



Electronic Communications Committee (ECC)  
within the European Conference of Postal and Telecommunications Administrations (CEPT)

## ECC RECOMMENDATION (10)03

### HARMONISED CEPT EXAMINATION PROCEDURES FOR THE LONG RANGE CERTIFICATE (LRC) FOR NON-SOLAS VESSELS

Recommendation adopted by the Working Group "Frequency Management" (FM)

#### INTRODUCTION

The full implementation of the Global Maritime Distress and Safety System (GMDSS) has made it necessary to review and to harmonise the examination requirements for the certificates of maritime radio operators. Harmonised examination procedures for the General Operator's Certificate and Restricted Operator's Certificate were introduced for maritime radio operators performing radiocommunication duties on board vessels subject to SOLAS<sup>1</sup>. Likewise harmonised examination procedures for the Short Range Certificate (SRC) and Long Range Certificate (LRC) were introduced for maritime radio operators performing radio communication duties on board non-SOLAS vessels.

The GMDSS was fully implemented as per 1. February 1999. Because of the decision-making by WRC 07, the Digital Selective Calling (DSC) and radiotelephony procedures were amalgamated into one set of regulation (see RR Article 32). The changes to the Radio Regulations needed to be fully reflected in the examination syllabus and this led to this revision. Having gained experience of the GMDSS, the opportunity has been taken to simplify and clearly define the differential between the requirements of the individual certificates. This Recommendation describes the examination procedures for maritime radio personnel on board vessels sailing in all sea areas which use the frequencies and techniques of the GMDSS on a non-compulsory basis.

"The European Conference of Postal and Telecommunications Administrations,

*considering*

- a) that the maritime mobile service and the maritime mobile-satellite service are services according to the ITU Radio Regulations (Article 1) and governed by the ITU Radio Regulations and national regulations;
- b) that provisions of the GMDSS; closely related to the maritime mobile service and the maritime mobile-satellite service; are also given in SOLAS and other international conventions and resolutions;
- c) that it is desirable to establish common standards of competence for the operators of stations of the maritime mobile service operating in accordance with the GMDSS;
- d) that the GMDSS entered into force on 1 February 1992 and was fully implemented on 1 February 1999;
- e) that administrations are responsible; in accordance with Article 48 of the ITU Radio Regulations, to ensure that the operators of ship stations and ship earth stations operating in accordance with the GMDSS are adequately qualified to enable efficient operation of the station;
- f) that Article 48 also requires the radio operators on vessels for which a radio installation is not compulsory under international agreements and which use the frequencies and techniques of the GMDSS to be adequately qualified in accordance with the administrations' requirement;

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<sup>1</sup> International Convention for the Safety of Life at Sea (1974), as amended.

g) that the basic requirements for the format of certificates are set down in Radio Regulations Article 47.

*recommends*

- 1) that the administrations issue the Long Range Certificate (LRC) for candidates passing the examination described in the Annex;
- 2) that the developments in IMO should be monitored and this Recommendation should be modified accordingly;
- 3) that the examination establishments should continuously update examination procedures;
- 4) that the quality assurance processes with regards to Long Range Certificate (LRC) examination should be applied;
- 5) that the administrations mutually recognise each other's certificates when these are issued in accordance with ITU Radio Regulations Resolution 343 and the Annex of this document;
- 6) that the Long Range Certificates issued in accordance with this Recommendation should bear a reference to the Radio Regulations and this Recommendation;
- 7) that the administrations applying this Recommendation should complete the arrangements for introducing the examination syllabus described in the Annex by July 1, 2011 and, in any event, not later than July 1, 2013.”

*Note:*

*Please check the Office web site (<http://www.ero.dk>) for the up to date position on the implementation of this and other ECC Recommendations*

**Annex**

**CEPT EXAMINATION SYLLABUS FOR THE GMDSS LONG RANGE CERTIFICATE (LRC)**

The examination should consist of theoretical supplemented by practical tests and/or assessed practical training, overseen by an independent examiner and should include at least:

**A. GENERAL KNOWLEDGE OF RADIO COMMUNICATIONS IN THE MARITIME MOBILE SERVICE AND MARITIME MOBILE SATELLITE SERVICE**

- A1. General principles and basic features
- A2. System overview of the GMDSS structure
- A3. Search and Rescue (SAR)
- A4. Maritime Safety Information (MSI)

**B. PRACTICAL KNOWLEDGE AND ABILITY TO USE RADIO EQUIPMENT**

- B1. VHF radio installation
- B2. MF/HF radio installation
- B3. Digital Selective Calling (DSC)
- B4. Antennas, interfacing and power sources

**C. PROCEDURES AND PRACTICAL OPERATION OF THE SUBSYSTEMS**

- C1. DSC Distress, urgency and safety communication procedures for VHF, MF and HF
- C2. Protection of distress frequencies on VHF, MF and HF
- C3. Procedures and practical operation of the Maritime Mobile Satellite Service
- C4. Alerting, Communication and Locating Signals

**D. RADIOTELEPHONY PROCEDURES**

- D1. Ability to exchange communications relevant to the safety of life at sea
- D2. Practical and theoretical knowledge of radiotelephony procedures

**E. REGULATIONS FOR VHF/MF/HF COMMUNICATIONS**

- E1. Regulations, obligatory procedures and practices

**F. EXAMINATION REQUIREMENTS**

## **CEPT EXAMINATION SYLLABUS GUIDELINES FOR THE GMDSS LONG RANGE CERTIFICATE (LRC)**

### **A. GENERAL KNOWLEDGE OF RADIO COMMUNICATIONS IN THE MARITIME MOBILE SERVICE AND MARITIME MOBILE SATELLITE SERVICE**

#### **A1. The general principles and basic features**

- 1.1 Types of communication
  - Distress, urgency and safety communications
  - SAR (Search and Rescue) Communication
  - Public correspondence
  - Port operations and ship movement service
  - Intership communications
  - On board communications
  
- 1.2 Types of stations
  - Ship stations
  - Coast stations
  - Rescue coordination centres
  - Pilot, VTS and port stations
  - Aircraft stations
  - Land Earth Stations (LES)
  - Network Co-ordination Stations (NCS)
  - Ship Earth Stations (SES)
  
- 1.3 General knowledge of radio frequencies and frequency bands
  - The concept of frequency
  - Frequency and wavelength
  - The unit of frequency. Hz, kHz, MHz, GHz.
  - The subdivision of the most significant part of the radio spectrum: VHF, MF, and HF
  - Different propagation mechanisms, typical ranges and reliability (awareness of A4)
  - Propagation on MF, HF and VHF frequencies
  
- 1.4 Frequencies allocation and their usage
  - The usage of VHF, MF and HF frequencies in the maritime mobile service
  - Modes of communication and classes of emission.
  - Official designations of emission (e.g. F1B, J3E, H3E)
  - Other designations of emissions (e.g. TLX, SSB, AM, FM etc.)
  - The concept of radio channel: simplex, semi-duplex and duplex; paired and unpaired frequencies.
  - Frequency plans and channelling systems in the maritime mobile bands.
    - Distress and Safety frequencies
    - Calling frequencies
    - Intership communications
    - Port operations and Ship movement
    - Public correspondence
    - National frequency allocations
  
- 1.5 Maritime Mobile Satellite Service
  - Systems and Services
  - Inmarsat
  - COSPAS-SARSAT
  - Inmarsat EGC/SafetyNet
  - Telephone
  - Telex
  - Facsimile
  - Data

## **A2. System overview of the GMDSS structure**

- 2.1 System design
  - Structure
  - Block Diagram

## **A3. Search and Rescue (SAR)**

- 3.1 SAR regions
- 3.2 The role of Rescue coordination centres
- 3.3 Organisation of search and rescue
- 3.4 SAR communication including on-scene communications

## **A4. Maritime Safety Information (MSI)**

- 4.1 The NAVTEX system
  - Purpose and capabilities, including Distress and Safety functions
  - Message format (transmitter ID, message type, message number)
  - Selection of transmitters and message type
  - Messages which cannot be rejected
- 4.2 Enhanced Group Calling (EGC) system (Inmarsat C)
  - pre-programming a Ship\_Earth Station for EGC message reception
  - selecting operating mode for EGC reception

## **B. PRACTICAL KNOWLEDGE AND ABILITY TO USE RADIO EQUIPMENT**

### **B1. VHF radio installation**

- 1.1 Radiotelephone channels
  - Channel selection and controls
  - Dual watch facilities and controls
- 1.2 Basic controls and usage
  - On/Off control
  - Press to transmit switch
  - High/low output power switch
  - Volume control
  - Squelch control
  - Dimmer
- 1.3 Handheld VHF radiotelephone
  - Specifications

### **B2 MF/HF radio installation**

- 2.1 Frequencies/channels and selection criteria
- 2.2 Typical controls and usage
  - On/Off control
  - Selecting RX frequency
  - Selecting TX frequency
  - Selecting ITU channel number
  - Tuning the transmitter
  - Selecting the class of emission
  - Using volume control and squelch
  - Using clarifier or RX fine tuning

- Controlling RF gain
- Using automatic gain control
- Selecting transmitting power

### **B3. Digital Selective Calling (DSC)**

- 3.1 Call categorisation, priority and definitions
  - Distress
  - Urgency
  - Safety
  - Routine
- 3.2 Types of call
  - Distress
  - All ships
  - Geographic area
  - Individual
- 3.3 Maritime Mobile Service Identity (MMSI)
  - The nationality identification: Maritime Identification Digits (MID)
  - Ship station numbers
  - Coast station numbers
  - Group call numbers
- 3.4 Facilities and usage
  - DISTRESS BUTTON
  - Alert designation and display
  - Automatic and manual updating of vessel position
  - Reviewing received messages
  - Watchkeeping functions and controls
  - Single frequency alert attempt
  - Multi-frequency alert attempt

### **B4. Antennas, interfacing and power sources**

- 4.1 Antennas performance and positioning
  - Antenna arrangement and tuner
  - General maintenance
  - Earthing
- 4.2 Interfacing
  - Connection to position device
- 4.3 Power sources
  - Connections to different power sources
  - Requirements, and fuses
  - Safety
  - Charging
  - Different types of batteries and their maintenance

## **C. PROCEDURES AND PRACTICAL OPERATION OF THE SUBSYSTEMS**

### **C1. DSC distress, urgency and safety communication procedures for VHF, MF and HF**

- 1.1 Distress procedures
  - Transmission of a distress alert

- Receipt and acknowledgement by a coast station
- Reception of a shore-to-ship distress alert relay
- Transmission of a distress alert by a station not itself in distress
- acknowledgement by a ship station
  - VHF/MF
  - HF

- 1.2 Urgency and Safety communications via DSC equipment
- Procedures for DSC Urgency and Safety announcements

## **C2. Protection of distress frequencies on VHF, MF and HF bands**

- 2.1 Avoiding harmful interference
- Avoidance of the transmission of false alerts
  - Status of Channel 16 and 70
  - Status of MF/HF distress and safety frequencies
- 2.2 Transmissions during distress traffic
- 2.3 Prevention of unauthorised transmissions
- 2.4 Test protocols and procedures
- Testing DSC equipment
  - Radiotelephone test procedures
- 2.5 Avoidance of transmissions in VHF guard bands
- 2.6 Procedures to follow when a false or inadvertent Distress Alert is transmitted

## **C3. Procedures and practical operation of the Maritime Mobile Satellite Service**

- 3.1 Inmarsat-C terminal
- Components
  - Entering/updating position
  - Usage of an Inmarsat-C Ship Earth Station
  - Sending and receiving text messages
  - Distress and Safety services
    - Sending a distress alert
    - Sending a distress priority message
    - 2-digit code safety services
    - Avoidance of initiating a false distress alert
    - Procedures to follow when a false distress alert is transmitted
- 3.2 Inmarsat Enhanced Group Call (EGC) receiver
- Programming a Ship Earth Station for EGC reception
  - Selecting NAV/MET areas

## **C4. Alerting, Communication and Locating Signals**

- 4.1
- 406 MHz Emergency Position Indicating Radio Beacons (EPIRBS)
  - Registration and coding
  - Operation, activation and testing
  - 121.5 MHz homing function
  - Mounting float-free mechanism
  - Battery expiry date
- 4.2 Search and Rescue Radar Transponder and Transmitter (SART)

- Operation height and range
  - Battery expiry date
- 4.3 Handheld VHF
- Operation
  - Communication range
  - Battery provision

## **D. RADIOTELEPHONY PROCEDURES**

### **D1. Ability to exchange communications relevant to the safety of life at sea**

- 1.1 Distress communications
- Distress signal MAYDAY
  - Distress call
  - Distress message
  - Acknowledgement RECEIVED MAYDAY
  - Follow up distress traffic
  - The control of distress traffic
  - SEELONCE MAYDAY and SEELONCE FEENEE
  - Transmission of a distress message by a station not itself in distress
  - MAYDAY RELAY
- 1.2 Urgency communications
- Urgency signal PAN-PAN
  - Urgency call
  - Urgency message
  - Radiomedical
- 1.3 Safety communications
- Safety signal SECURITE
  - Safety call
  - Safety message
- 1.4 Awareness of the existence and use of the IMO Standard Marine Communication Phrases Vocabulary
- English phrases
- 1.5 Phonetic alphabet

### **D2. Practical and theoretical knowledge of radiotelephony procedures**

- 2.1 Traffic routines
- Use of call signs
  - Establishing communication on intership, port operation and ship movement channels
  - Unanswered calls and garbled calls
- 2.2 Public correspondence and radiotelephony call procedures
- Method of calling a coast station
  - Calls to ships from coast stations
- 2.3 Traffic charges
- International charging system
  - Accounting Authority Identification Code (AAIC)



## **E. REGULATIONS FOR VHF/MF/HF COMMUNICATIONS**

### **E1. Regulations, obligatory procedures and practices**

- 1.1 Awareness of National and International Documentation
  - List of Coast Stations and Special Service Stations
  - List of Ship Stations and Maritime Mobile Service Identity Assignments
  - Manual for use by the Maritime Mobile and Maritime Mobile Satellite Service
  - National manuals
  
- 1.2 Knowledge of the international regulations and agreements
  - Radio Operator's Certificates
  - Ship Station Licence
  - Radio record keeping
  - Secrecy of correspondence
  - Prohibited transmissions
  - Watchkeeping

## **F. EXAMINATION REQUIREMENTS**

Candidates must show proof of theoretical and practical knowledge and compliance with national requirements.