnnYYYYMMDDHHmmssnnnnn
	UpdateType	0, 1	0 - Regular update 1 - Immediate update	D, F	n
	Message	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	$n_1...n_n$
	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	$n_1...n_n.n_1...n_n$

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)

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
IDE or DC	MessageType	9	Message type number: 9 - DDP request	E, F	nn
	MessageId	Unique number	Unique message number generated by using: LRIT ID of the LRIT component, date and time, and unique sequence number	E, F	nnnnYYYYMMDDHHmmssnnnnn
	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
	ArchivedDDP VersionNum	Unique number	The DDP version number being requested	E, F	$n_1 \ldots n_n$:$n_1 \ldots n_n$
	Archived DDPTimeStamp	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

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
	DDPVersionNum	Unique number	DDP version number of the DDP used by the LRIT component	E, F	$n_1 \ldots n_n{:}n_1 \ldots n_n$
	test	0, 1	Setting indicates if the message is a test message or a regular message 0 - Regular message 1 - Test message	E, F	n
	schemaVersion	Decimal number	The release number of the XML schema associated with all the LRIT messages	E, F	$n_1 \ldots n_n.n_1 \ldots n_n$

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 0001200701300255232222 2 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)

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
DDP server	MessageType	10	Message type number: 10 - DDP update	E, F	nn
	MessageId	Unique number	Unique number generated by using: LRIT ID of the DDP server, date and time and unique sequence number	E, F	nnnnYYYYMMDDHHmmssnnnnn
	ReferenceId	Unique number	Unique number generated by using *MessageId* of the DDP request message	E, F	nnnnYYYYMMDDHHmmssnnnnn
	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
	Message	Text	Text message indicating the nature of the message	E, F	TEXT
	TimeStamp	Date and time	Date and time when the message is transmitted	E, F	xs:dateTime
	DDPFileVersionNum	Unique number	DDP version number used by the DDP server	E, F	$n_1..n_n$ or $n_1..n_n:n_1..n_n$
	DDPFile	attachment	Full DDP or an incremental update	E, F	Refer to DDP schema

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
	test	0, 1	Setting indicates if the message is a test message or a regular message 0 - Regular message 1 - Test message	E, F	n
	schemaVersion	Decimal number	The release number of the XML schema associated with all the LRIT messages	E, F	$n_1...n_n.n_1...n_n$

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 3999200701301555231111 1 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 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)

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
IDE, DC or the DDP server	MessageType	11	Message type number: 11 - System status	D, F	nn
	MessageId	Unique number	Unique message number generated by using: LRIT ID of the LRIT component, date and time and unique sequence number	D, F	nnnnYYYYMMDDHHmmssnnnnn
	TimeStamp	Date and time	Date and time when the system status message is transmitted	D, F	xs:dateTime
	DDPVersionNum	Unique number	DDP version number of the DDP used by the LRIT component	D, F	$n_1 \ldots n_n{:}n_1 \ldots n_n$
	SystemStatus	0 or 1	0 - Normal function; 1 - Not able to provide functionality as described in the Performance standards and/or the technical specifications	D, F	n
	Message	Text	Text message indicating the nature of the message	D, F	TEXT
	Originator	LRIT ID	LRIT ID of the LRIT component	D, F	nnnn
	test	0, 1	Setting indicates if 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	$n_1 \ldots n_n.n_1 \ldots n_n$

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 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 39992007013016552333333 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)

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
R/CDC or IDC	MessageType	12	Message type number: 12 - Journal	D	nn
	MessageId	Unique number	Unique message number generated by using: LRIT ID of the DC, date and time, and unique sequence number	D	nnnnYYYYMMDDHHmmssnnnnn
	Message	Text	Text message indicating the nature of the message	D	TEXT
	TimeStamp	Date and time	Date and time when the message is transmitted	D	xs:dateTime
	Orginator	LRIT ID	LRIT ID of the DC	D	nnnn
	JournalFile	attachment	File attachment containing the journal created by the DC	D	See paragraph 2.3.10
	DDPVersionNum	Unique number	DDP version number of the DDP used by the DC	D	$n_1 \ldots n_n$:$n_1 \ldots n_n$
	test	0, 1	Setting indicates if message is test message or regular LRIT message 0 - Regular message 1 - Test message	D	n
	schemaVersion	Decimal number	The release number of the XML schema associated with all the LRIT messages	D	$n_1 \ldots n_n.n_1 \ldots n_n$

2.2.11 Pricing notification message (Message 13)

2.2.11.1 Table 11 outlines the parameters associated with the Pricing notification message.

2.2.11.2 The Pricing notification message should be sent from the IDE to all the DCs. The message is to inform all DCs that a new version of the pricing list has been published and is available for download.

2.2.11.3 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.

2.2.11.4 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 IDE, the date and time, and a 5 digit unique sequence number together. An example of a *MessageId* is 0002200701301255232222 2 where the LRIT ID of the IDE = 0002, year = 2007, month = 01, day = 30, h = 12, min = 55, second = 23, and unique sequence number = 22222.

2.2.11.5 The *Message* parameter is for the provision of text containing information in relation to the nature of the message. It might, for example, state that a certain DC has updated its pricing policy and this is the reason why a new pricing list is available for download.

2.2.11.6 The *TimeStamp* parameter is the date and time when the IDE transmits the message.

2.2.11.7 The *DDPVersionNum* parameter is the version number of the DDP that is being used by the IDE.

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

2.2.11.9 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 11

Summary of Pricing notification message
(Message 13)

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
IDE	MessageType	13	Message type number: 13 - Pricing notification	D	nn
	MessageId	Unique number	Unique message number generated by using: LRIT ID of the IDE, date and time, and unique sequence number	D	nnnnYYYYMMDDHHmmssnnnnn
	Message	Text	Text message indicating the nature of the message	D	TEXT
	TimeStamp	Date and time	Date and time when the message is transmitted	D	xs:dateTime
	DDPVersionNum	Unique number	DDP version number of the DDP used by the IDE	D	$n_1..n_n:n_1..n_n$
	test	0, 1	Setting indicates if message is test message or regular message 0 - Regular message 1 - Test message	D	n
	schemaVersion	Decimal number	The release number of the XML schema associated with all the LRIT messages	D	$n_1...n_n.n_1...n_n$

2.2.12 Pricing request message (Message 14)

2.2.12.1 Table 12 outlines the parameters associated with the Pricing request message.

2.2.12.2 The Pricing request message is sent by a DC to the IDE. The message is intended to inform the IDE that the DC sending the message is requesting a copy of the latest pricing file.

2.2.12.3 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.

2.2.12.4 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 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.

2.2.12.5 The *Originator* parameter is the LRIT ID of the DC generating the message. This parameter is used to identify where the message originated.

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

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

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

2.2.12.9 The *ReferenceId* parameter indicates the *MessageId* associated with the pricing notification message that caused the pricing request message to be generated.

2.2.12.10 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 12

Summary of pricing request message
(Message 14)

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
DC	MessageType	14	Message type number: 14 - Pricing request	D	nn
	MessageId	Unique number	Unique message number generated by using: LRIT ID of the DC, date and time, and unique sequence number	D	nnnnYYYYMMDDHHmmssnnnnn
	Originator	LRIT ID	LRIT ID of the DC	D	nnnn
	TimeStamp	Date and time	Date and time when the message is transmitted	D	xs:dateTime
	DDPVersionNum	Unique number	Current version number of the DDP used by the DC	D	$n_1 \ldots n_n$:$n_1 \ldots n_n$
	test	0, 1	Setting indicates if message is test message or regular message 0 - Regular message 1 - Test message	D	n
	ReferenceId	Unique number	MessageId of the pricing notification message	D	nnnnYYYYMMDDHHmmssnnnnn
	schemaVersion	Decimal number	The release number of the XML schema associated with all the LRIT messages.	D	$n_1 \ldots n_n.n_1 \ldots n_n$

2.2.13 Update pricing file message (Message 15)

2.2.13.1 Table 13 outlines the Update pricing file message.

2.2.13.2 The Update pricing file message is sent directly by the IDE to the DCs or by the DCs to the IDE. The message should contain the pricing file and should be used by the IDE and DCs to update their local copies of the pricing file.

2.2.13.3 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.

2.2.13.4 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 (DC or IDE), the date and time, and a 5 digit unique sequence number together. An example of a *MessageId* is 3999200701300255232222 2 where the LRIT ID of the LRIT Component (DC or IDE) = 3999, year = 2007, month = 01, day = 30, h = 02, min = 55, second = 23, and unique sequence number = 22222.

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

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

2.2.13.7 The *PricingFile* parameter is a file attachment containing either a pricing file from a DC or the pricing file from the IDE.

2.2.13.8 The *DDPVersionNum* parameter is the version number of the DDP that is being used by the DC or the IDE.

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

2.2.13.10 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.

2.2.13.11 The *ReferenceId* parameter indicates the *MessageId* associated with the pricing request message that caused the pricing update message to be generated.

Table 13

Summary of pricing update message
(Message 15)

Parameter provided by	**Parameter**	**Value**	**Description**	**LRIT system communication segments** (see figure 1)	**Processed format** (see paragraph 2.2.1.3)
IDE or DC	MessageType	15	Message type number: 15 - Pricing update	D	nn
	MessageId	Unique number	Unique message number generated by using: LRIT ID of the IDE or DC, date and time, and unique sequence number	D	nnnnYYYYMMDDHHmmssnnnnn
	Message	Text	Text message indicating the nature of the update message	D	TEXT
	TimeStamp	Date and time	Date and time when the message is transmitted	D	xs:dateTime
	DDPVersionNum	Unique number	DDP version number of the DDP used by the DC or the IDE	D	n1...nn:n1...nn
	PricingFile	attachment	Updated pricing file	D	See XML Schemas
	test	0, 1	Setting indicates if the message is a test message or a regular message. 0 - Regular message 1 - Test message	D	n
	schemaVersion	Decimal number	The release number of the XML schema associated with all the LRIT messages.	D	n1...nn.n1...nn
	ReferenceId	Unique number	MessageId of the pricing request message	D	nnnnYYYYMMDDHHmmssnnnnn

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.

2.3.2 DC DDP 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.

2.3.2A IDE DDP Processing

2.3.2A.1 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; and

.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

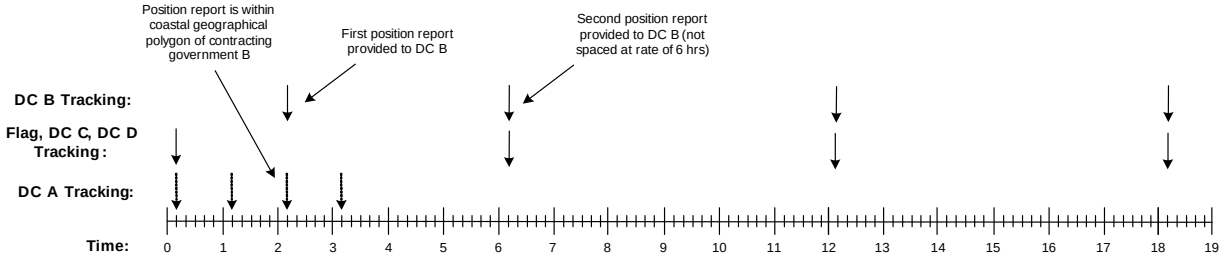
2.3.3.1 All LRIT position reports received by a DC from ships entitled to fly the flags of a Contracting Government(s) utilizing that DC (See Figure 1, Communications Segment B) should be checked against all coastal geographical polygons contained within the DDP in order to determine if a particular 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



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 requesting Contracting Government) whose flag the ship is entitled to fly by checking the territorial seas polygon in the DDP.

2.3.4.2 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/don't 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 requesting Contracting Government) whose flag the ship is entitled to fly by checking the territorial seas polygon in the DDP.

2.3.4.3 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.

2.3.4.4 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.

2.3.4.5 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 Contract Government) before sending the position reports to the requesting LRIT Data User. Refer to table 15 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.

2.3.4.6 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).

2.3.4.7 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 SAR 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 SAR SURPIC messages (Message type 6) with valid LRIT position report messages (Message types 1, 2 and 3) as listed in table 14.

Table 14

Operational scenarios that terminate, suspend or modify a request message

				Position Request Message ***MT 4***			*SAR Position Request Message* ***MT 5***			*SAR SURPIC* ***MT 6***	*Coastal State Standing Order*
				Access Type			*Access Type*			-	
				1 Coastal	*3-5 Port*	*6 SAR*	*1 Coastal*	*3-5 Port*	*6 SAR*	-	
LRIT Position Report Message	**MT 1**	Response Type	1 Coastal	**VALID**[1]	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid	**VALID**
			3 Port	Not valid	**VALID**[2]	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid
			4 SAR	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid
	MT 2		1 Coastal	**VALID**[3]	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid
			3 Port	Not valid	**VALID**[4]	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid
			4 SAR	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid
	MT 3		1 Coastal	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid
			3 Port	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid	Not valid
			4 SAR	Not valid	Not valid	Not valid	Not valid	Not valid	**VALID**[5]	**VALID**	Not valid

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 15 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 15

Operational scenarios that terminate, suspend or modify a request message

Existing request message	Event	Action by processing DC	Receipt message	Receipt code
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
	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. • 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

Existing request message	Event	Action by processing DC	Receipt message	Receipt code
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	
	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	• The Existing "Stop Request" message terminates • The new request becomes the valid one	No	
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)	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	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	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 • New request message starts with desired reporting rate (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

Existing request message	Event	Action by processing DC	Receipt message	Receipt code
	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
	Ship reports a location that is within the internal waters of a Contracting Government other than the one that sent the request	• 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	Yes (only one receipt message at the beginning of the temporary suspension period)	0 (not entitled to data)
	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	• 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	No	N/A
DC is complying with a request message with the following parameters: • Message Type 4, • Access Type 5, • Request Types: 2, 3, 4, 5, 6, 10 or 11 (port State Request with time trigger 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	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	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 • New request message starts with desired reporting rate (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

Existing request message	Event	Action by processing DC	Receipt message	Receipt code
	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
	Ship reports a location that is within the internal waters of a Contracting Government other than the one that sent the request	• 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.	Yes (only one receipt message at the beginning of the temporary suspension period)	0 (not entitled to data)
	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	• 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	No	N/A

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 than 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 than the DC should send a receipt message with receipt code 0 (not entitled to data) to the requestor.

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

2.3.5.5 DCs have the option of processing the *DataUserRequestor* parameter of the SAR SURPIC 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 the SAR service LRIT IDs in the DDP. If a DC chooses to reject a SAR SURPIC message based upon the LRIT ID in the *DataUserRequestor* parameter than the DC should send a receipt message with receipt code 0 (not entitled to data) to the requestor.

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[4] 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

[4] DC may delegate its responsibility to its ASP.

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 can not 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 3 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;

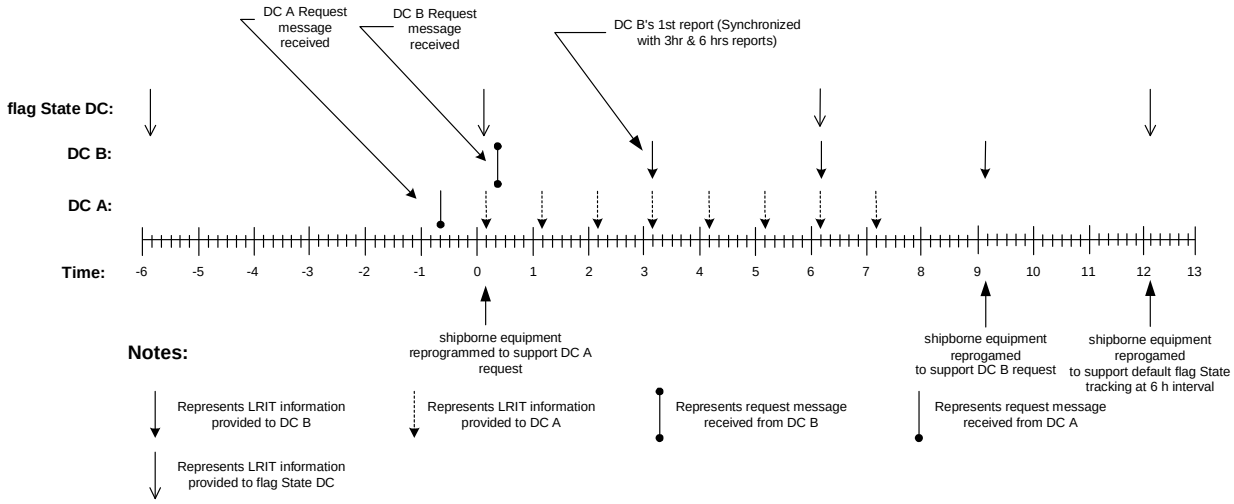
.3 DC B should receive its first position report at time 3 1/6 (Synchronized with 6 hr reports and 1 hr reports). Since the first position report is within the time frame associated with the request (3 h), a receipt message is not sent to DC B;

.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

.5 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 3

Example of request for decrease in ship's transmission interval



2.3.6.8 Figure 4 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;

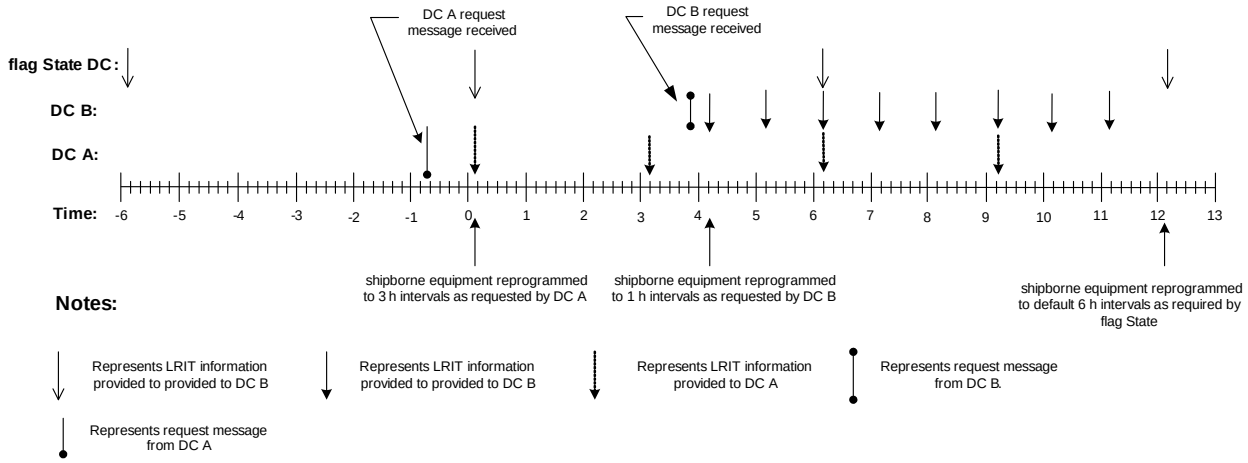
.2 the processing DC sets the requested shipborne equipment to 3 h as required by the request received from DC A. This request has taken place at time point -4/6;

.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.

Figure 4

Example of request for increase in ship's transmission interval



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[5] 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.

[5] AND indicates a logical operation.

2.3.9 Valid message parameter combinations for Messages 4 and 5

2.3.9.1 Table 16 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 16 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 16

Clarification of valid message parameter combinations for Messages 4 and 5

Access Type	Request Type	Port or port facility	Distance	Request Duration	Note
0	0	Not valid	Not valid	Not valid	
	1	Not valid	Not valid	Not valid	This message combination (Access type 0, Request type 1) is not valid.
	2	Not valid	Not valid	Not valid	This message combination (Access type 0, Request type 2) is not valid.
	3	Not valid	Not valid	Not valid	This message combination (Access type 0, Request type 3) is not valid.
	4	Not valid	Not valid	Not valid	This message combination (Access type 0, Request type 4) is not valid.
	5	Not valid	Not valid	Not valid	This message combination (Access type 0, Request type 5) is not valid.
	6	Not valid	Not valid	Not valid	This message combination (Access type 0, Request type 6) is not valid.
	7	Not valid	Not valid	Not valid	This message combination (Access type 0, Request type 7) is not valid.
	8	Not valid	Not valid	Not valid	This message combination (Access type 0, Request type 8) is not valid.
	9	Not valid	Not valid	Not valid	This message combination (Access type 0, Request type 9) is not valid.
	10	Not valid	Not valid	Not valid	This message combination (Access type 0, Request type 10) is not valid.
	11	Not valid	Not valid	Not valid	This message combination (Access type 0, Request type 11) is not valid.
1	0	Not valid	Not valid	Not valid	This message combination (Access type 1, Request type 0) is not valid.
	1	Not valid	Not valid	Not valid	Request duration is not valid since ship will be polled immediately.
	2	Not valid	Not valid	Required	
	3	Not valid	Not valid	Required	
	4	Not valid	Not valid	Required	
	5	Not valid	Not valid	Required	
	6	Not valid	Not valid	Required	

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

Access Type	Request Type	Port or port facility	Distance	Request Duration	Note
	4	Required	Required	Optional	
	5	Required	Required	Optional	
	6	Required	Required	Optional	
	7	Not valid	Not valid	Not valid	This message combination (Access type 3, Request type 7) is not valid.
	8	Required	Required	Optional	
	9	Not valid	Not valid	Not valid	This message combination (Access type 3, Request type 9) is not valid.
	10	Required	Required	Optional	
	11	Required	Required	Optional	
4	*This access type number reserved for possible future use*				
5	0	Not valid	Not valid	Not valid	This message combination (Access type 5, Request type 0) is not valid.
	1	Required	Not valid	Not valid	Request duration is not valid since ship will be polled immediately.
	2	Required	Not valid	Required	
	3	Required	Not valid	Required	
	4	Required	Not valid	Required	
	5	Required	Not valid	Required	
	6	Required	Not valid	Required	
	7	Required	Not valid	Required	
	8	Required	Not valid	Optional	
	9	Required	Not valid	Not valid	Request duration is not valid since most recent ship position will be sent.
	10	Required	Not valid	Required	
	11	Required	Not valid	Required	

Access Type	Request Type	Port or port facility	Distance	Request Duration	Note
6	0	Not valid	Not valid	Not valid	This message combination (Access type 6, Request type 0) is not valid.
	1	Not valid	Not valid	Not valid	Only valid for message type 5.
	2	Not valid	Not valid	Not valid	This message combination (Access type 6, Request type 2) is not valid.
	3	Not valid	Not valid	Not valid	This message combination (Access type 6, Request type 3) is not valid.
	4	Not valid	Not valid	Not valid	This message combination (Access type 6, Request type 4) is not valid.
	5	Not valid	Not valid	Not valid	This message combination (Access type 6, Request type 5) is not valid.
	6	Not valid	Not valid	Not valid	This message combination (Access type 6, Request type 6) is not valid.
	7	Not valid	Not valid	Not valid	Only valid for message type 5.
	8	Not valid	Not valid	Not valid	This message combination (Access type 6, Request type 8) is not valid.
	9	Not valid	Not valid	Not valid	Only valid for message type 5.
	10	Not valid	Not valid	Not valid	This message combination (Access type 6, Request type 10) is not valid.
	11	Not valid	Not valid	Not valid	This message combination (Access type 6, Request type 11) is not valid.

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);

.2 data compressed ZIP file containing XML files according with the following schema:

LritMessageLog.xsd

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

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

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

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

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

  <xs:element name="LritMessageLog" type="MessageLogType"/>

</xs:schema>
```

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 Processing pricing file information

2.3.11.1 The update pricing file message should be transmitted as determined by the DC issuing the pricing message and the IDE.

2.3.11.2 R/CDCs and the IDC have the option of sending an update pricing file message containing a price breakdown that is different for each LRIT Data User associated with the DC, or a single price breakdown that is the same for all LRIT Data Users of the associated DC.

2.3.11.3 An R/CDC should not issue an update pricing file message that contains a cost breakdown for single LRIT Data Users as well as for a group of LRIT Data Users (i.e. a choice of either a single cost breakdown for each individual LRIT Data User or a cost breakdown for all LRIT Data Users but not a combination of the two choices).

2.3.11.4 The properties of the pricing file attachment should feature the following:

.1 binary attachment to the pricing update message (Message 15);

.2 data compressed ZIP file containing XML file with file name *DataUserPriceYYYYMMDD_XXXX*.xml contained in the ZIP file. XXXX indicates the LRIT ID of the Contracting Government associated with the XML pricing file when issued by an NDC. XXXX represents either the LRIT ID of the Contracting Government associated with the XML pricing file or the LRIT ID of the issuing DC when issued by either an R/CDC or the IDC. XML files with LRIT IDs representing a DC contain a single pricing breakdown for all LRIT Data Users.

2.3.11.5 The parameter definitions for the pricing file are:

.1 *PositionReport*: The charges for providing LRIT information transmitted by the shipborne equipment at preset intervals[6] [7];

.2 *Poll*: The charges for providing LRIT information transmitted by the shipborne equipment on demand[8];

[6] Refer to pre-scheduled position reports as defined in Note (2) in Table 1 of the Performance standards.

[7] Preset intervals are the intervals specified in paragraph 4.4 of the Performance standards.

[8] Refer to on demand reports as defined in Note (1) in Table 1 of the Performance standards.

.3 *PeriodicRateChange*: The charges for the remote configuration of the shipborne equipment so as to transmit at intervals other than the preset[9] ones (i.e. those requested by the LRIT Data User other than a SAR service) and the charges for resetting the shipborne equipment to transmit at preset interval;

.4 *ArchivePositionReport*: The charge for providing archived LRIT information (i.e. all LRIT position reports received from a ship other than the last one);

.5 *Currency*: The ISO 4217:2001 alphabetic code of the currency associated with each of the charges. DCs should only populate two currencies (Special Drawing Rights (SDR) and a currency decided by the Contracting Government) within this parameter. If more than two currencies are populated then DCs are only obligated to process the first two currencies within the currency parameter;

.6 *DataCentreID*: The LRIT ID of the DC that issued the pricing list;

.7 *DataProviderID*: The LRIT ID of the Contracting Government from whose ships LRIT information originate;

.8 *IssueDate*: The date of issue of the pricing list; and

.9 *EffectDate*: The date on which the list of charges takes effect.

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

2.3.12.1 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 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:

.1 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

.2 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.

[9] Preset intervals are the intervals specified in paragraph 4.4 of the Performance standards.

2.3.12.2 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 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 5. 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 Performance standards while the specific communications protocols stated in the subsequent sections apply only to certain links as summarized in table 17. Communications links 1, 2, 3, 4 and 6 do not have to implement the specific communications protocols detailed in the subsequent sections.

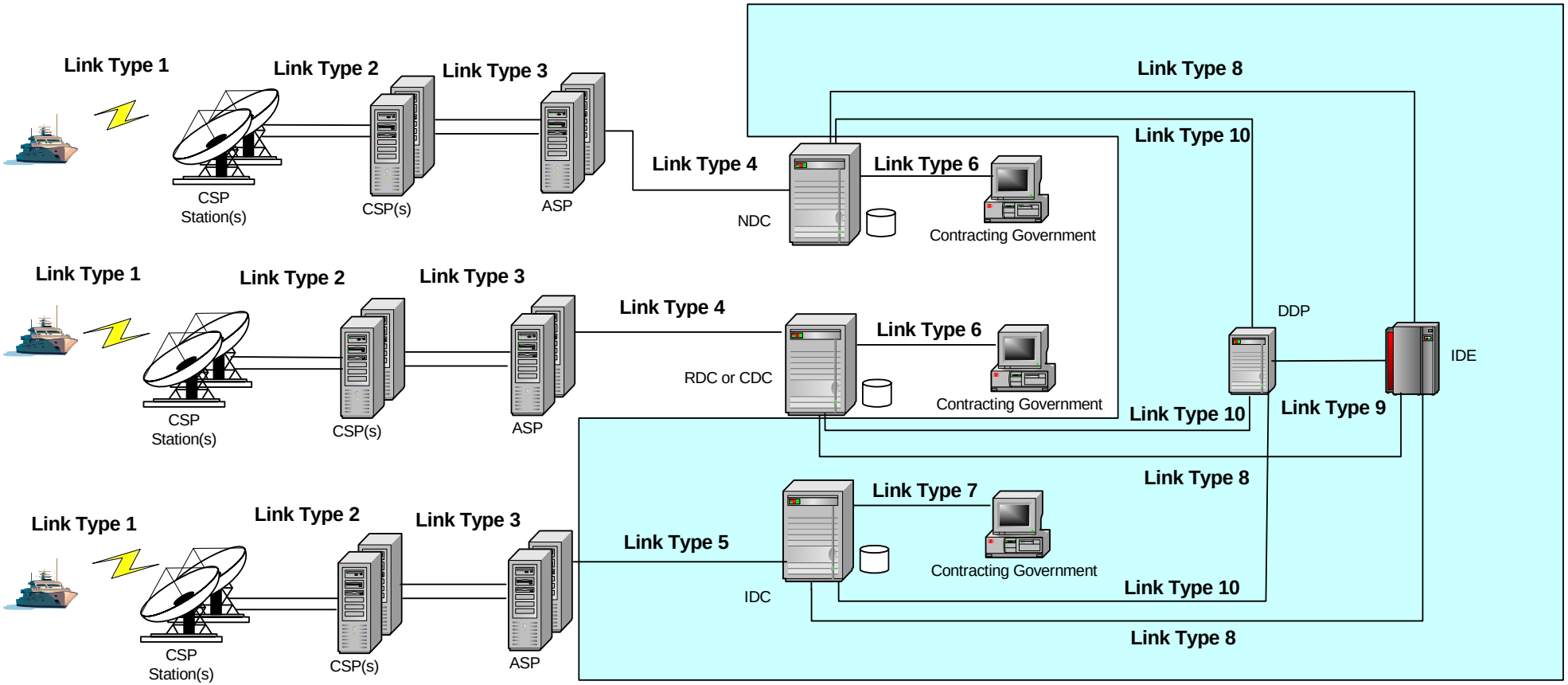
Table 17

Summary of LRIT communications links

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

Figure 5

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 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 version 1.1 or later) subsequently referred to as TLS and should communicate via XML-based SOAP messages between the various LRIT components. 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 5.

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 routeing 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 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 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 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 6, 7 and 8.

Figure 6

Message flow example
Periodic position report (Message 1)

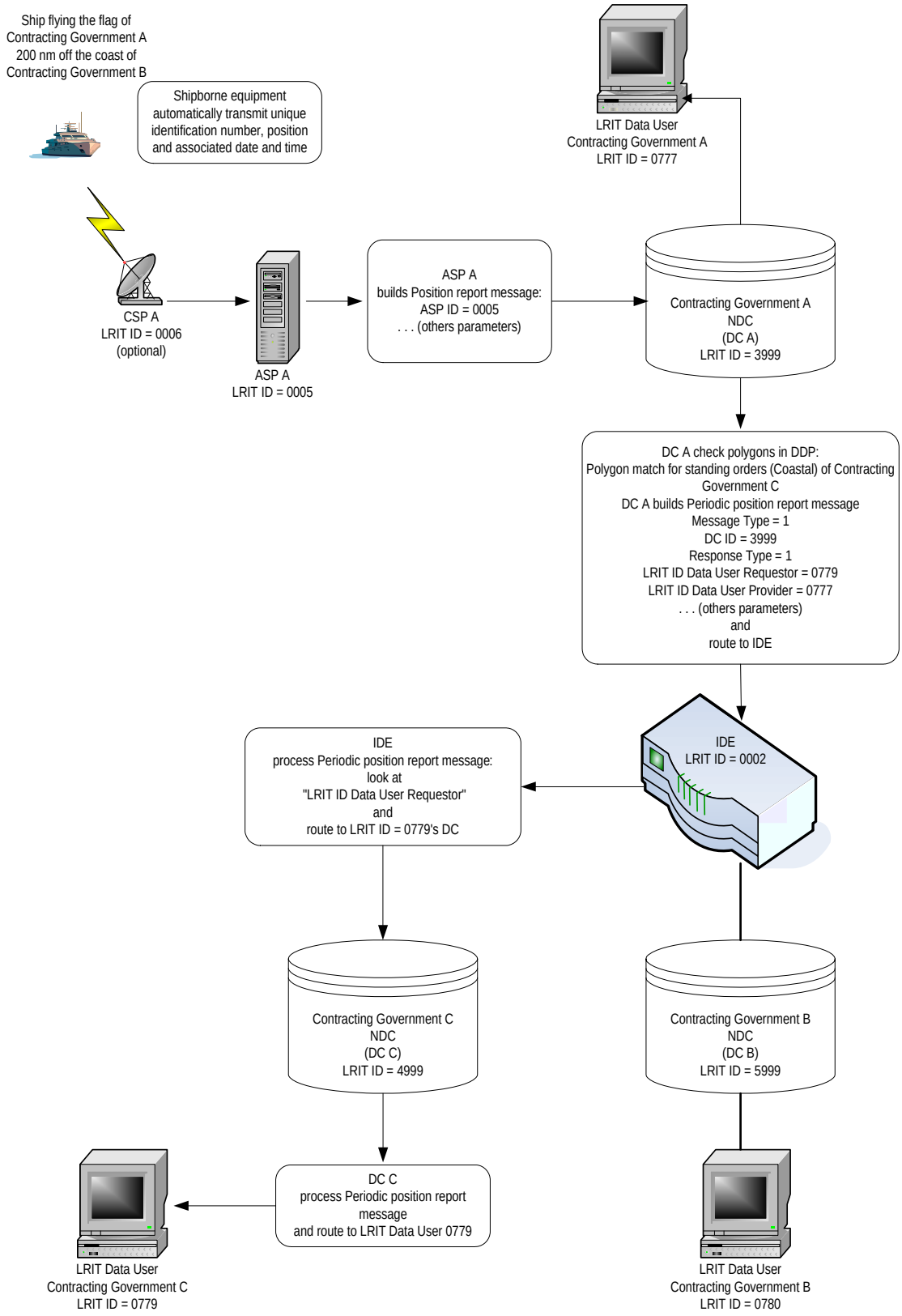


Figure 7

Message flow example
Position request (Message 4)
and Polled position report (Message 2)

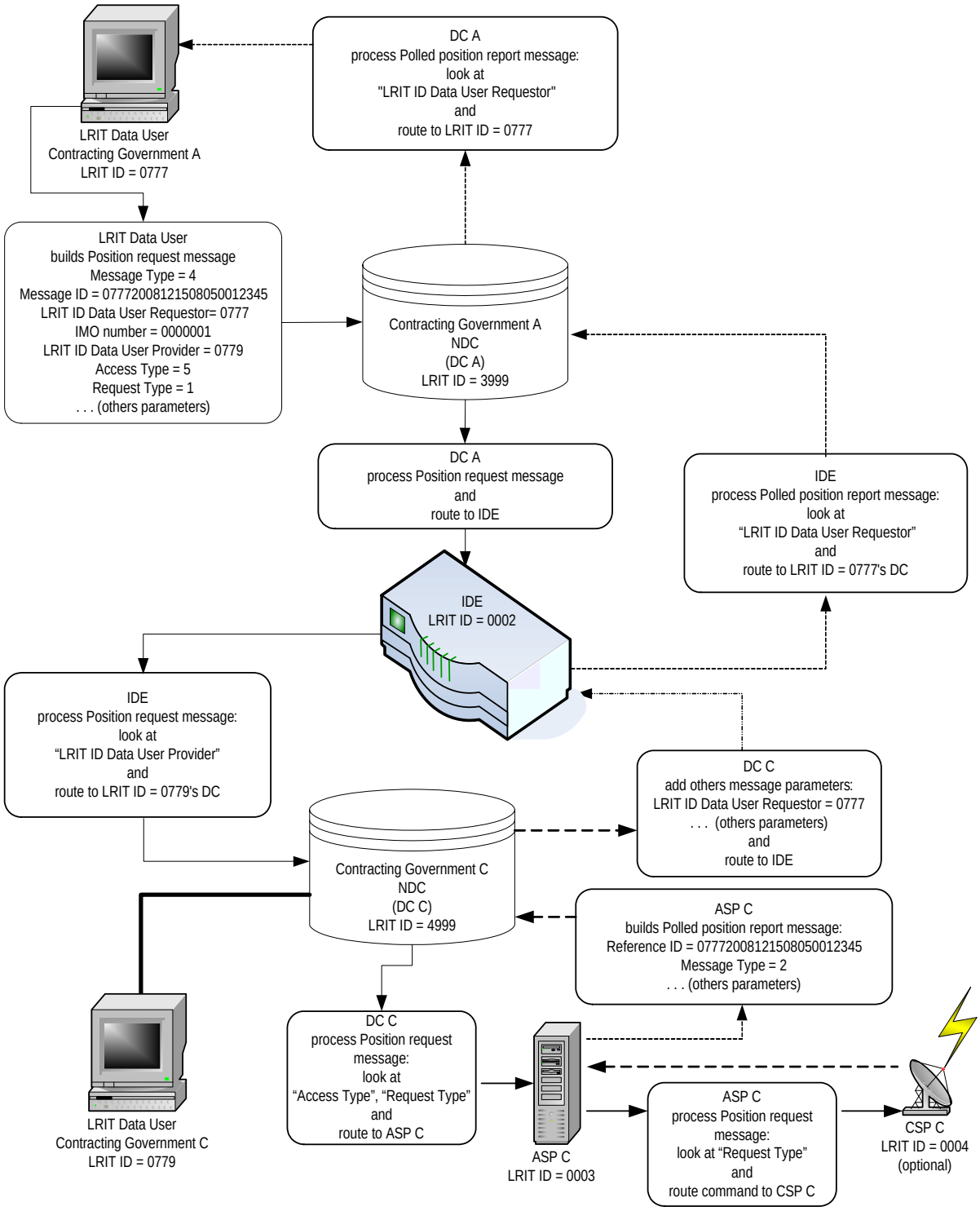
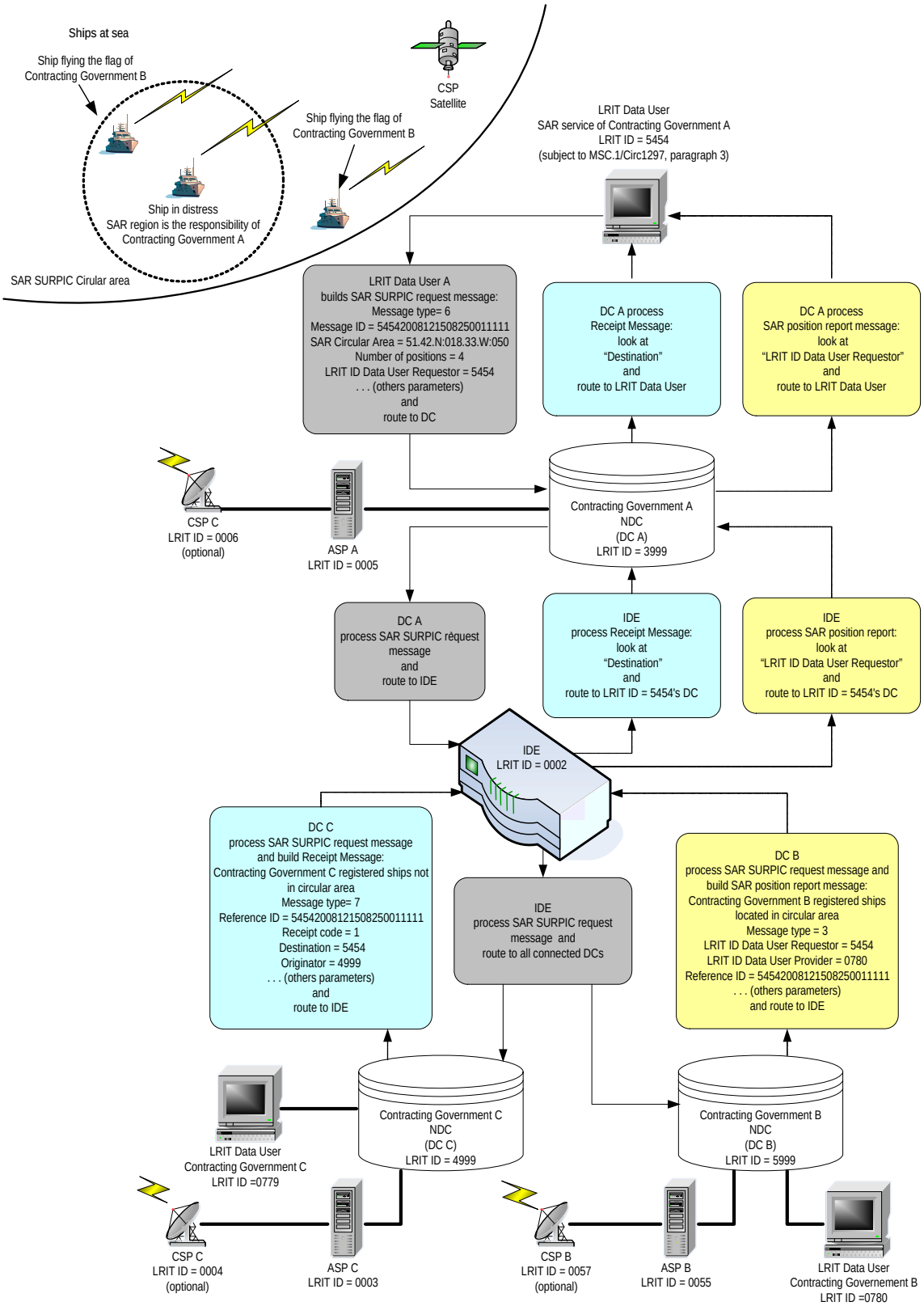


Figure 8

Message flow example
SAR SURPIC request (Message 6),
Receipt (Message 7) and SAR position report (Message 3)



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 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 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 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[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:

<*Regular version number*><colon><*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.

Publishing and implementation times

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

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

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 h 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[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[12] indicate the time at which the published versions are implemented by DCs 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.

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.

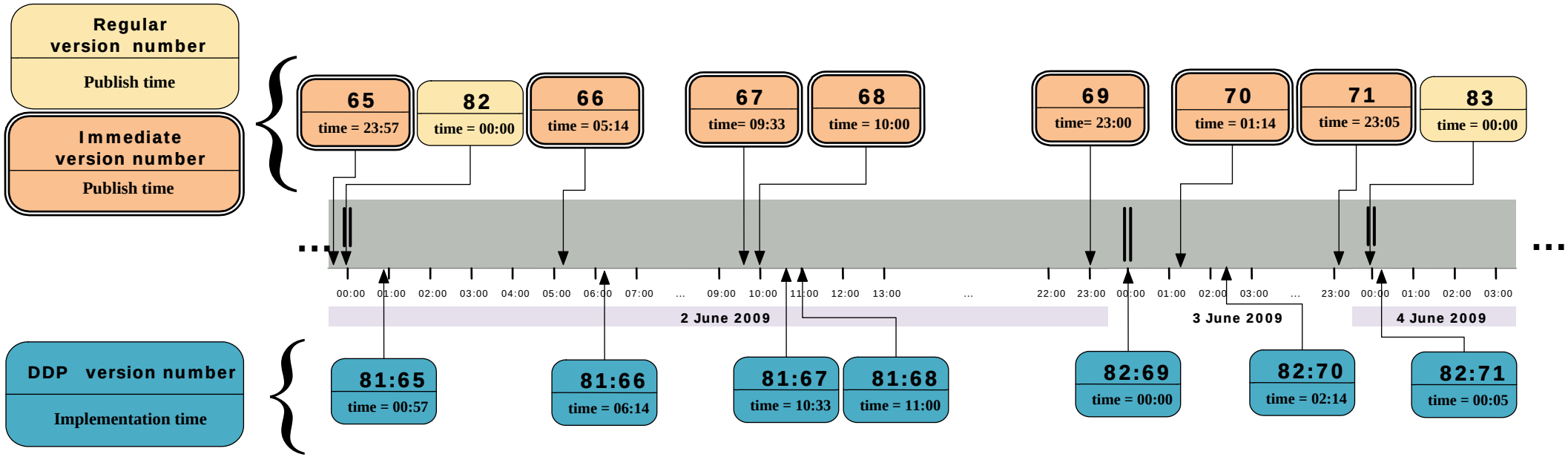
2.12.6 Figure I-1 illustrates how changes to *regular* and *immediate* DDP information are published and implemented independently of each other, together forming the *DDP version number* of the DDP which is implemented within the LRIT system at a particular point in time.

[11] Coloured yellow and orange, respectively, in the electronic version of this document.

[12] Coloured blue in the electronic version of this document.

Figure I-1

New DDP versions and implementation times
(for explanations refer to paragraph 2.12 and table I-5)



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 gives 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[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 3 digits; and

[13] The UN/LOCODE website is at http://www.unece.org/locode.

.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>* lists the *areaID* values of polygons defined in either 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; and

.4 *<DataCentreID>* specifies the LRIT ID of the Data Centre serving the Contracting Government. The Data Centre specified is defined in *<DataCentre>* with the corresponding value of *@lritID* within *<DataCentres>*.

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

.1 *<DataCentre>*:

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

.2 *<IDEInterfaceWebServiceLocation>* is the URI[14] of the SOAP endpoint for connections by the IDE; and

.3 *<DDPInterfaceWebServiceLocation>* is the URI[14] of the SOAP endpoint for connections from the DDP server.

.2 *<IDE>*:

.1 *@lritID* is the LRIT ID of the IDE;

.2 *<DCInterfaceWebServiceLocation>* is the URI[15] of the SOAP endpoint for connections by Data Centres; and

[14] The hostname (fully-qualified domain name) part of the URI specified for *<IDEInterfaceWebServiceLocation>* must exactly match the hostname part of the URI specified for *<DDPInterfaceWebServiceLocation>*.

.3 <*DDPInterfaceWebServiceLocation*> is the URI[15] of the SOAP endpoint for connections by the DDP server.

.3 <*DDPServer*>:

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

.2 <*WebServiceLocation*> is the URI of the SOAP endpoint for connections by the IDE and by Data Centres.

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;

[15] The hostname (fully-qualified domain name) part of the URI specified for <*DCInterfaceWebServiceLocation*> must exactly match the hostname part of the URI specified for <*DDPInterfaceWebServiceLocation*>.

.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 in 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[16] 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 http://www.w3.org/TR/xpath.

Table I-1

Regular Datatypes

Incrementable datatype	***Identifier attribute***	***Parent element in Full DDP***	***Identifier format***
contractingGovernmentType	lritID	DataDistributionPlan	<CG LRIT ID>
contactPointType	contactID	SARService	CPSAR<SAR LRIT ID>_<pk>
		NationalPointsOfContact	CPN<CG LRIT ID>_<pk>
		ASPInfo	CPASPINF<ASP LRIT ID>_<pk>
		DataCentreInfo	CPDCINF<CG LRIT ID>_<pk>
		DataCentre	CPDC<DC LRIT ID>_<pk>
		IDE	CPIDE<IDE LRIT ID>_<pk>
		DDPServer	CPDDP<DDP LRIT ID>_<pk>
		LRITCoordinator	CPLC<LC LRIT ID>_<pk>
lrit: polygonType	areaID	InternalWaters	GAIW<CG LRIT ID>_<pk>
		TerritorialSea	GATS<CG LRIT ID>_<pk>
		SeawardAreaOf1000NM	GAOT<CG LRIT ID>_<pk>
		CustomCoastalAreas	GACA<CG LRIT ID>_<pk>
portType	locode	Ports	<LOCODE>
portFacilityType	imoPortFacilityNumber	PortFacilities	<IMOPortFacilityNumber>
placeType	placeCode	Places	<PlaceCode>
sarServiceType	lritID	SARServices	<SAR LRIT ID>
aspInfoType	aspInfoID	ContractingGovernment	ASPINF<CG LRIT ID>_<pk>
dataCentreInfoType	dcInfoID	ContractingGovernment	DCINF<CG LRIT ID>
aspType	lritID	ASPs	<ASP LRIT ID>
lritCoordinatorType	lritID	DataDistributionPlan	<LC LRIT ID>

Table I-2

Immediate Datatypes

Incrementable datatype	***Identifier attribute***	***Parent element in Full DDP***	***Identifier format***
exclusionType	exclusionID	Exclusions	EXCL<CG LRIT ID>_<pk>
dataCentreType	lritID	DataCentres	<DC LRIT ID>
coastalStateStandingOrderType	contractingGovernmentID	CoastalStateStandingOrders	<CG LRIT ID>
ideType	lritID	DataDistributionPlan	<IDE LRIT ID>
ddpserverType	lritID	DataDistributionPlan	<DDP LRIT ID>

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 DDP information on geographical areas may be uploaded by each Contracting Government to the DDP server, as 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 may be used for the purposes of the coastal State standing order.

4.2 The file to be uploaded must conform to the specifications given in this section in order to be successfully accepted and processed by the DDP server.

Upload file format

4.3 The uploaded file must be a valid GML[17] 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.

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;

[17] Geography Markup Language.

.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 *lrit:polygonType* datatype.

4.8.1 If the *@gml:id* attribute of a polygon correctly matches 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 ignored.

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 *<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 version="1.0" encoding="utf-8"?>
<gml:MultiSurface
        xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
        instance" xsi:schemaLocation="http://www.opengis.net/gml/3.2
        http://schemas.opengis.net/gml/3.2.1/gml.xsd" gml:id="InternalWaters">
          <gml:surfaceMembers>
                    <gml:Polygon gml:id="GAIW1234_1">
                              <gml:description>Area 1</gml:description>
                              <gml:exterior>
                                        <gml:LinearRing>
                                                  <gml:posList>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</gml:posList>
                                        </gml:LinearRing>
                              </gml:exterior>
                    </gml:Polygon>
                    <gml:Polygon gml:id="GAIW1234_2">
                              <gml:description>Area 2</gml:description>
                              <gml:exterior>
                                        <gml:LinearRing>
                                                  <gml:posList>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</gml:posList>
                                        </gml:LinearRing>
                              </gml:exterior>
                    </gml:Polygon>
          </gml:surfaceMembers>
</gml:MultiSurface>
```

5 Constraints on polygons of geographical areas[18]

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[19], 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;

.3 The total number of vertices for all polygons should not be more than 10,000 vertices; and

.4 The total number of polygons should not be more than 1,000 polygons.

.2 *TerritorialSeas* 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[20], 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: http://www.un.org/special-rep/ohrlls/sid/list.htm.

20 The Small Islands Developing States are listed by the United Nations at the following web address: http://www.un.org/special-rep/ohrlls/sid/list.htm.

.3 The total number of vertices for all polygons should not be more than 10,000 vertices; and

.4 The total number of polygons should not be more than 1,000 polygons.

.3 *SeawardAreaOf1000NM* polygons;

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

.2 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;

.3 The total number of vertices for all polygons should not be more than 1,000 vertices; and

.4 The total number of polygons should not be more than 10 polygons.

.4 *CustomCoastalAreas* polygon:

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

.2 The average separation between adjacent vertices should not be less than 600 m;

.3 The total number of vertices for each polygon should not be more than 100 vertices;

.4 The total number of polygons should not be more than 100 polygons; and

.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* and *CustomCoastalAreas* should be *disjoint* (i.e. no overlap between polygons 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[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;

[21] Information on the IMO Web Accounts system is given in Circular letter No.2892.

.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 I-3

Users of the LRIT Data Distribution Plan web interface

User	Enter	View	Print	Download	Implement
Contracting Government	Yes(1)	Yes	Yes	Yes	No
LRIT Data Centre	Yes(2)	Yes	Yes	Yes	Yes
International LRIT Data Exchange	Yes(2)	Yes	Yes	Yes	Yes
LRIT Coordinator	Yes(2)	Yes	Yes	Yes(3)	Yes(4)
Application Service Provider	Yes(2)	Yes	Yes	No	No
Secretariat	Yes	Yes	Yes	Yes	---

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[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).

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.

[22] Extensible Markup Language (XML).

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[23], 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.

.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.

[23] Details to be issued under a separate cover.

.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*.

6.8 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)

Example	***DDP version implemented by requestor***	***Time of request (on 2 June)***	***Requested Update Type***	***Versions returned in Incremental Update***	
				Regular	***Immediate***
1	81:66	10:12	Immediate	-	67, 68
2	81:65	05:15	Regular	82	-
3	81:65	05:15	Immediate	-	66
4	81:65	05:15	All updates	82	66
5	80:64	13:00	All updates	81, 82	65, 66, 67, 68

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 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 31 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.

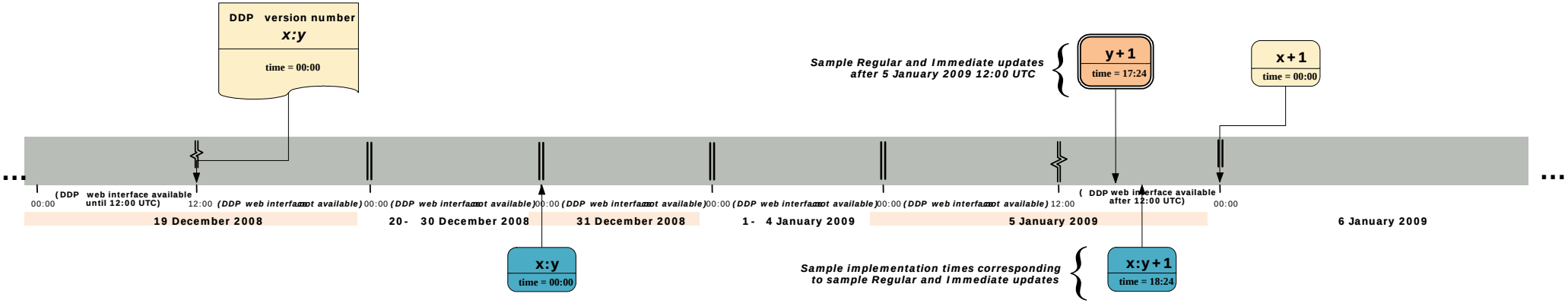
2.7 Subject to the provisions of paragraph 2.3, the LRIT system, including the DDP server, will be fully operational from 00:00 UTC on 31 December 2008. From this point in time, notifications of updates to the DDP (*immediate* and *regular*) will be transmitted as specified in this document.

Figure illustrating the implementation timeline

2.8 Figure II-1, below, illustrates the timeline described above.

Figure II-1

DDP 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

Elements of the DDP and related cut-off and implementation times for new entries or amendments to existing ones

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.

No.	Case	Cut off time for including new entries and for amending existing ones ——— Publishing time of the new version of the DDP	IDE and all DCs should implement the resulting new version of the DDP at	Comments
1	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	23:59 UTC daily ——— 00:00 UTC daily	00:00 UTC the day after publishing	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

No.	Case	Cut off time for including new entries and for amending existing ones ——— Publishing time of the new version of the DDP	IDE and all DCs should implement the resulting new version of the DDP at	Comments
2	Administration exercises it 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.)	Not applicable ——— 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.	One h after the time of publishing.	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 e-mail) the LRIT Coordinator.
3	A State becoming a Contracting Government.	23:59 UTC daily ——— 00:00 UTC daily	00:00 UTC the day after publishing.	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.

No.	Case	Cut off time for including new entries and for amending existing ones _____ Publishing time of the new version of the DDP	IDE and all DCs should implement the resulting new version of the DDP at	Comments
4	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.	23:59 UTC daily _____ 00:00 UTC daily	00:00 UTC the day after publishing.	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.
5	Contracting Government establishes new search and rescue services or makes amendments to existing search and rescue services.	23:59 UTC daily _____ 00:00 UTC daily	00:00 UTC the day after publishing.	As case 1

No.	Case	Cut off time for including new entries and for amending existing ones _____ Publishing time of the new version of the DDP	IDE and all DCs should implement the resulting new version of the DDP at	Comments
6	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.	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.	One h after the time of publishing.	Contracting Governments may select from their defined geographical areas (of Internal Waters, Territorial Sea, Seaward Outer Boundary of 1000NM and Custom Coastal Areas) the set of areas which constitute their coastal State standing order. Only geographical areas which are implemented within the LRIT system at a particular time may be selected as part of a standing order at that time. If a new definition of a geographical area is to be introduced, the provisions of case 1 apply, and the new area may be selected as part of the standing order only after the corresponding published DDP version has been implemented by the IDE and all DCs.
7	Contracting Government recognizes new ASPs or withdraws the recognition from previously recognized ASPs.	23:59 UTC daily _____ 00:00 UTC daily	00:00 UTC the day after publishing.	As case 1

No.	Case	Cut off time for including new entries and for amending existing ones _____ Publishing time of the new version of the DDP	IDE and all DCs should implement the resulting new version of the DDP at	Comments
8	Contracting Government establishes new LRIT Data Centre or changes the LRIT Data Centre from which it requests and receives LRIT information.	Not applicable _____ A Regular Version of the DDP will be published by the DDP server at 00:00 UTC following the day in which the Secretariat, upon receipt of communications from the Administration with information on the new arrangements relating to its Data Centre, enters this information into the DDP.	00:00 UTC the day after publishing.	As case 1
9	Contracting Government changes particulars relating to its established Data Centre (e.g., its web service endpoint URI).	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.	One h after the time of publishing.	-
10	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.	23:59 UTC daily _____ 00:00 UTC daily	00:00 UTC the day after publishing.	As case 1

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 Co-ordinator.

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 Co-ordinator 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 back up. However, terrestrial microwave communications may also serve in a back up 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 7 days a week with an availability of 99.9% over the year and 95% over any day.

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: **1.3**
Release Date: 07 December 2010
==========

XSDs

File	Version	Date
DDP.xsd	1.2	24 Oct 2008
DDPNotification.xsd	1.0	22 Aug 2008
DDPRequest.xsd	1.1	24 Oct 2008
DDPUpdate.xsd	1.1	24 Sept 2008
JournalReport.xsd	1.0	22 Aug 2008
PricingFile.xsd	1.0	22 Aug 2008
PricingNotification.xsd	1.0	22 Aug 2008
PricingRequest.xsd	1.1	24 Oct 2008
PricingUpdate.xsd	1.1	24 Oct 2008
Receipt.xsd	1.0	22 Aug 2008
SARSURPICRequest.xsd	1.1	24 Oct 2008
ShipPositionReport.xsd	1.1	24 Oct 2008
ShipPositionRequest.xsd	1.0	22 Aug 2008
SystemStatus.xsd	1.0	22 Aug 2008
Types.xsd	1.2	07 Dec 2010

WSDLs

File	Version	Date
DC.wsdl	1.0	22 Aug 2008
DDP.wsdl	1.0	22 Aug 2008
IDE-DC.wsdl	1.0	22 Aug 2008
IDE-DDP.wsdl	1.0	22 Aug 2008

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 **Version** number to track changes to that file, independently of 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 ReferenceId 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 ReferenceId element with optional reference message ID
* Updated PricingRequest.xsd to:
    - Add ReferenceId element with optional reference message ID
* Updated PricingUpdate.xsd to:
    - Add ReferenceId 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 "<xs:pattern value="[0-9]+(\.[0-9]{1,2})?"/>"
    - Changed priceValueType restriction to "<xs:pattern value="[0-9]+(\.[0-9]{1,4})?"/>"

XSD files

DDP.xsd file

```
<!--
        File:           DDP.xsd
        Version:        1.2
        Date:           24 October 2008
-->
<xs:schema version="1.0" targetNamespace="http://gisis.imo.org/XML/LRIT/ddp/2008" xmlns="http://gisis.imo.org/XML/LRIT/ddp/2008"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:lrit="http://gisis.imo.org/XML/LRIT/types/2008" elementFormDefault="qualified">

        <xs:import namespace="http://gisis.imo.org/XML/LRIT/types/2008" schemaLocation="Types.xsd"/>

        <!-- Simple datatypes -->
        <xs:simpleType name="iso3166-1Alpha3CodeType">
                <xs:restriction base="xs:string">
                        <xs:pattern value="[A-Z]{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: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="coastalStateStandingOrderAreasIDType">
        <xs:restriction base="xs:string">
                <xs:pattern value="GA(IW|TS|OT|CA)1[0-9]{3}_[0-9]+"/>
        </xs:restriction>
</xs:simpleType>
<xs:simpleType name="coastalStateStandingOrderAreasIDListType">
        <xs:list itemType="coastalStateStandingOrderAreasIDType"/>
</xs:simpleType>
<xs:simpleType name="sarFacilityTypeType">
        <xs:restriction base="xs:string">
                <xs:enumeration value="RB"/>
                <xs:enumeration value="RV"/>
                <xs:enumeration value="SRG"/>
                <xs:enumeration value="MRG"/>
                <xs:enumeration value="LRG"/>
                <xs:enumeration value="VLR"/>
                <xs:enumeration value="ELR"/>
                <xs:enumeration value="HEL-L"/>
                <xs:enumeration value="HEL-M"/>
                <xs:enumeration value="HEL-H"/>
                <xs:enumeration value="GSU"/>
                <xs:enumeration value="MAU"/>
```

```
                <xs:enumeration value="UIU"/>
                <xs:enumeration value="DUIU"/>
                <xs:enumeration value="FFU"/>
                <xs:enumeration value="IRU"/>
        </xs:restriction>
</xs:simpleType>
<xs:simpleType name="sarFacilityTypeListType">
        <xs:list itemType="sarFacilityTypeType"/>
</xs:simpleType>
<!-- Complex datatypes -->
<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" type="xs:string" minOccurs="0"/>
                <xs:element name="FirstName" type="xs:string" minOccurs="0"/>
                <xs:element name="LastName" type="xs:string" minOccurs="0"/>
                <xs:element name="Department" type="xs:string" minOccurs="0"/>
                <xs:element name="Position" type="xs:string" minOccurs="0"/>
                <xs:element name="AddressLine1" type="xs:string" minOccurs="0"/>
                <xs:element name="AddressLine2" type="xs:string" minOccurs="0"/>
                <xs:element name="AddressLine3" type="xs:string" minOccurs="0"/>
                <xs:element name="AddressCity" type="xs:string" minOccurs="0"/>
                <xs:element name="AddressPostcode" type="xs:string" minOccurs="0"/>
                <xs:element name="AddressState" type="xs:string" minOccurs="0"/>
                <xs:element name="AddressCountry" type="xs:string" minOccurs="0"/>
                <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="Website" type="xs:anyURI" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
```

```
        <xs:attribute name="contactID" type="contactIDType" use="required"/>
    </xs:complexType>
    <xs:complexType name="dataCentreType">
        <xs:sequence>
            <xs:element name="Type">
                <xs:simpleType>
                    <xs:restriction base="xs:string">
                        <xs:enumeration value="International"/>
                        <xs:enumeration value="National"/>
                        <xs:enumeration value="Regional"/>
                        <xs:enumeration value="Cooperative"/>
                    </xs:restriction>
                </xs:simpleType>
            </xs:element>
            <xs:element name="Name" type="xs:string"/>
            <xs:element name="IDEInterfaceWebServiceLocation" type="xs:anyURI"/>
            <xs:element name="DDPInterfaceWebServiceLocation" type="xs:anyURI"/>
            <xs:element name="ContactPoint" type="contactPointType" minOccurs="0" maxOccurs="unbounded"/>
            <xs:element name="AdditionalInformation" type="xs:string" minOccurs="0"/>
        </xs:sequence>
        <xs:attribute name="lritID" type="lrit:dataCentreLRITIDType"/>
    </xs:complexType>
    <xs:complexType name="aspType">
        <xs:sequence>
            <xs:element name="Name" type="xs:string"/>
        </xs:sequence>
        <xs:attribute name="lritID" type="lrit:aspLRITIDType"/>
    </xs:complexType>
    <xs:complexType name="dataCentreInfoType">
        <xs:sequence>
            <xs:element name="DataCentreID" type="lrit:dataCentreLRITIDType"/>
            <xs:element name="ContactPoint" type="contactPointType" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
        <xs:attribute name="dcInfoID" type="dcInfoIDType" use="required"/>
    </xs:complexType>
    <xs:complexType name="sarServiceType">
        <xs:sequence>
            <xs:element name="Name" type="xs:string"/>
```

```
                <xs:element name="MMSI" type="mmsiType" minOccurs="0"/>
                <xs:element name="CallSign" type="xs:string" minOccurs="0"/>
                <xs:element name="VHFVoiceCallSign" type="xs:string" minOccurs="0"/>
                <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="lritID" type="lrit:sarServiceLRITIDType" use="required"/>
</xs:complexType>
<xs:complexType name="aspInfoType">
        <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="aspInfoID" type="aspInfoIDType" 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:sequence>
        <xs:attribute name="imoPortFacilityNumber" type="lrit:imoPortFacilityNumberType" use="required"/>
</xs:complexType>
<xs:complexType name="portType">
        <xs:sequence>
                <xs:element name="Name" type="xs:string"/>
```

```
                <xs:element name="Position" type="lrit:posType"/>
            </xs:sequence>
            <xs:attribute name="locode" type="lrit:locodeType" use="required"/>
        </xs:complexType>
        <xs:complexType name="exclusionType">
            <xs:sequence>
                <xs:element name="ExcludedContractingGovernmentID" type="lrit:contractingGovernmentLRITIDType"/>
                <xs:element name="From" type="xs:dateTime" minOccurs="0"/>
                <xs:element name="Until" type="xs:dateTime" minOccurs="0"/>
                <xs:element name="Reason" type="xs:string" minOccurs="0"/>
            </xs:sequence>
            <xs:attribute name="contractingGovernmentID" type="lrit:contractingGovernmentLRITIDType"
use="required"/>
            <xs:attribute name="exclusionID" type="exclusionIDType" use="required"/>
        </xs:complexType>
        <xs:complexType name="coastalStateStandingOrderType">
            <xs:simpleContent>
                <xs:extension base="coastalStateStandingOrderAreasIDListType">
                    <xs:attribute name="contractingGovernmentID" type="lrit:contractingGovernmentLRITIDType"
use="required"/>
                </xs:extension>
            </xs:simpleContent>
        </xs:complexType>
        <xs:complexType name="ddpServerType">
            <xs:sequence>
                <xs:element name="Name" type="xs:string"/>
                <xs:element name="WebServiceLocation" type="xs:anyURI"/>
                <xs:element name="ContactPoint" type="contactPointType" maxOccurs="unbounded"/>
                <xs:element name="AdditionalInformation" type="xs:string" minOccurs="0"/>
            </xs:sequence>
            <xs:attribute name="lritID" type="lrit:ddpServerLRITIDType"/>
        </xs:complexType>
        <xs:complexType name="ideType">
            <xs:sequence>
                <xs:element name="Name" type="xs:string"/>
                <xs:element name="DCInterfaceWebServiceLocation" type="xs:anyURI"/>
                <xs:element name="DDPInterfaceWebServiceLocation" type="xs:anyURI"/>
                <xs:element name="ContactPoint" type="contactPointType" maxOccurs="unbounded"/>
```

```
                <xs:element name="AdditionalInformation" type="xs:string" minOccurs="0"/>
            </xs:sequence>
            <xs:attribute name="lritID" type="lrit:ideLRITIDType"/>
        </xs:complexType>
        <xs:complexType name="lritCoordinatorType">
            <xs:sequence>
                <xs:element name="Name" type="xs:string"/>
                <xs:element name="ContactPoint" type="contactPointType" maxOccurs="unbounded"/>
                <xs:element name="AdditionalInformation" type="xs:string" minOccurs="0"/>
            </xs:sequence>
            <xs:attribute name="lritID" type="lrit:lritCoordinatorLRITIDType"/>
        </xs:complexType>
        <!-- Incremental datatypes -->
        <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:choice>
            <xs:attribute name="xPath" type="xs:string" use="required"/>
        </xs:complexType>
        <xs:complexType name="immediateIncrementableType">
            <xs:choice>
                <xs:element name="StandingOrder" type="coastalStateStandingOrderType"/>
                <xs:element name="Exclusion" type="exclusionType"/>
                <xs:element name="DataCentre" type="dataCentreType"/>
            </xs:choice>
            <xs:attribute name="xPath" type="xs:string" use="required"/>
        </xs:complexType>
        <!-- Root-element datatypes -->
```

```
<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:element name="NationalPointsOfContact">
            <xs:complexType>
                <xs:sequence>
                    <xs:element name="ContactPoint" type="contactPointType" minOccurs="0" maxOccurs="unbounded"/>
                </xs:sequence>
            </xs:complexType>
        </xs:element>
        <xs:element name="DataCentreInfo" type="dataCentreInfoType"/>
        <xs:element name="ASPInfo" type="aspInfoType" minOccurs="0" maxOccurs="unbounded"/>
        <xs:element name="SARServices">
            <xs:complexType>
                <xs:sequence>
                    <xs:element name="SARService" type="sarServiceType" minOccurs="0" maxOccurs="unbounded"/>
                </xs:sequence>
            </xs:complexType>
        </xs:element>
        <xs:element name="Ports">
            <xs:complexType>
                <xs:sequence>
                    <xs:element name="Port" type="portType" minOccurs="0" maxOccurs="unbounded"/>
                </xs:sequence>
            </xs:complexType>
        </xs:element>
        <xs:element name="PortFacilities">
            <xs:complexType>
            <xs:sequence>
                    <xs:element name="PortFacility" type="portFacilityType" minOccurs="0" maxOccurs="unbounded"/>
```

```
                    </xs:sequence>
            </xs:complexType>
    </xs:element>
    <xs:element name="Places">
            <xs:complexType>
                    <xs:sequence>
                            <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:sequence>
		<xs:attribute name="lritID" type="lrit:contractingGovernmentLRITIDType" use="required"/>
	</xs:complexType>
	<xs:complexType name="territoryType">
		<xs:complexContent>
			<xs:extension base="contractingGovernmentType">
				<xs:attribute name="contractingGovernmentID" type="lrit:contractingGovernmentLRITIDType"
use="required"/>
			</xs:extension>
		</xs:complexContent>
	</xs:complexType>
	<!-- Root elements -->
	<xs:element name="DataDistributionPlan">
		<xs:complexType>
			<xs:sequence>
				<xs:element name="ContractingGovernment" type="contractingGovernmentType" minOccurs="0"
maxOccurs="unbounded"/>
				<xs:element name="Territory" type="territoryType" minOccurs="0" maxOccurs="unbounded"/>
				<xs:element name="CoastalStateStandingOrders">
					<xs:complexType>
						<xs:sequence>
							<xs:element name="StandingOrder" type="coastalStateStandingOrderType" minOccurs="0"
maxOccurs="unbounded"/>
						</xs:sequence>
					</xs:complexType>
				</xs:element>
				<xs:element name="Exclusions">
					<xs:complexType>
						<xs:sequence>
							<xs:element name="Exclusion" type="exclusionType" minOccurs="0"
maxOccurs="unbounded"/>
						</xs:sequence>
					</xs:complexType>
				</xs:element>
				<xs:element name="DataCentres">
					<xs:complexType>
						<xs:sequence>
```

```
                                                <xs:element name="DataCentre" type="dataCentreType" minOccurs="0"
maxOccurs="unbounded"/>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                                <xs:element name="ASPs">
                                    <xs:complexType>
                                        <xs:sequence>
                                            <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:attribute name="versionNum" type="lrit:ddpVersionNumType" use="required"/>
                            <xs:attribute name="regularVersionPublishedAt" type="xs:dateTime" use="required"/>
                        <xs:attribute name="regularVersionImplementationAt" type="xs:dateTime"
use="required"/>
                            <xs:attribute name="immediateVersionPublishedAt" type="xs:dateTime" use="required"/>
                            <xs:attribute name="immediateVersionImplementationAt" type="xs:dateTime" use="required"/>
                            <xs:attribute name="schemaVersion" type="xs:decimal" use="required"/>
                        </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="baseImmediateVersionNum" type="xs:int" use="required"/>
                                        <xs:attribute name="targetImmediateVersionNum" 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:sequence>
                            <xs:attribute name="baseRegularVersionNum"
type="lrit:ddpIncrementalVersionNumType"/>
                            <xs:attribute name="targetRegularVersionNum" type="lrit:ddpIncrementalVersionNumType"/>
                            <xs:attribute name="baseImmediateVersionNum" type="lrit:ddpIncrementalVersionNumType"/>
                            <xs:attribute name="targetImmediateVersionNum" type="lrit:ddpIncrementalVersionNumType"/>
                            <xs:attribute name="schemaVersion" type="xs:decimal" use="required"/>
                        </xs:complexType>
                    </xs:element>
</xs:schema>
```

DDPNotification.xsd file

```
<!--
        File:           DDPNotification.xsd
        Version:        1.0
        Date:           22 August 2008
-->
<xs:schema version="1.0" targetNamespace="http://gisis.imo.org/XML/LRIT/ddpNotification/2008" xmlns="http://gisis.imo.org/XML/LRIT/ddpNotification/2008"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:lrit="http://gisis.imo.org/XML/LRIT/types/2008" elementFormDefault="qualified">

        <xs:import namespace="http://gisis.imo.org/XML/LRIT/types/2008" schemaLocation="Types.xsd"/>

        <xs:simpleType name="messageTypeType">
                <xs:restriction base="xs:integer">
                        <xs:enumeration value="8"/>
                </xs:restriction>
        </xs:simpleType>

        <xs:element name="DDPNotification" type="DDPNotificationType"/>
        <xs:complexType name="DDPNotificationType">
                <xs:sequence>
                        <xs:element name="MessageType" type="messageTypeType"/>
                        <xs:element name="MessageId" type="lrit:msgIDType"/>
                        <xs:element name="UpdateType">
                                <xs:simpleType>
                                        <xs:restriction base="xs:integer">
                                                <xs:enumeration value="0"/>
                                                <xs:enumeration value="1"/>
                                        </xs:restriction>
                                </xs:simpleType>
                        </xs:element>
                        <xs:element name="Message" type="lrit:messageType"/>
                        <xs:element name="TimeStamp" type="xs:dateTime"/>
                        <xs:element name="NewVersionNum" type="lrit:ddpIncrementalVersionNumType"/>
                </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>
```

DDPRequest.xsd file

```
<!--
        File:           DDPRequest.xsd
        Version:        1.1
        Date:           24 October 2008
-->
<xs:schema version="1.0" targetNamespace="http://gisis.imo.org/XML/LRIT/ddpRequest/2008" xmlns="http://gisis.imo.org/XML/LRIT/ddpRequest/2008"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:lrit="http://gisis.imo.org/XML/LRIT/types/2008" elementFormDefault="qualified">

        <xs:import namespace="http://gisis.imo.org/XML/LRIT/types/2008" schemaLocation="Types.xsd"/>

        <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: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

```
<!--
        File:           DDPUpdate.xsd
        Version:        1.0
        Date:           22 August 2008
-->
<xs:schema version="1.0" targetNamespace="http://gisis.imo.org/XML/LRIT/ddpUpdate/2008" xmlns="http://gisis.imo.org/XML/LRIT/ddpUpdate/2008"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:lrit="http://gisis.imo.org/XML/LRIT/types/2008" xmlns:xmime="http://www.w3.org/2005/05/xmlmime"
elementFormDefault="qualified">

        <xs:import namespace="http://gisis.imo.org/XML/LRIT/types/2008" schemaLocation="Types.xsd"/>

        <xs:simpleType name="messageTypeType">
                <xs:restriction base="xs:integer">
                        <xs:enumeration value="10"/>
                </xs:restriction>
        </xs:simpleType>

        <xs:element name="DDPUpdate" type="DDPUpdateType"/>
        <xs:complexType name="DDPUpdateType">
                <xs:sequence>
                        <xs:element name="MessageType" type="messageTypeType"/>
                        <xs:element name="MessageId" type="lrit:msgIDType"/>
                        <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: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>
```

JournalReport.xsd file

```
<!--
        File:           JournalReport.xsd
        Version:        1.0
        Date:           22 August 2008
-->
<xs:schema version="1.0" targetNamespace="http://gisis.imo.org/XML/LRIT/journalReport/2008" xmlns="http://gisis.imo.org/XML/LRIT/journalReport/2008"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:lrit="http://gisis.imo.org/XML/LRIT/types/2008" xmlns:xmime="http://www.w3.org/2005/05/xmlmime"
elementFormDefault="qualified">

        <xs:import namespace="http://gisis.imo.org/XML/LRIT/types/2008" schemaLocation="Types.xsd"/>

        <xs:simpleType name="messageTypeType">
                <xs:restriction base="xs:integer">
                        <xs:enumeration value="12"/>
                </xs:restriction>
        </xs:simpleType>

        <xs:element name="JournalReport" type="JournalReportType"/>
        <xs:complexType name="JournalReportType">
                <xs:sequence>
                        <xs:element name="MessageType" type="messageTypeType"/>
                        <xs:element name="MessageId" type="lrit:msgIDType"/>
                        <xs:element name="Message" type="lrit:messageType"/>
                        <xs:element name="TimeStamp" type="xs:dateTime"/>
                        <xs:element name="Originator" type="lrit:lritIDType"/>
                        <xs:element name="JournalFile" type="xs:base64Binary" xmime:expectedContentTypes="application/zip"/>
                        <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>
```

PricingFile.xsd file

```
<!--
        File:           PricingFile.xsd
        Version:        1.0
        Date:           22 August 2008
-->
<xs:schema version="1.0" targetNamespace="http://gisis.imo.org/XML/LRIT/pricingFile/2008" xmlns="http://gisis.imo.org/XML/LRIT/pricingFile/2008"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:lrit="http://gisis.imo.org/XML/LRIT/types/2008" elementFormDefault="qualified">

        <xs:import namespace="http://gisis.imo.org/XML/LRIT/types/2008" schemaLocation="Types.xsd"/>

        <xs:simpleType name="lritIDTypeList">
                <xs:list itemType="lrit:lritIDType"/>
        </xs:simpleType>

        <xs:element name="PricingFile">
                <xs:complexType>
                        <xs:sequence>
                                <xs:element name="PriceList" maxOccurs="unbounded">
                                        <xs:complexType>
                                                <xs:sequence>
                                                        <xs:element name="dataProviderID" type="lritIDTypeList"/>

                                                        <xs:element name="BreakDown" maxOccurs="unbounded">
                                                                <xs:complexType>
                                                                        <xs:sequence>
                                                                                <xs:element name="Poll" type="lrit:priceValueType"/>

                                                                                <xs:element name="PeriodicRateChange"
type="lrit:priceValueType"/>
                                                                                <xs:element name="PositionReport" type="lrit:priceValueType"/>

                                                                                <xs:element name="ArchivePositionReport"
type="lrit:priceValueType"/>
                                                                        </xs:sequence>
                                                                        <xs:attribute name="currency" type="lrit:currencyType"/>
```

```
                                                                                    </xs:complexType>
                                                                                </xs:element>
                                                                            </xs:sequence>
                                                                            <xs:attribute name="dataCentreID" type="lrit:lritIDType" use="required"/>
                                                                            <xs:attribute name="issueDate" type="xs:date"/>
                                                                            <xs:attribute name="effectiveDate" type="xs:date"/>
                                                                        </xs:complexType>
                                                                    </xs:element>
                                                                </xs:sequence>
                                                                <xs:attribute name="schemaVersion" type="xs:decimal" use="required"/>
                                                            </xs:complexType>
                                                        </xs:element>
                                                    </xs:schema>
```

PricingNotification.xsd file

```
<!--
        File:           PricingNotification.xsd
        Version:        1.0
        Date:           22 August 2008
-->
<xs:schema version="1.0" targetNamespace="http://gisis.imo.org/XML/LRIT/pricingNotification/2008"
xmlns="http://gisis.imo.org/XML/LRIT/pricingNotification/2008" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:lrit="http://gisis.imo.org/XML/LRIT/types/2008" elementFormDefault="qualified">

        <xs:import namespace="http://gisis.imo.org/XML/LRIT/types/2008" schemaLocation="Types.xsd"/>
        <xs:simpleType name="messageTypeType">
                <xs:restriction base="xs:integer">
                        <xs:enumeration value="13"/>
                </xs:restriction>
        </xs:simpleType>

        <xs:element name="PricingNotification" type="PricingNotificationType"/>
        <xs:complexType name="PricingNotificationType">
                <xs:sequence>
                        <xs:element name="MessageType" type="messageTypeType"/>
                        <xs:element name="MessageId" type="lrit:msgIDType"/>
                        <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:schema>
```

PricingRequest.xsd file

```
<!--
        File:           PricingRequest.xsd
        Version:        1.1
        Date:           24 October 2008
-->
<xs:schema version="1.0" targetNamespace="http://gisis.imo.org/XML/LRIT/pricingRequest/2008" xmlns="http://gisis.imo.org/XML/LRIT/pricingRequest/2008"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:lrit="http://gisis.imo.org/XML/LRIT/types/2008" elementFormDefault="qualified">

        <xs:import namespace="http://gisis.imo.org/XML/LRIT/types/2008" schemaLocation="Types.xsd"/>

        <xs:simpleType name="messageTypeType">
                <xs:restriction base="xs:integer">
                        <xs:enumeration value="14"/>
                </xs:restriction>
        </xs:simpleType>

        <xs:element name="PricingRequest" type="PricingRequestType"/>
        <xs:complexType name="PricingRequestType">
                <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="Originator" type="lrit:dataCentreLRITIDType"/>
                <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>
```

PricingUpdate.xsd file

```
<!--
        File:           PricingUpdate.xsd
        Version:        1.1
        Date:           24 October 2008
-->
<xs:schema version="1.0" targetNamespace="http://gisis.imo.org/XML/LRIT/pricingUpdate/2008" xmlns="http://gisis.imo.org/XML/LRIT/pricingUpdate/2008"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:lrit="http://gisis.imo.org/XML/LRIT/types/2008" xmlns:xmime="http://www.w3.org/2005/05/xmlmime"
elementFormDefault="qualified">

        <xs:import namespace="http://gisis.imo.org/XML/LRIT/types/2008" schemaLocation="Types.xsd"/>

        <xs:simpleType name="messageTypeType">
                <xs:restriction base="xs:integer">
                        <xs:enumeration value="15"/>
                </xs:restriction>
        </xs:simpleType>

        <xs:element name="PricingUpdate" type="PricingUpdateType"/>
        <xs:complexType name="PricingUpdateType">
                <xs:sequence>
                        <xs:element name="MessageType" type="messageTypeType"/>
                        <xs:element name="MessageId" type="lrit:msgIDType"/>
                        <xs:element name="ReferenceId" type="lrit:msgIDType"/>
                        <xs:element name="Message" type="lrit:messageType"/>
                        <xs:element name="TimeStamp" type="xs:dateTime"/>
                        <xs:element name="DDPVersionNum" type="lrit:ddpVersionNumType"/>
                        <xs:element name="PricingFile" 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>
```

Receipt.xsd file

```
<!--
        File:           Receipt.xsd
        Version:        1.0
        Date:           22 August 2008
-->
<xs:schema version="1.0" targetNamespace="http://gisis.imo.org/XML/LRIT/receipt/2008" xmlns="http://gisis.imo.org/XML/LRIT/receipt/2008"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:lrit="http://gisis.imo.org/XML/LRIT/types/2008" elementFormDefault="qualified">

        <xs:import namespace="http://gisis.imo.org/XML/LRIT/types/2008" schemaLocation="Types.xsd"/>

        <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:minInclusive value="0"/>
                        <xs:maxInclusive value="256"/>
                        <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:restriction>
        </xs:simpleType>

        <xs:element name="Receipt" type="ReceiptType"/>
        <xs:complexType name="ReceiptType">
                <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:schema>
```

SARSURPICRequest.xsd file

```
<!--
        File:           SARSURPICRequest.xsd
        Version:        1.1
        Date:           24 October 2008
-->
<xs:schema version="1.0" targetNamespace="http://gisis.imo.org/XML/LRIT/sarSurpicRequest/2008"
xmlns="http://gisis.imo.org/XML/LRIT/sarSurpicRequest/2008" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:lrit="http://gisis.imo.org/XML/LRIT/types/2008" elementFormDefault="qualified">

        <xs:import namespace="http://gisis.imo.org/XML/LRIT/types/2008" schemaLocation="Types.xsd"/>

        <xs:simpleType name="messageTypeType">
                <xs:restriction base="xs:integer">
                        <xs:enumeration value="6"/>
                </xs:restriction>
        </xs:simpleType>
        <xs:simpleType name="sarCircularAreaType">
                <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])):([0-9]{3}))"/>
                </xs:restriction>
        </xs:simpleType>
        <xs:simpleType name="sarRectangularAreaType">
                <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])):(([0-8][0-9]\.[0-5][0-9]\.[nN])|(90\.00\.[nN])):(([0-1][0-7][0-9]\.[0-5][0-9]\.[eE])|([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="SARSURPICRequest" type="SARSURPICType"/>
```

```
        <xs:complexType name="SARSURPICType">
                <xs:sequence>
                        <xs:element name="MessageType" type="messageTypeType"/>
                        <xs:element name="MessageId" type="lrit:msgIDType"/>
                        <xs:choice>
                                <xs:element name="SARCircularArea" type="sarCircularAreaType"/>
                                <xs:element name="SARRectangularArea" type="sarRectangularAreaType"/>
                        </xs:choice>
                        <xs:element name="NumberOfPositions" type="numberOfPositionsType"/>
                        <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>
```

ShipPositionReport.xsd file

```
<!--
        File:           ShipPositionReport.xsd
        Version:        1.1
        Date:           24 October 2008
-->
<xs:schema version="1.0" targetNamespace="http://gisis.imo.org/XML/LRIT/positionReport/2008" xmlns="http://gisis.imo.org/XML/LRIT/positionReport/2008"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:lrit="http://gisis.imo.org/XML/LRIT/types/2008" elementFormDefault="qualified">

        <xs:import namespace="http://gisis.imo.org/XML/LRIT/types/2008" schemaLocation="Types.xsd"/>

        <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:element name="ShipPositionReport" type="ShipPositionReportType"/>
        <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:element name="TimeStamp2" type="xs:dateTime"/>
                        <xs:element name="TimeStamp3" type="xs:dateTime"/>
                        <xs:element name="DCId" type="lrit:dataCentreLRITIDType"/>
                        <xs:element name="TimeStamp4" type="xs:dateTime"/>
```

```
                <xs:element name="TimeStamp5" type="xs:dateTime"/>
                <xs:element name="ResponseType" type="lrit:responseTypeType"/>
                <xs:element name="DataUserRequestor" type="lrit:lritIDType"/>
                <xs:element name="ShipName" type="lrit:shipNameType" minOccurs="0"/>
                <xs:element name="DataUserProvider" type="lrit:lritIDType"/>
                <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>
```

ShipPositionRequest.xsd file

```
<!--
        File:           ShipPositionRequest.xsd
        Version:        1.0
        Date:           22 August 2008
-->
<xs:schema version="1.0" targetNamespace="http://gisis.imo.org/XML/LRIT/positionRequest/2008" xmlns="http://gisis.imo.org/XML/LRIT/positionRequest/2008"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:lrit="http://gisis.imo.org/XML/LRIT/types/2008" elementFormDefault="qualified">

        <xs:import namespace="http://gisis.imo.org/XML/LRIT/types/2008" schemaLocation="Types.xsd"/>

        <xs:simpleType name="messageTypeType">
                <xs:restriction base="xs:integer">
                        <xs:enumeration value="4"/>
                        <xs:enumeration value="5"/>
                </xs:restriction>
        </xs:simpleType>
        <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: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: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>
```

SystemStatus.xsd file

```
<!--
        File:           SystemStatus.xsd
        Version:        1.0
        Date:           22 August 2008
-->
<xs:schema version="1.0" 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" xmlns:lrit="http://gisis.imo.org/XML/LRIT/types/2008" elementFormDefault="qualified">

        <xs:import namespace="http://gisis.imo.org/XML/LRIT/types/2008" schemaLocation="Types.xsd"/>

        <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
        Version:        1.2
        Date:           07 December 2010
-->
<xs:schema version="1.0" 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:simpleType name="aspLRITIDType">
                <xs:restriction base="lritIDType">
                        <xs:pattern value="[4][0-9]{3}"/>
                </xs:restriction>
        </xs:simpleType>
        <xs:simpleType name="cspLRITIDType">
                <xs:restriction base="lritIDType">
```

```
                <xs:pattern value="[4][0-9]{3}"/>
            </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})(20[0-2][0-9])(0[1-9]|1[0-2])(0[1-9]|[1-2][0-9]|3[0-1])([0-1][0-9]|2[0-3])([0-5][0-9])([0-5][0-9])([0-9]{5})"/>
            </xs:restriction>
        </xs:simpleType>
        <xs:simpleType name="refIDType">
            <xs:restriction base="xs:string">
                <xs:pattern value="()|(([0-9]{4})(20[0-2][0-9])(0[1-9]|1[0-2])(0[1-9]|[1-2][0-9]|3[0-1])([0-1][0-9]|2[0-3])([0-5][0-9])([0-5][0-9])([0-9]{5}))"/>
            </xs:restriction>
        </xs:simpleType>
        <xs:simpleType name="imoNumType">
            <xs:restriction base="xs:string">
                <xs:pattern value="[0-9]{7}"/>
            </xs:restriction>
        </xs:simpleType>
        <xs:simpleType name="shipNameType">
            <xs:restriction base="xs:string">
                <xs:minLength value="0"/>
                <xs:maxLength value="50"/>
            </xs:restriction>
```

```
</xs:simpleType>
<xs:simpleType name="mmsiNumType">
        <xs:restriction base="xs:string">
                <xs:pattern value="[0-9]{9}"/>
        </xs:restriction>
</xs:simpleType>
<xs:simpleType name="testType">
        <xs:restriction base="xs:integer">
                <xs:enumeration value="0"/>
                <xs:enumeration value="1"/>
        </xs:restriction>
</xs:simpleType>
<xs:simpleType name="responseTypeType">
        <xs:restriction base="xs:integer">
                <xs:enumeration value="1"/>
                <xs:enumeration value="2"/>
                <xs:enumeration value="3"/>
                <xs:enumeration value="4"/>
        </xs:restriction>
</xs:simpleType>
<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]\.[eEwW])|([0][8-9][0-9]\.[0-5][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]\.[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="ddpVersionNumOrIncrementalVersionType">
        <xs:restriction base="xs:string">
                <xs:pattern value="[0-9]+(:[0-9]+)?"/>
        </xs:restriction>
</xs:simpleType>
<xs:simpleType name="pricingVersionNumType">
        <xs:restriction base="xs:positiveInteger"/>
</xs:simpleType>
<xs:simpleType name="locodeType">
        <xs:restriction base="xs:string">
                <xs:pattern value="[A-Z]{2}([A-Z0-9]){3}"/>
        </xs:restriction>
</xs:simpleType>
<xs:simpleType name="imoPortFacilityNumberType">
        <xs:restriction base="xs:string">
                <xs:pattern value="[A-Z]{2}([A-Z0-9]){3}-[0-9]{4}"/>
        </xs:restriction>
</xs:simpleType>
<xs:simpleType name="placeCodeType">
        <xs:restriction base="xs:string">
                <xs:pattern value="[A-Z]{3}([0-9]){3}"/>
        </xs:restriction>
</xs:simpleType>
<xs:simpleType name="percentageValueType">
        <xs:restriction base="xs:float">
                <xs:pattern value="[0-9]+(\.[0-9]{1,2})?"/>
        </xs:restriction>
</xs:simpleType>
<xs:simpleType name="priceValueType">
```

```
		<xs:restriction base="xs:float">
			<xs:pattern value="[0-9]+(\.[0-9]{1,4})?"/>
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="currencyType">
		<xs:restriction base="xs:string">
			<xs:pattern value="[A-Z]{3}"/>
		</xs:restriction>
	</xs:simpleType>
	<xs:complexType name="polygonType">
		<xs:sequence>
			<xs:element name="Caption" type="xs:string" minOccurs="0" form="qualified"/>
			<xs:element name="PosList" type="polygonPosListType" form="qualified"/>
		</xs:sequence>
		<xs:attribute name="areaID" type="xs:string" use="required"/>
	</xs:complexType>
	<xs:simpleType name="posType">
		<xs:restriction base="xs:string">
			<xs:pattern value="\s*-?[0-9]{1,3}\.[0-9]{2}\s+-?[0-9]{1,2}\.[0-9]{2}\s*"/>
		</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]{1,2}\.[0-9]{2}\s*)(\s+-?[0-9]{1,3}\.[0-9]{2}\s+-?[0-9]{1,2}\.[0-9]{2}\s*){2,}"/>
		</xs:restriction>
	</xs:simpleType>
</xs:schema>
```

WSDLs files

DC.wsdl file

```
<!--
	File:		DC.wsdl
	Version:	1.0
	Date:		22 August 2008
-->
<wsdl:definitions name="dc" targetNamespace="http://gisis.imo.org/XML/LRIT/2008" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
xmlns:tns="http://gisis.imo.org/XML/LRIT/2008" xmlns:posrep="http://gisis.imo.org/XML/LRIT/positionReport/2008"
xmlns:posreq="http://gisis.imo.org/XML/LRIT/positionRequest/2008" xmlns:surpic="http://gisis.imo.org/XML/LRIT/sarSurpicRequest/2008"
xmlns:receipt="http://gisis.imo.org/XML/LRIT/receipt/2008" xmlns:ddpNotification="http://gisis.imo.org/XML/LRIT/ddpNotification/2008"
xmlns:ddpUpdate="http://gisis.imo.org/XML/LRIT/ddpUpdate/2008" xmlns:systemStatus="http://gisis.imo.org/XML/LRIT/systemStatus/2008"
xmlns:pricingNotification="http://gisis.imo.org/XML/LRIT/pricingNotification/2008" xmlns:pricingUpdate="http://gisis.imo.org/XML/LRIT/pricingUpdate/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:import namespace="http://gisis.imo.org/XML/LRIT/positionReport/2008" schemaLocation="ShipPositionReport.xsd"/>
			<xs:import namespace="http://gisis.imo.org/XML/LRIT/positionRequest/2008" schemaLocation="ShipPositionRequest.xsd"/>
			<xs:import namespace="http://gisis.imo.org/XML/LRIT/sarSurpicRequest/2008" schemaLocation="SARSURPICRequest.xsd"/>
			<xs:import namespace="http://gisis.imo.org/XML/LRIT/receipt/2008" schemaLocation="Receipt.xsd"/>
			<xs:import namespace="http://gisis.imo.org/XML/LRIT/ddpNotification/2008" schemaLocation="DDPNotification.xsd"/>
			<xs:import namespace="http://gisis.imo.org/XML/LRIT/ddpRequest/2008" schemaLocation="DDPRequest.xsd"/>
			<xs:import namespace="http://gisis.imo.org/XML/LRIT/ddpUpdate/2008" schemaLocation="DDPUpdate.xsd"/>
			<xs:import namespace="http://gisis.imo.org/XML/LRIT/systemStatus/2008" schemaLocation="SystemStatus.xsd"/>
			<xs:import namespace="http://gisis.imo.org/XML/LRIT/pricingNotification/2008" schemaLocation="PricingNotification.xsd"/>
			<xs:import namespace="http://gisis.imo.org/XML/LRIT/pricingUpdate/2008" schemaLocation="PricingUpdate.xsd"/>

			<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="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="SARSURPICRequestRequest">
                        <wsdl:part name="params" element="surpic:SARSURPICRequest"/>
                </wsdl:message>
                <wsdl:message name="SARSURPICRequestResponse">
                        <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="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:message name="PricingNotificationRequest">
        <wsdl:part name="params" element="pricingNotification:PricingNotification"/>
</wsdl:message>
<wsdl:message name="PricingNotificationResponse">
        <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsdl:message name="PricingUpdateRequest">
        <wsdl:part name="params" element="pricingUpdate:PricingUpdate"/>
</wsdl:message>
<wsdl:message name="PricingUpdateResponse">
        <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsdl:portType name="dcPortType">
        <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="SARSURPICRequest">
                <wsdl:input message="tns:SARSURPICRequestRequest"/>
                <wsdl:output message="tns:SARSURPICRequestResponse"/>
        </wsdl:operation>
        <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:operation name="PricingNotification">
                <wsdl:input message="tns:PricingNotificationRequest"/>
                <wsdl:output message="tns:PricingNotificationResponse"/>
        </wsdl:operation>
        <wsdl:operation name="PricingUpdate">
                <wsdl:input message="tns:PricingUpdateRequest"/>
                <wsdl:output message="tns:PricingUpdateResponse"/>
        </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="SARSURPICRequest">
            <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="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:operation name="PricingNotification">
            <soap12:operation soapAction=""/>
            <wsdl:input>
                <soap12:body use="literal"/>
            </wsdl:input>
            <wsdl:output>
                <soap12:body use="literal"/>
            </wsdl:output>
        </wsdl:operation>
        <wsdl:operation name="PricingUpdate">
            <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="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
        Version:        1.0
        Date:           22 August 2008
-->
<wsdl:definitions name="ddp" targetNamespace="http://gisis.imo.org/XML/LRIT/2008" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
xmlns:tns="http://gisis.imo.org/XML/LRIT/2008" xmlns:ddpRequest="http://gisis.imo.org/XML/LRIT/ddpRequest/2008"
xmlns:receipt="http://gisis.imo.org/XML/LRIT/receipt/2008" 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:import namespace="http://gisis.imo.org/XML/LRIT/ddpRequest/2008" schemaLocation="DDPRequest.xsd"/>
                        <xs:import namespace="http://gisis.imo.org/XML/LRIT/receipt/2008" schemaLocation="Receipt.xsd"/>
                        <xs:import namespace="http://gisis.imo.org/XML/LRIT/systemStatus/2008" schemaLocation="SystemStatus.xsd"/>

                        <xs: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:message name="SystemStatusResponse">
        <wsdl:part name="params" element="tns:Response"/>
</wsdl:message>

<wsdl:portType name="ddpPortType">

        <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="SystemStatus">
                <wsdl:input message="tns:SystemStatusRequest"/>
                <wsdl:output message="tns:SystemStatusResponse"/>
        </wsdl:operation>

</wsdl:portType>

<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>
                        <soap12:body use="literal"/>
                </wsdl:input>
                <wsdl:output>
                        <soap12:body use="literal"/>
                </wsdl:output>
        </wsdl:operation>

    </wsdl:binding>

    <wsdl:service name="ddpService">

        <wsdl:port name="ddpPort" binding="tns:ddpServiceBinding">
                <soap12:address location="http://localhost:8080/ddp"/>
        </wsdl:port>
    </wsdl:service>
</wsdl:definitions>
```

IDE-DC.wsdl file

```
<!--
        File:           IDE-DC.wsdl
        Version:        1.0
        Date:           22 August 2008
-->
<wsdl:definitions name="ide" targetNamespace="http://gisis.imo.org/XML/LRIT/2008" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
xmlns:tns="http://gisis.imo.org/XML/LRIT/2008" xmlns:posrep="http://gisis.imo.org/XML/LRIT/positionReport/2008"
xmlns:posreq="http://gisis.imo.org/XML/LRIT/positionRequest/2008" xmlns:surpic="http://gisis.imo.org/XML/LRIT/sarSurpicRequest/2008"
xmlns:receipt="http://gisis.imo.org/XML/LRIT/receipt/2008" xmlns:systemStatus="http://gisis.imo.org/XML/LRIT/systemStatus/2008"
xmlns:journalReport="http://gisis.imo.org/XML/LRIT/journalReport/2008" xmlns:pricingRequest="http://gisis.imo.org/XML/LRIT/pricingRequest/2008"
xmlns:pricingUpdate="http://gisis.imo.org/XML/LRIT/pricingUpdate/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:import namespace="http://gisis.imo.org/XML/LRIT/positionReport/2008" schemaLocation="ShipPositionReport.xsd"/>
                        <xs:import namespace="http://gisis.imo.org/XML/LRIT/positionRequest/2008" schemaLocation="ShipPositionRequest.xsd"/>
                        <xs:import namespace="http://gisis.imo.org/XML/LRIT/sarSurpicRequest/2008" schemaLocation="SARSURPICRequest.xsd"/>
                        <xs:import namespace="http://gisis.imo.org/XML/LRIT/receipt/2008" schemaLocation="Receipt.xsd"/>
                        <xs:import namespace="http://gisis.imo.org/XML/LRIT/systemStatus/2008" schemaLocation="SystemStatus.xsd"/>
                        <xs:import namespace="http://gisis.imo.org/XML/LRIT/journalReport/2008" schemaLocation="JournalReport.xsd"/>
                        <xs:import namespace="http://gisis.imo.org/XML/LRIT/pricingRequest/2008" schemaLocation="PricingRequest.xsd"/>
                        <xs:import namespace="http://gisis.imo.org/XML/LRIT/pricingUpdate/2008" schemaLocation="PricingUpdate.xsd"/>

                        <xs: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="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="SARSURPICRequestRequest">
        <wsdl:part name="params" element="surpic:SARSURPICRequest"/>
    </wsdl:message>
    <wsdl:message name="SARSURPICRequestResponse">
        <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="PricingRequestRequest">
        <wsdl:part name="params" element="pricingRequest:PricingRequest"/>
  </wsdl:message>
  <wsdl:message name="PricingRequestResponse">
        <wsdl:part name="params" element="tns:Response"/>
  </wsdl:message>

  <wsdl:message name="PricingUpdateRequest">
        <wsdl:part name="params" element="pricingUpdate:PricingUpdate"/>

</wsdl:message>
  <wsdl:message name="PricingUpdateResponse">
        <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="SARSURPICRequest">
              <wsdl:input message="tns:SARSURPICRequestRequest"/>
              <wsdl:output message="tns:SARSURPICRequestResponse"/>
```

```
		</wsdl:operation>
		<wsdl:operation name="Receipt">
			<wsdl:input message="tns:ReceiptRequest"/>
			<wsdl:output message="tns:ReceiptResponse"/>
		</wsdl:operation>
		<wsdl:operation name="SystemStatus">
			<wsdl:input message="tns:SystemStatusRequest"/>
			<wsdl:output message="tns:SystemStatusResponse"/>
		</wsdl:operation>
		<wsdl:operation name="JournalReport">
			<wsdl:input message="tns:JournalReportRequest"/>
			<wsdl:output message="tns:JournalReportResponse"/>
		</wsdl:operation>
		<wsdl:operation name="PricingRequest">
			<wsdl:input message="tns:PricingRequestRequest"/>
			<wsdl:output message="tns:PricingRequestResponse"/>
		</wsdl:operation>
		<wsdl:operation name="PricingUpdate">
			<wsdl:input message="tns:PricingUpdateRequest"/>
			<wsdl:output message="tns:PricingUpdateResponse"/>
		</wsdl:operation>
	</wsdl:portType>

	<wsdl:binding name="ideServiceBinding" type="tns:idePortType">
		<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="SARSURPICRequest">
            <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>
                <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="PricingRequest">
                <soap12:operation soapAction=""/>
                <wsdl:input>
                        <soap12:body use="literal"/>
                </wsdl:input>
                <wsdl:output>
                        <soap12:body use="literal"/>
                </wsdl:output>
        </wsdl:operation>
        <wsdl:operation name="PricingUpdate">
                <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="ideService">

        <wsdl:port name="idePort" binding="tns:ideServiceBinding">
                <soap12:address location="http://localhost:8080/ide"/>
        </wsdl:port>
    </wsdl:service>
</wsdl:definitions>
```

IDE-DDP.wsdl file

```
<!--
        File:           IDE-DDP.wsdl
        Version:        1.0
        Date:           22 August 2008
-->
<wsdl:definitions name="ide" targetNamespace="http://gisis.imo.org/XML/LRIT/2008" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
xmlns:tns="http://gisis.imo.org/XML/LRIT/2008" xmlns:receipt="http://gisis.imo.org/XML/LRIT/receipt/2008"
xmlns:ddpNotification="http://gisis.imo.org/XML/LRIT/ddpNotification/2008" xmlns:ddpUpdate="http://gisis.imo.org/XML/LRIT/ddpUpdate/2008"
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:import namespace="http://gisis.imo.org/XML/LRIT/ddpNotification/2008" schemaLocation="DDPNotification.xsd"/>
                        <xs:import namespace="http://gisis.imo.org/XML/LRIT/ddpUpdate/2008" schemaLocation="DDPUpdate.xsd"/>
                        <xs:import namespace="http://gisis.imo.org/XML/LRIT/systemStatus/2008" schemaLocation="SystemStatus.xsd"/>
                        <xs:import namespace="http://gisis.imo.org/XML/LRIT/receipt/2008" schemaLocation="Receipt.xsd"/>

                        <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="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="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="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: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>
```