

DEVELOPMENTAL AND INTEGRATION TESTING

GUIDANCE NOTES FOR LRIT DATA CENTRES

1 General

1.1 This note provides guidance to LRIT Data Centres (DCs) to be tested on joining the **testing environment** of the LRIT system and moving on afterwards, on satisfactory completion of developmental testing, to the **production environment** of the LRIT system and should be read together with the Protocols and arrangements for the prototype, development and integration and modification testing phases of the LRIT system (Version 2) (the Protocols) which are set out in the annex to MSC.1/Circ.1294.

1.2 Contracting Government(s) establishing DCs wishing to undergo developmental testing should notify to this end to the Organization and communicate¹, as soon as possible and without delay, the information specified in regulation V/19-1.8.2 and paragraphs 5.2, 8.1 or 8.2, 8.3.2, 11.2 and 16.1.1 of the Revised performance standards and functional requirements for the long-range identification and tracking of ships (Revised performance standards) adopted by resolution MSC.263(84) and, a list with the names and contact details of the authorized testing Application Service Provider¹ (ASP) together with any associated conditions of authorization.

1.3 Related information is also provided in the LRIT Data Distribution Plan - Accessing and entering information - Guidance notes for Contracting Governments (DDP-GN-01).

2 Pre-developmental testing process

2.1 A single shared username and password will be allocated to each Contracting Government (and non-metropolitan territory or special administrative region, subject to consultations with the Contracting Government concerned) for accessing the **testing environment** of the LRIT Data Distribution Plan (DDP). This information will be sent also, by e-mail, to the person in charge of the DC established by the Contracting Government or providing services to the Contracting Government, as the case maybe, together with guidance² on how to access the **testing environment** of the DDP.

2.2 An individual username and password will be allocated to the person in charge of the DC and the recognized ASP (in case the Contracting Government concerned advises the Organization that it wishes the see the recognized ASP being granted access) working with the DC for use within the **production environment** of the DDP, in accordance with the level of access specified for each type of user in the Technical specification for the LRIT Data Distribution Plan³. This information will be sent on an individual basis by a separate official letter to the person in charge of the DC and the recognized ASP, as the case may be, in accordance with the information provided by each Contracting Government. However, if any one of the designated persons has already an existing IMO Web Account, as described in Circular letter No.2892, the Secretariat will assign the relevant permissions for accessing the **production environment** of the DDP in his/her existing IMO Web Account.

2.3 In order to commence developmental testing and in accordance with the provisions of section 3.3.2 of the Protocols, DCs to be tested should:

¹ Paragraphs 8.1.1 to 8.1.8 and Appendix 1 of MSC.1/Circ.1298 provide salient guidance on communication of information to the Organization.

- .1 ensure that the Contracting Government(s) establishing the DC and the Contracting Government(s) to which the DC is providing service have advised to this end the Organization. In this respect, the Secretariat is prepared to provide, upon request and taking into account the peculiarities involved, advice and guidance in relation to the contents of such communications in case the DC to be tested is to provide services to more than one Contracting Government;
- .2 ensure that the Contracting Government(s) establishing the DC and the Contracting Government(s) to which the DC is providing services have included in at least in the **testing environment** of the DDP the information required in connection with the geographical areas;
- .3 ascertain that the polygons of the geographical areas which have been included by the Contracting Government(s) in the **testing environment** of the DDP comply with the constraints provided in section 5 of the Technical specifications of the LRIT Data Distribution Plan;
- .4 implement and test the aforesaid polygons and confirm to the Organization that they have done so and that these have not caused any errors or malfunctions;
- .5 implement the released version of the XML schemas⁴; and
- .6 undertake and satisfactorily complete the Pre-tests specified in appendix 2 of the annex to the Protocols and forward the completed pre-test documentation to the Organization.

2.4 When a Contracting Government(s) advise(s) the Organization that its/their DC is ready to commence developmental testing, the Secretariat will, *inter alia*, forward a word format version of appendix 2 of the annex to the Protocols and of the Pre-developmental testing report set out in annex 1 which will be tailor-made so as to be identifiable as for use only by the DC to be tested.

2.4.1 In order to ensure a systematic approach and avoid unnecessary communications or correspondence as result of errors, after carrying out all the actions specified in paragraphs 2.3.2 to 2.3.6, DCs to be tested should complete and submit the Pre-developmental testing report which they will receive from the Secretariat.

2.4.2 The Pre-developmental testing report should be signed by the person the Contracting Government(s) concerned have advised the Organization as being in charge of the operation of the DC to be tested. In case it is signed by any other person it will not be processed and will need to be resubmitted.

2.4.3 The Pre-developmental testing report to be submitted does not need to be accompanied by appendix 2 to the annex of the Protocols completed so as to show that the required pre-tests had been carried out and/or any related records or logs attesting to this end. However, those concerned are expected to complete as necessary appendix 2 using the form provided by the Secretariat. The aforesaid should be kept together with any other supporting documentation and should be immediately forwarded to the Organization when requested. The Secretariat does not expect that the aforesaid documents need to be kept beyond the last day of the session of the Committee, when it considers and accepts the first report of the LRIT Coordinator on the review of the performance of the DC in question.

2.5 In accordance with the decisions of the Maritime Safety Committee (the Committee) and as provided in the Protocols, the Secretariat is obliged, before processing any Pre-developmental testing report, to check whether the Contracting Government(s), establishing or using the DC to be tested, have included in the DDP the geographical coordinate points for the geographical areas they are obliged, in accordance with the provisions of regulation V/19-1.8.2 and paragraph 11.2.2 of the Revised performance standards, to communicate information to the Organization.

2.5.1 Subject to the provisions of paragraphs 2.5.2 to 2.6, the aforesaid instruction of the Committee will be executed in two stages and separately in relation to the developmental and integration testing phases.

2.5.1.1 For the purposes of the developmental testing phase, the Secretariat will be checking whether the required information has been included in the testing environment of the DDP and will not be investigating whether the information has been also included in the production environment of the DDP.

2.5.1.2 For the purposes of the integration testing phase, the Secretariat will be checking whether the required information has been included in the production environment of the DDP and will not be investigating whether the information is identical to that which was included in the testing environment of the DDP.

2.5.2 As the provisions of paragraph 11.2.2.4 of the Revised performance standards relate to the provisions of regulation V/19-1.8.1.3, which establishes the right of a Contracting Government to request and receive LRIT information within a certain area off its coast, the Secretariat has decided (and will inform the Committee) not to apply strictly the aforesaid instructions of the Committee (i.e. Contracting Governments would not be required to include customs areas in the DDP). Thus, a “No” entry can be recorded against item 1.4 of the Pre-developmental testing report.

2.5.2.1 However, if the entry against item 1.4 of the Pre-developmental testing report is “Yes” and no related entries have been made in the **testing environment** of the DDP, the Pre-developmental testing report will not be processed and will be deemed as containing false statements. In such a case, either the Contracting Government(s) concerned will need to enter the aforesaid information in the **testing environment** of the DDP or a corrected Pre-developmental testing report will need to be submitted.

2.5.3 Notwithstanding the aforesaid, Contracting Governments contemplating to use custom geographical areas (within the 1,000 nautical miles sea area) are advised to include such areas in the **testing environment** of the DDP so as to allow the performance of the appropriate tests.

2.6 Contracting Governments which are landlocked States are not required to communicate to the Organization any information in accordance with the provisions of regulation V/19-1.8.2 and paragraph 11.2.2 of the Revised performance standards.

2.7 Subject to the provisions of paragraph 2.6, DCs providing services to more than a single Contracting Government are expected, before entering “Yes” against item 1.1, 1.2 and 1.3 of the Pre-developmental testing report, to ascertain that all Contracting Governments to which the DC will be providing services have included the corresponding information in the **testing environment** of the DDP.

2.7.1 If the entry against either item 1.1 or item 1.2 or item 1.3 of the Pre-developmental testing report is “Yes” and no related entries have been made in the **testing environment** of the

DDP for anyone of the Contracting Governments to which the DC will be providing services, the Pre-developmental testing report will not be processed and will be deemed as containing false statements. In such a case, the Contracting Government(s) concerned will need to enter the relevant information in the **testing environment** of the DDP and the Pre-developmental testing report will need to be resubmitted after the entries have been made.

2.8 As soon as it has been ascertained that the submitted Pre-developmental testing report is in order and all required information has been entered in the **testing environment** of the DDP, the Secretariat will provide the International LRIT Data Exchange (IDE), the DCs which will be assisting the testing of the DC to be tested and the LRIT Coordinator with copies of the Pre-developmental testing report and will copy the related communication to the DC to be tested.

2.9 The Secretariat would then request the IDE and the 1st and 2nd assisting DCs to advise the Organization, no later than three working days after receiving the Pre-developmental testing report, whether they are comfortable with the results of the pre-developmental testing process and ready to proceed with the developmental testing of the DC to be tested.

2.10 As soon as a positive response is received from the IDE and the 1st and 2nd assisting DCs, the Secretariat will advise the DC to be tested, the IDE, the 1st and 2nd assisting DCs and the LRIT Coordinator that the testing of the DC to be tested can commence.

2.11 The Protocols stipulate that the Secretariat, in consultation with the DC to be tested, the IDE and the 1st and 2nd assisting DCs should determine and advise the date and times on which the developmental testing would commence and advise those concerned of the date by which the tests should be preferably completed.

2.11.1 However, subject to paragraph 2.11.1, the Secretariat has decided (and will inform the Committee) to leave the practical arrangements in relation to the commencement of the testing to be agreed amongst those concerned and invoke the provisions of the Protocols only if those concerned are unable to reach such agreement.

2.11.1.1 The flexibility allowed by paragraph 2.11.1 is conditional on the understanding that testing can commence at any time after either the Secretariat has advised that testing can commence or the DC to be tested has confirmed to the IDE, the 1st and 2nd assisting DCs and the Secretariat (in relation to the DDP server) that it has successfully installed the PKI certificate for the **testing environment** of the LRIT system, whichever of the two events occurs later.

2.11.2 The Secretariat, recognizing that the DC to be tested may encounter difficulties or problems during the testing process or the need to make for example changes or modifications in the software solution used before continuing the testing process, has also decided (and will inform the Committee) not to specify a date by which the testing process should be completed, on the understanding that those concerned would endeavour to satisfactorily complete all tests as soon as it practically possible.

3 PKI certificate for the testing environment of the LRIT system

3.1 The DC to be tested, as soon as its Pre-developmental testing report has been cleared and forwarded by the Secretariat to the IDE, the 1st and 2nd assisting DCs and the LRIT Coordinator, should request from the Secretariat the issue of a PKI certificate for the **testing environment** of the LRIT system. Annex 2 provides guidance on requesting the issue of a PKI certificate.

3.1.1 The request for the issue of such a PKI certificate should originate from the designated national point of contact for LRIT-related matters of the Contracting Government establishing

the DC or from the person in charge of the DC and should be sent to the Secretariat by e-mail (LRIT@imo.org). The e-mail should only request the issue of a PKI certificate and should not deal with any other matters.

3.2 DCs requesting the issue of more than one PKI certificate should explain in the request the reasons for doing so and justifying the need(s) in detail so as to enable the Secretariat to consider the actions to be taken and to report accordingly to the Committee.

3.3 In accordance with paragraph 3.3.3.1.1 of the Protocols, the DC to be tested is required to confirm to the IDE, the 1st and 2nd assisting DCs and the Secretariat (in relation to the DDP server) that it has successfully installed the PKI certificate.

4 Developmental testing phase

4.1 Subject to the provisions of sections 5 and 6, the DC to be tested should proceed in accordance with the procedures set out in paragraph 3.3.3.1.2 to 3.3.3.1.10 of the Protocols.

4.2 The Secretariat will forward, either with the advise that the testing of the DC to be tested can commence or under a separate cover, a word format version of appendix 2 of the annex to the Protocols (the Report of test results) and of the Summary report set out in appendix 5 of the annex to the Protocols (the Summary report) which will be tailor-made so as to be identifiable as for use only by the DC to be tested, together with associated guidance notes for their completion.

4.3 On satisfactory completion of the test procedures and test cases, the DC being tested should forward to the Organization the completed Report of test results and the completed Summary report received from the Secretariat.

4.4 The Report of test results to be submitted does not need to be accompanied by any related records or logs attesting that the various tests have been carried out or providing related information. However, the aforesaid should be kept together with any other supporting documentation and should be immediately forwarded to the Organization when requested. The Secretariat does not expect that the aforesaid documents need to be kept beyond the last day of the session of the Committee, when it considers and accepts the first report of the LRIT Coordinator on the review of the performance of the DC in question.

5 Accelerated testing programme

5.1 DCs to be tested which are based on and implementing the same design and the same software and hardware solutions, used previously in at least two DCs which have been fully tested and are operating in the **production environment** of the LRIT system could be considered for testing under the accelerated testing programme.

5.2 In line with the provisions of paragraph 3.3.2.1.1 of the Protocols, Contracting Government(s) establishing a DC which qualifies for accelerated testing and wishing to undergo developmental testing should notify to this end the Organization.

5.2.1 The aforesaid notification should be accompanied by the statement set out in annex 3. A word format version of the statement tailor-made so as to be identifiable as for use only by the DC to be tested can be requested from the Secretariat.

5.3 Subject to the provisions of sections 2, 3 and 6 and of paragraphs 5.4 and 5.5, the Pre-developmental testing process specified in paragraph 3.3.2 of the Protocols, the Developmental testing process specified in paragraph 3.3.3 of the Protocols and the related provisions of the present guidance note should be observed.

5.4 Subject to the provisions of section 6, in lieu of the test procedures and test cases specified in appendix 2 of the annex to the Protocols for the **testing environment**, DCs which qualify for accelerated testing should undergo and satisfactorily complete at least the test cases specified in annex 4, in case the DC to be tested is an NDC. It should be noted that the accelerated testing programme only applies in relation to the test which are required to be carried out during the developmental testing phase.

5.5 Subject to the provisions of paragraph 4.4, DCs which qualify for accelerated testing should use, complete and forward to the Organization on satisfactory completion of the required tests, in lieu of the testing documentation set out in appendix 2 and the summary report set out in appendix 5 of the annex to the Protocols, the Report of test results and the Summary report for the accelerated testing programme which will be provided by the Secretariat and will be tailor-made so as to be identifiable as for use only by the DC to be tested.

6 Additional test cases and procedures

6.1 Subject to the provisions of section 5, all DCs are required to undergo and satisfactorily complete the test procedures and test cases specified in appendix 2 of the annex to the Protocols.

6.2 In addition, all DCs are required to undergo and satisfactorily complete, in the **testing environment**, additional test cases as set out in annex 5 when a:

.1 National (NDC) LRIT Data Centres:

- .1 is to undergo testing for first time and is contemplating to start providing services to Contracting Government(s) other than that it is establishing the centre;
- .2 operating in the production environment, is contemplating to start providing services to Contracting Government(s) other than that established the centre;
- .3 operating in the production environment, is contemplating to become a RDC or a CDC; or
- .4 operating in the production environment and already providing services to other Contracting Government(s), is contemplating to provide services to Contracting Government(s) which was/were not included in previous testing;

.2 Regional (RDC) or Cooperative (CDC) LRIT Data Centres:

- .1 is to undergo testing for first time; or
- .2 operating in the production environment, is contemplating to provide services to other Contracting Government(s) which was/were not included in previous testing.

6.3 An NDC contemplating to start providing services to Contracting Government(s) other than that it is establishing the centre and an RDC or CDC does not have to undergo all of the test procedures and cases set out in appendix 2 of the annex to the Protocols for each and every one of the Contracting Government(s) associated with the LRIT Data Centre (DC) (i.e. establishing, or using the services of, the DC), provided

- .1 test cases DC-1.1, DC-1.4 and DC-4.1 are carried out and satisfactorily completed for all Contracting Governments associated with the DC (i.e. in order to check the functionality of receiving a valid position report from the IDE; ascertain that LRIT Data User (LDU) address is registered with the DC; and verify that the DC can receive a valid receipt message from the IDE for each LDU);
- .2 test cases DC-2.1 and DC-15.1 are carried out and satisfactorily completed for at least two Contracting Governments (which should preferably be the ones presenting the more complexities in the testing process);
- .3 additional further tests are carried out so as to test all possible foreseeable operational scenarios taking into account the peculiarities associated with the Contracting Government(s) which would be served by the DC; and
- .4 a detailed test plan is submitted to the Organization before the commencement of any tests. The Organization should in turn provide the aforesaid information and a copy of the proposed test plan to the IDE, the DCs which would be identified to assist its testing and to the LRIT Coordinator.

6.4 Subject to the provisions of paragraph 4.4, DCs which are required to undergo and satisfactory complete the additional test cases as specified in paragraphs 6.2 and 6.3 and annex 5, should use, complete and forward to the Organization on satisfactory completion of all required tests, in lieu of the testing documentation set out in appendix 2 and the summary report set out in appendix 5 of the annex to the Protocols, the Report of test results and the Summary report for the developmental testing phase which will be provided by the Secretariat and will be tailor-made so as to be identifiable as for use only by the DC to be tested.

7 PKI certificate for the production environment of the LRIT system

7.1 The DC being tested, as soon as it is advised of the authorization of the LRIT Coordinator and after ensuring that the Contracting Government(s) establishing the DC and the Contracting Government(s) to which the DC is providing services, other than the ones which are landlocked States, have included in the **production environment** of the DDP the information required in paragraphs 11.2.2.1, 11.2.2.2 and 11.2.2.3 of the Revised performance standards in connection with the geographical areas, should request from the Secretariat, the issue of a PKI certificate for the **production environment** of the LRIT system. Annex 2 provides guidance on requesting the issue of a PKI certificate.

7.2 The Secretariat would not issue such a PKI certificate unless the authorization of the LRIT Coordinator has been received and the information required in paragraphs 11.2.2.1, 11.2.2.2 and 11.2.2.3 of the Revised performance standards has been entered within the **production environment** of the DDP by each of the Contracting Government which will be associated with the DC being tested.

7.3 The request for the issue such a PKI certificate should originate from the designated national point of contact for LRIT-related matters of the Contracting Government establishing the DC or from the person in charge of the DC and should be sent to the Secretariat by e-mail (LRIT@imo.org). The e-mail should only request the issue of a PKI certificate and should not deal with any other matters.

7.4 DCs requesting the issue of more than one PKI certificate should explain in the request the reasons for doing so and justifying the need(s) in detail so as to enable the Secretariat to consider the actions to be taken and to report accordingly to the Committee.

7.5 The DC to be tested is required should confirm to the IDE and the Secretariat that it has successfully installed the PKI certificate.

8 Integration testing phase

8.1 Following the issue to the DC being tested of the PKI certificate, the Secretariat will advise the IDE and the DCs operating in the production environment of the LRIT system that the DC in question has been authorized to become part of the **production environment** of the LRIT system. A copy of this communication will also be sent to the DC being tested and to the LRIT Coordinator.

8.2 The DC being tested should undergo and satisfactorily complete the test procedures and test cases specified in appendix 2 of the annex to the Protocols for the **production environment**.

8.2.1 The integration tests should be carried out after the time either the DC being tested has notified the IDE and the Secretariat that it has successfully installed the PKI certificate for the **production environment** or the Secretariat has advised the IDE and the DCs operating in the production environment of the LRIT system that the DC in question has been authorized to become part of the **production environment** of the LRIT system, whichever of the two occurs later.

8.3 Subject to the provisions of paragraph 4.4, the DC being tested should use, complete and forward to the Organization on satisfactory completion of the required tests, in lieu of the testing documentation set out in appendix 2 and the summary report set out in appendix 5 of the annex to the Protocols, the Report of test results and the Summary report for the **production environment** which will be provided by the Secretariat and will be tailor-made so as to be identifiable as for use only by the DC being tested.

8.4 All tests in the **production environment** of the LRIT system should be carried out and satisfactorily completed, no later than five working days after the issue of the PKI certificate for the production environment of the LRIT system.

8.5 If the DC being tested fails the integration testing or does not provide the integration testing documentation and the related summary report after the fifth working day of the issue of the PKI certificate for the **production environment** of the LRIT system, the Secretariat would revoke the PKI certificate for the **production environment** of the LRIT system and inform accordingly those operating in the **production environment**, those who participated in the developmental testing of the DC in question and the LRIT Coordinator. In this case, the DC would be treated as a DC which has not undergone any testing and should commence testing anew through the developmental and integration testing phase route.

9 Electronic communications in relation to testing issues

9.1 All electronic communications should originate from the e-mail addresses which the Contracting Governments concerned have notified the Organization as being of those they have designated either as national point(s) of contact for LRIT-related matters or as being in charge of the operation of the DC concerned.

9.2 Changes in such e-mail addresses should be communicated to the Organization in writing either by the Contracting Government concerned or by the designated national point of contact for LRIT-related matters in cases the Contracting Government concerned has advised the Organization in writing that such a person is so authorized.

10 Designation of substitutes for signing Pre-developmental testing reports or Summary reports

10.1 In case the person in charge of a DC finds it necessary to designate a substitute to sign on or submit on his/her behalf either a Pre-developmental testing report or a Summary report, the necessary arrangements should be made in writing with the Secretariat prior to such a report is being signed and/or submitted.

11 Admissibility of the results of tests

11.1 The results of any tests will be deemed admissible only if the tests in question have been carried out after the time specified in paragraph 2.11.1.1 with respect to developmental testing and after the time specified in paragraph 8.2.1 in relation to integration testing.

12 Commencement of operation of a DC in the production environment of the LRIT system

12.1 The Secretariat will inform the Committee that the DC being tested should be considered as being in production as from the date and time it satisfactorily completes the integration testing into the production of the LRIT system as recorded in the Summary report for the integration testing of the DC in question.

¹ Refer to MSC.1/Circ.1296 on Guidance on the survey and certification of compliance of ships with the requirement to transmit LRIT information.

² Refer to LRIT Data Distribution Plan - Accessing and entering information - Guidance notes for Contracting Governments (DDP-GN-01).

³ Refer to Table I-3 of annex 4 on Technical specifications for the LRIT Data Distribution Plan of the annex to MSC.1/Circ.1259/Rev.1 on Revised interim technical specification for the LRIT system.

⁴ The released version of the XML schemas may be obtained from the Secretariat in their native forms upon request. Such request should be sent to the Secretariat (LRIT@imo.org) by the person in charge of the operation of the DC concerned.

ANNEX 1

PRE-DEVELOPMENTAL TESTING REPORT^{1,2}

(to be completed and signed by the person in charge of the operation of the LRIT Data Centre which is to be tested)

<i>Environment</i>	Testing
<i>Contracting Government⁴</i>	
<i>Type of LRIT Data Centre</i>	National/Regional/Cooperative ⁵
<i>Providing services also to⁶</i>	
<i>LRIT ID (of DC)⁷</i>	

THIS IS TO CERTIFY that:

- 1 the Contracting Government(s) establishing the LRIT Data Centre (DC) and the Contracting Government(s) using the services of the DC, have included in at least the Testing environment of the DDP the information required in connection with the geographical areas:
 - 1.1 of the waters⁸ landward of the baselines for measuring the breadth of the territorial sea of the Contracting Government concerned in accordance with international law; Yes/No⁹
 - 1.2 of the territorial sea¹⁰ of the Contracting Government concerned in accordance with international law; Yes/No¹¹
 - 1.3 between the coast of the Contracting Government concerned and a distance of 1,000 nautical miles from its coast¹²; and Yes/No¹³
 - 1.4 within which the Contracting Government concerned is seeking the provision of LRIT information pursuant to the provisions of SOLAS regulation V/19-1.8.1.3, if other than that defined under item 1.3 above¹⁴; Yes/No¹⁵
- 2 it has been ascertained that the polygons of the geographical areas which have been included by each of the Contracting Governments concerned in the Testing environment of the DDP fully comply with the constraints provided in section 5 of the Technical specifications of the LRIT Data Distribution Plan; Yes/No¹⁶
- 3 the aforesaid polygons have been implemented and tested and have been found not to cause any errors or malfunctions in the operation of the DC; Yes/No¹⁷
- 4 the released version¹⁸ of the XML schemas has been implemented by the DC; and Yes/No¹⁹

5 the Pre-tests specified²⁰ in appendix 2 of the annex to the Protocols and arrangements for the prototype, development and integration and modification testing phases of the LRIT system (Version 2) which are set out in MSC.1/Circ.1294 on Long-range identification and tracking – Technical documentation (Part II) have been carried out and satisfactorily completed. Yes/No²¹

.....
(Signature²² of the person)

.....
Date²³

Name, title and contact details (telephone and facsimile numbers and e-mail address) of the person who signed above

¹ An electronic version of this report may be obtained from the Secretariat upon request.
² All entries other than signatures should be done electronically in word format.
⁴ In the space provided enter the name of the Contracting Government(s) establishing the LRIT Data Centre.
⁵ Delete as appropriate.
⁶ In the space provided enter the name(s) of the Contracting Government(s) (other than the Contracting Government(s) establishing the LRIT Data Centre) to which the LRIT Data Centre is providing services.
⁷ In the space provided enter the LRIT ID assigned to the DC.
⁸ Refer to paragraph 11.2.2.1 of the Revised performance standards and functional requirements for the Long-range identification and tracking of ships (the Revised performance standards) adopted by resolution MSC.263(84).
⁹ Delete as appropriate.
¹⁰ Refer to paragraph 11.2.2.2 of the Revised performance standards.
¹¹ Delete as appropriate.
¹² Refer to paragraph 11.2.2.3 of the Revised performance standards.
¹³ Delete as appropriate.
¹⁴ Refer to paragraph 11.2.2.4 of the Revised performance standards.
¹⁵ Delete as appropriate.
¹⁶ Delete as appropriate.
¹⁷ Delete as appropriate.
¹⁸ Refer to annex 6 of the annex to MSC.1/Circ.1259/Rev.1.
¹⁹ Delete as appropriate.
²⁰ Guidance Note: The following test procedures and test cases should be conducted: Test procedure DC-1.0, Test cases DC-1.1 and DC-1.4; Test procedure DC-2.0, Test cases DC-2.1, DC-2.2, DC-2.4, DC-2.5, DC-2.6, DC-2.7, DC-2.8 and DC-2.9; Test procedure DC-3.0, Test cases DC-3.1 and DC-3.2; Test procedure DC-6.0, Test case DC-6.1; Test procedure DC-7.0, Test case DC-7.1; Test procedure DC-8.0, Test case DC-8.1; Test procedure DC-9.0, Test case DC-9.1; Test procedure DC-10.0, Test cases DC-10.1; Test procedure DC-11.0, Test cases DC-11.1 and DC-11.2; Test procedure DC-12.0, Test case DC-12.1; Test procedure R/CDC-14.0, Test case R/CDC-14.1; Test procedure DC-15.0, Test cases DC-15.1, DC-15.2 and DC-15.3; and Test procedure DC-16.0, Test cases DC-16.1 and DC-16.2.
²¹ Delete as appropriate.
²² The part containing the signature should be scanned after it has been signed and sent to the Secretariat together with the electronically completed report.
²³ All dates should be numeric in the format DD/MM/YY.

ANNEX 2

REQUESTING THE ISSUE OF PKI CERTIFICATE

1 The request for the issue of PKI certificate(s) should originate from the designated national point of contact for LRIT-related matters of the Contracting Government establishing the DC or from the person in charge of the DC and should be sent to the Secretariat (LRIT@imo.org).

1.1 In the case of an RDC and a CDC the request should originate from the national point of contact for LRIT-related matters designated by the Contracting Government (the lead Contracting Government) which the Contracting Governments establishing the DC have authorized to communicate related information to the Organization in accordance with the provisions of paragraph 8.2 of the Revised performance standards.

1.1.1 In case, the post of the lead Contracting Government is held on an ad hoc or a rotational basis the relevant arrangements should be made known to the Organization or are known to the Organization as a result of the practices followed by the group of the Contracting Governments concerned during deliberations on LRIT-related matters with the framework of the Maritime Safety Committee.

1.2 In case the request is sent by the person in charge of the DC, the Organization will consider that the request has been made with the authority and on behalf of the Contracting Government(s) establishing the DC.

1.3 The Organization is issuing to DCs PKI certificates for the **testing** and **production environments** of the LRIT system for use only in relation to communications within the LRIT system. Another other use or attempted use of a PKI certificate issued by the Organization immediately invalidates the PKI certificate and the Secretariat in such cases will automatically proceed with its cancellation without any reference to the DC or the Contracting Governments associated with the DC in question.

1.4 DCs are obliged to forthwith inform the Organization when they have reasonable grounds to believe that a PKI certificate issue to them has been or is being compromised or attempts are made to compromise it.

2 The request for the issue of PKI certificate(s) should include the correct and full Web Service URI of the DC for the **testing** and **production environments** of the LRIT system, as appropriate. Without this information the Secretariat will be unable to activate the DC within the DDP in both environments.

3 The Web Service URI of the DC will be entered by the Secretariat into **testing** and **production environments** of the DDP at the time of issue of the PKI certificate(s).

4 If more than one PKI certificate is required per DC or if there is a need for special processing of the request, the designated national point of contact for LRIT-related matters or the person in charge of the DC should write to this end to the Secretariat, explaining and justifying the need(s) in detail so as to enable the Secretariat to consider the actions to be taken and to report accordingly to the Maritime Safety Committee.

5 By default, the IMO PKI software accepts PKCS #10 text files, and signs them using the SHA-1 hash algorithm for FIPS-compliance. This file must be generated from the DC software according to the guidelines given in paragraph 6, and be sent by email as a text file attachment.

5.1 The following text represents a fictitious example PKCS #10 certification request:

```
-----BEGIN CERTIFICATE REQUEST-----
MIIBnTCCAQYCAQAwxTELMaKGA1UEBhMCU0cxETAPBgNVBAoTCE0yQ3J5c
HRvMRIwEAYDVQQDEwlsb2NhbGhvc3QxJzAlBkgqhkiG9w0BCQEWGGFkbWluQ
HNlcnZlci5leGFtcGxlLmRvbTCBnzANBgqhkiG9w0BAQEFAAOBjQAwgYkCgYEA
r1nYY1Qrll1ruB/FqlCRrr5nvupdIN+3wF7q915tvEQoc74bnu6b8IbbGRMhzdzmVQ4Szf
VEAuMMuTHeYbPq5th7YDrTNizKKxOBnqE2KYuX9X22A1Kh49soJFg6kPb9MUgi
ZBiMlvtb7K3CHfgw5WagWnLl8Lb+ccvKZZl+8CAwEAAaAAMA0GCSqGSIb3DQE
BBAUAA4GBAHpoRp5YS55CZpy+wdigQEwjL/wSluvo+WjtpvP0YoBMJu4VMKeZi4
05R7o8oEwiPdlrriKNknFmHKIaCKTLRcU59ScA6ADEIWUzqmUzP5Cs6jrSRo3NKf
g1bd09D1K9rsQkRc9Urv9mRBIIsredGnYECNeRaK5R1yZpOowninXC
-----END CERTIFICATE REQUEST-----
```

6 The request for the issue for PKI certificate for the **testing** and **production environments** of the LRIT system should:

- .1 be sent separately for each of the environments;
- .2 include the correct and full Web Service URI of the DC for each of the environments. PKI certificates will not be issued without this information provided together with the certificate request;
- .3 be formulated so as to provide, for each of the environments, base-64-encoded PKCS #10 files with the standard certificate fields populated with information as defined below:

<i>Field Name</i>	<i>Field Value Description (Example and expected value)</i>
Bit length	Encryption strength of 1024 bit-length
Organization	Name of the LRIT system component (e.g., <i>United States National LRIT Data Centre</i>)
Organizational Unit	Unique four digit numerical LRIT ID of the LRIT system component as assigned by the Secretariat (e.g., <i>3153</i>)
Common Name	Fully qualified Domain Name (Internet DNS) of the LRIT system component (e.g., <i>dc1.contracting.gov</i>), which must exactly match the hostname part of the Web Service URI specified within the DDP.
(Others)	e.g., City, Location, etc., may be populated as appropriate.

The generated Distinguished Name for the certificate will, using sample values above, thus be of the form:

CN=dc1.contracting.gov, OU=3153, O=National LRIT Data Centre

.4 be sent in each case as a text file attached to an email sent to LRIT@imo.org.

7 The Secretariat will issue and forward the PKI certificate for each environment to the person designated as being in charge of the operation of the DC for which the PKI certificate has been requested.

8 The returned signed PKI certificate, corresponding to each request, will be valid for use only within the environment for which it has been issued.

ANNEX 3

STATEMENT

(to be completed and signed by the person in charge of the operation of the LRIT Data Centre wishing to follow the accelerating testing process)

Environment	Testing
--------------------	---------

1 Details of the LRIT Data Centre (DC) to be tested

Contracting Government ¹	
Type of LRIT Data Centre	National/ Regional /Cooperative ²
Providing services also to ³	
LRIT ID (of DC) ⁴	

2 Details of the Production DCs using the same software solution

2.1 1st LRIT Data Centre

Contracting Government ⁵	
Type of LRIT Data Centre	National/Regional/Cooperative ⁶
Providing services also to ⁷	
LRIT ID (of DC) ⁸	

2.2 2nd LRIT Data Centre

Contracting Government ⁹	
Type of LRIT Data Centre	National/Regional/Cooperative ¹⁰
Providing services also to ¹¹	
LRIT ID (of DC) ¹²	

3 *Certification of software solution*

I hereby certify that the software solution used for the LRIT Data Centre to be tested fully corresponds with the software solution used by the LRIT Data Centres specified in section 2.

.....
(Signature¹³ of the person) *Date¹⁴*

Name, title and contact details (telephone and facsimile numbers and e-mail address) of the person who signed above

1 In the space provided enter the name of the Contracting Government(s) establishing the LRIT Data Centre.
2 Delete as appropriate.
3 In the space provided enter the name(s) of the Contracting Government(s) (other than the Contracting Government(s) establishing the LRIT Data Centre) to which the LRIT Data Centre is providing services.
4 In the space provided enter the LRIT ID assigned to the DC.
5 In the space provided enter the name of the Contracting Government(s) that has established the first LRIT Data Centre.
6 Delete as appropriate.
7 In the space provided enter the name(s) of the Contracting Government(s) (other than the Contracting Government(s) that have established the first LRIT Data Centre) to which the LRIT Data Centre is providing services.
8 In the space provided enter the LRIT ID assigned to the first DC which uses the same software solution.
9 In the space provided enter the name of the Contracting Government(s) which has established the second LRIT Data Centre.
10 Delete as appropriate.
11 In the space provided enter the name(s) of the Contracting Government(s) (other than the Contracting Government(s) that have established the second LRIT Data Centre) to which the LRIT Data Centre is providing services.
12 In the space provided enter the LRIT ID assigned to the second DC which uses the same software solution.
13 The part containing the signature should be scanned after it has been signed and sent to the Secretariat together with the electronically completed report.
14 All dates should be numeric in the format DD/MM/YY.

ANNEX 4

ACCELERATED TESTING PROGRAMME

List of required test cases for the testing environment
(to be conducted by the DCs to be tested in case the DC is an NDC)

Test case	To be certified by
DC-1.1	IDE
DC-2.1 <i>(only for test cases specified in Table 2.2.2)</i>	1st-ast-DC
DC-2.2	1st-ast-DC and 2nd-ast-DC
DC-2.4	1st-ast-DC
DC-2.5	1st-ast-DC
DC-2.6	1st-ast-DC
DC-2.7	1st-ast-DC
DC-2.8	1st-ast-DC
DC-2.9	1st-ast-DC
DC-3.1	1st-ast-DC
DC-3.2	1st-ast-DC
DC-5.1	Internal Certification
DC-6.1	IDE
DC-7.1	IDE
DC-8.1	IDE
DC-9.1	IDE
DC-10.1	IDE
DC-11.1	DDP
DC-11.2	DDP
DC-12.1	DDP
DC-13.1	IDE
DC-13.2	IDE
DC-13.3	IDE
DC-14.1 <i>(only for Regional or Cooperative DCs)</i>	IDE
DC-15.1	1st-ast-DC
DC-15.2	1st-ast-DC
DC-15.3	1st-ast-DC
DC-16.1	1st-ast-DC
DC-16.2	1st-ast-DC

ANNEX 5

ADDITIONAL TEST CASES AND PROCEDURES

(to be carried out in the testing environment only)

EXPLANATORY NOTES AND GUIDANCE

ON THE CONDUCT OF TESTING OF LRIT DATA CENTRES

(reproduced from annex 7 to document MSC 86/6/1)

1 The intent of this document is to provide explanatory notes and guidance on the conduct testing of LRIT Data Centres in relation to the test cases stipulated in the Protocols and arrangements for the prototype, development, integration and modification testing phases of the LRIT system (the Protocols) when a:

- .1 National (NDC) LRIT Data Centres:
 - .1 is to undergo testing for first time and is contemplating to start providing services to Contracting Government(s) other than that it is establishing the centre;
 - .2 operating in the production environment, is contemplating to start providing services to Contracting Government(s) other than that established the centre;
 - .3 operating in the production environment, is contemplating to become a RDC or a CDC; or
 - .4 operating in the production environment and already providing services to other Contracting Government(s), is contemplating to provide services to Contracting Government(s) which was/were not included in previous testing;
- .2 Regional (RDC) or Cooperative (CDC) LRIT Data Centres:
 - .1 is to undergo testing for first time; or
 - .2 operating in the production environment, is contemplating to provide services to other Contracting Government(s) which was/were not included in previous testing.

2 The explanatory notes and guidance set out in this document should always be read together with the Protocols. Every reference to the Protocols constitutes at the same time a reference to the explanatory notes and guidance set out in this document.

3 The explanatory notes and guidance set out in this document should be observed and adhered to when conducting the test procedures and test cases specified in appendix 2 to the annex of the Protocols as specified in the table set out below. The test cases referred to in the aforesaid table are those specified in appendix 2 to the annex of the Protocols.

4 In the instances referred to in paragraph 1, when recording the results of a specific test as specified in appendix 2 of the annex to the Protocols against a test case specified in the table set

out below, it is implied that the specific test case has been conducted subject to the provisions of the explanatory notes and guidance set out in this document.

5 In the instances referred to in paragraph 1, when completing any one of the parts of the Summary report provided in appendix 5 of the annex to the Protocols, it is implied that the test cases specified in the table set out below have been conducted subject to the provisions of the explanatory notes and guidance set out in this document.

6 When an NDC is contemplating to start providing services to Contracting Government(s) other than that it is establishing the centre and an RDC or CDC before commencement of any testing should ascertain that the polygons of the geographical areas included by each of the Contracting Governments concerned in the testing and production environments of the LRIT Data Distribution Plan fully complied with the constraints set out in section 5 of the Technical specification for the LRIT Data Distribution Plan.

7 An NDC contemplating to start providing services to Contracting Government(s) other than that it is establishing the centre and an RDC or CDC does not have to undergo all of the test procedures and cases set out in the Protocols for each and every one of the Contracting Government(s) associated with the LRIT Data Centre (DC) (i.e. establishing, or using the services of, the DC), provided

- .1 test cases DC-1.1, DC-1.4 and DC-4.1 are carried out and satisfactorily completed for all Contracting Governments associated with the DC (i.e. in order to check the functionality of receiving a valid position report from the IDE; ascertain that LRIT Data User (LDU) address is registered with the DC; and verify that the DC can receive a valid receipt message from the IDE for each LDU);
- .2 test cases DC-2.1 and DC-15.1 are carried out and satisfactorily completed for at least two Contracting Governments (which should preferably be the ones presenting the more complexities in the testing process);
- .3 additional further tests are carried out so as to test all possible foreseeable operational scenarios taking into account the peculiarities associated with the Contracting Government(s) which would be served by the DC; and
- .4 a detailed test plan is submitted to the Organization before the commencement of any tests. The Organization should in turn provide the aforesaid information and a copy of the proposed test plan to the IDE, the DCs which would be identified to assist its testing and to the LRIT Coordinator.

Table
Explanatory notes and guidance

		The explanatory notes and guidance applies		
Test case	Guidance	NDC is contemplating to start providing services to other Contracting Government(s) and RDC or CDC is to undergo testing for the first time (Paragraphs 1.1.1 and 1.2.1)	NDC¹ is contemplating either to start providing services to other Contracting Government(s) or to become an RDC or a CDC (Paragraphs 1.1.2 and 1.1.3)	NDC² already providing services to other Contracting Government(s), and a RDC and CDC³, are contemplating to provide services to a new⁴ Contracting Government(s) which was/were not included in previous testing (Paragraphs 1.1.4 and 1.2.2)
	Expect results (in addition to those specified in appendix 2 of the annex to the Protocols)			
DC-1.1 DC-1.4	The specified test should be conducted for each Contracting Government establishing or using the services of the DC if is entitled to receive the LRIT information. The position report is only received by the intended recipient.	Yes	Yes (only as far as the new Contracting Government(s) is/are concerned)	Yes (only as far as the new Contracting Government(s) is/are concerned)
DC-1.2 DC-1.3 DC-1.5 DC-1.6 DC-2.2 DC-2.3 DC-2.5 to DC-2.9 DC-4.2 DC-15.2 to DC-16.2	The specified test should be conducted once using different LRIT Data Users. No additional expected results.	Yes	No	No

		The explanatory notes and guidance applies		
Test case	Guidance	NDC is contemplating to start providing services to other Contracting Government(s) and RDC or CDC is to undergo testing for the first time (Paragraphs 1.1.1 and 1.2.1)	NDC¹ is contemplating either to start providing services to other Contracting Government(s) or to become an RDC or a CDC (Paragraphs 1.1.2 and 1.1.3)	NDC² already providing services to other Contracting Government(s), and a RDC and CDC³, are contemplating to provide services to a new⁴ Contracting Government(s) which was/were not included in previous testing (Paragraphs 1.1.4 and 1.2.2)
	Expect results (in addition to those specified in appendix 2 of the annex to the Protocols)			
DC-2.1	The tests specified in tables 2.2.1 and 2.2.2 should be conducted twice using two ships chosen from two different Contracting Governments.	Yes	Yes (to be conducted only once)	No
	No additional expected results.			
DC-2.4	The specified test should be conducted once selecting one of the LRIT Data Users. The test should be repeated using a test scenario where the request message contains a request for a ship that is registered to the DC but not associated with the LRIT ID of the Contracting Government specified in the Data User Provider parameter.	Yes	Yes	No
	No additional expected results.			

		The explanatory notes and guidance applies		
Test case	Guidance	NDC is contemplating to start providing services to other Contracting Government(s) and RDC or CDC is to undergo testing for the first time (Paragraphs 1.1.1 and 1.2.1)	NDC¹ is contemplating either to start providing services to other Contracting Government(s) or to become an RDC or a CDC (Paragraphs 1.1.2 and 1.1.3)	NDC² already providing services to other Contracting Government(s), and a RDC and CDC³, are contemplating to provide services to a new⁴ Contracting Government(s) which was/were not included in previous testing (Paragraphs 1.1.4 and 1.2.2)
	Expect results (in addition to those specified in appendix 2 of the annex to the Protocols)			
DC-3.1 DC-3.2	The SAR SURPIC area should contain at least one ship position from each Contracting Government establishing or using the services of the DC. No additional expected results.	Yes	Yes (only as far as the new Contracting Government(s) is/are concerned)	Yes (only as far as the new Contracting Government(s) is/are concerned)
DC-4.1	The specified test should be conducted for each Contracting Government establishing or using the services of the DC. No additional expected results.	Yes	Yes (only as far as the new Contracting Government(s) is/are concerned)	Yes (only as far as the new Contracting Government(s) is/are concerned)
DC-10.1	The specified test should be conducted once. The pricing file should include the list of prices of all Contracting Governments establishing or using the services of the DC. No additional expected results.	Yes	Yes	Yes

		The explanatory notes and guidance applies		
Test case	Guidance	NDC is contemplating to start providing services to other Contracting Government(s) and RDC or CDC is to undergo testing for the first time (Paragraphs 1.1.1 and 1.2.1)	NDC¹ is contemplating either to start providing services to other Contracting Government(s) or to become an RDC or a CDC (Paragraphs 1.1.2 and 1.1.3)	NDC² already providing services to other Contracting Government(s), and a RDC and CDC³, are contemplating to provide services to a new⁴ Contracting Government(s) which was/were not included in previous testing (Paragraphs 1.1.4 and 1.2.2)
	Expect results (in addition to those specified in appendix 2 of the annex to the Protocols)			
R/CDC-14.1	The specified test should be conducted if the R/CDC is routing internally LRIT messages The journal file should contain a minimum of ten (10) LRIT messages. No additional expected results.	Yes	Yes	No
DC-15.1	The specified test should be conducted twice using two ships chosen from two different Contracting Governments establishing or using the services of the DC. No additional expected results.	Yes	Yes (to be conducted only once)	No

¹ Refers to an NDC operating in the production environment of the LRIT system.
² Refers to an NDC operating in the production environment of the LRIT system.
³ Refers to an RDC or CDC operating in the production environment of the LRIT system.

⁴ The term new Contracting Government(s) in this column refers to Contracting Government(s) which was or were not included in the testing when the centre in question undergone prototype testing or developmental and integration testing.