CEPT/ERC/RECOMMENDATION 31-05 E (Bonn 1994)

HARMONISED EXAMINATION PROCEDURES FOR MARITIME RADIO OPERATOR´S CERTIFICATES APPROPRIATE TO VESSELS WHICH USE THE FREQUENCIES AND TECHNIQUES OF THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM ON A NON-COMPULSORY BASIS

Recommendation proposed by the Working Group „Radio Regulatory“ (RR)

Text of the Recommendation adopted by the „European Radiocommunications Committee“ (ERC):

INTRODUCTION

The start of the Global Maritime Distress and Safety System (GMDSS) in February 1992 has made it necessary to harmonise the examination requirements for certificates of maritime radio operators. Harmonised examination procedures for the General Operator´s Ceriticate and Restricted Operator´s Certificate have already been introduced for maritime radio operators perfoming radiocommunication duties on board vessels subject to SOLAS[1].

The GMDSS is to be fully implemented by February 1999 for vessels subject to SOLAS. For vessels not subject to SOLAS, it is becoming clear that it would not be practicable to keep the old distress and safety system running in parallel with the GMDSS indefinitely. This Recommendation describes the examination procedures for maritime radio personnel on board vessels 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 personnel of stations of the Maritime Mobile Service and the Maritime Mobile-Satellite Service operating in accordance with the GMDSS,
d) that the GMDSS entered into force on 1 February 1992,
e) that Administrations are responsible, in accordance with Article 56 of the ITU Radio Regulations, to ensure that the personnel 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 56 also requires the radio personnel of 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´ requirements,
g) that the basic requirements for the format of certificates are set down in Radio Regulations 3869 through to 3876,

[1] International Convention for the Safety of Life at Sea (1974), as amended.

recommends

a) that Administrations issue the CEPT Long Range Certicate (LRC) for candidates passing the examination described in Annex 1,
b) that Administrations indicate on the certificate issued under Recommends **a)** whether or not the candidate has also passed the examination described in Annex 2,
c) that developments in IMO should be monitored nad this Recommendation should be modified accordingly,
d) that Administrations mutually recognise each other´s certificates when these are issued in accordance with Recommends **a)** and **b)**,
e) that CEPT LRC certificates issued in accordance with this Recommendation should bear a reference to the Radio Regulations and this Recommendation.“

ANNEX 1

EXAMINATION SYLLABUS FOR THE CEPT LONG RANGE CERTIFICATE (LRC) FOR VESSELS NOT SUBJECT TO COMPULSORY FIT UNDER THE SOLAS CONVENTION

The examination should consist of theoretical and practical tests and should include at least:

A. GENERAL KNOWLEDGE OF RADIOCOMMUNICATIONS IN THE MARITIME MOBILE SERVICE

A1. The general principles and basic features of the maritime mobile service

B. DETAILED PRACTICAL KNOWLEDGE AND ABILITY TO USE RADIO EQUIPMENT

B1. The VHF radio installation. Use VHF equipment in practice
B2. The MF/HF radio installation. Use MF/HF equipment in practice
B3. Purpose and use of Digital Selective Calling (DSC) facilities

C. OPERATIONAL PROCEDURES OF THE GMDSS AND DETAILED PRACTICAL OPERATION OF GMDSS SUBSYSTEMS AND EQUIPMENT APPROPRIATE TO NON-SOLAS VESSELS

C1. Basic introduction to Global Maritime Distress and Safety System (GMDSS) procedures
C2. Distress, urgency and safety communication procedures in the GMDSS
C3. Distress, urgency and safety communication procedures by radiotelephony in the old distress and safety system
C4. Maritime Safety Information (MSI) systems in the GMDSS
C5. Alerting and Locating Signals in the GMDSS

D. MISCELLANEOUS SKILLS AND OPERATIONAL PROCEDURES FOR RADIOTELEPHONE COMMUNICATIONS

D1. Ability to exchange communications relevant to the safety of life at sea
D2. Regulations, obligatory procedures and practices
D3. Practical and theoretical knowledge of radiotelephone procedures

EXAMINATION SYLLABUS GUIDELINES FOR THE CEPT LONG RANGE CERTIFICATE (LRC) FOR VESSELS NOT SUBJECT TO COMPULSORY FIT UNDER THE SOLAS CONVENTION

A. GENERAL KNOWLEDGE OF RADIOCOMMUNICATIONS IN THE MARITIME MOBILE SERVICE

A1. The general principles and basic features of the maritime mobile service.

1.1. Types of communications in the maritime mobile service
- Distress, urgency and safety communications
- Public correspondence
- Port operations service
- Ship movement service
- Intership communication
- On board communications

1.2. Types of station in the maritime mobile service
- Ship stations
- Coast stations
- Pilot stations, port stations etc.
- Aircraft stations
- Rescue Coordination Centre (RCC)

1.3. Elementary knowledge of radio frequencies and frequency bands
- Frequency and wavelength
- The unit of frequency. Hz, kHz, MHz, GHz
- The subdivision of the most significant part of the radio spectrum: MF, HF, VHF, UHF, SHF
- Different propagation mechanisms and typical ranges
- Propagation on MF frequencies
- Propagation on different HF frequency bands
- Propagation on VHF and UHF frequencies

1.4. Frequencies allocated to the maritime mobile service
- The usage of MF, HF, VHF, UHF and SHF frequencies in the maritime mobile service
- Modes of communication (e.g. Radiotelephony, DSC NBDP, Facsimile) and classes of emission
- Bandwidth of different emissions, carrier frequency and assigned frequency
- Official designations of emission (e.g. F1B, J3E, A3E, F4 etc.)
- Unofficial designations of emissions (e.g. TLX, SSB, AM, FM etc.)
- The concept of radio channel: simplex, semi-duplex and duplex; paired and unpaired channels
- Frequency plans and channelling systems in the VHF, MF and HF maritime mobile bands, including allocations for the Global Maritime Distress and Safety System (GMDSS)
- Distress and safety frequencies
- Small craft safety
- Intership communications
- Port operations
- Ship movement
- Calling frequencies

1.5. Maintaining the functionality of ship station equipment
- Sources of energy of ship stations
- Batteries
- Different kinds of batteries and their characteristics
- Charging
- Maintance of batteries

B. DETAILED PRACTICAL KNOWLEDGE AND ABILITY TO USE RADIO EQUIPMENT

B1. The VHF radio installation

1.1. Radiotelephone channels
- Channel selection and controls
- Dual watch facilities and controls

1.2. Basic controls and usage, e.g.
- Connecting the power
- Press to transmit switch
- High/low output power switch
- Volume control
- Squelch control
- Dimmer

1.3. Portable two-way VHF radiotelephone apparatus

1.4. Maritime VHF antennas and their maintenance

B2. The MF/HF radio installation

2.1. Frequencies/channels and selection criteria

2.2. Typical controls and usage, e.g.
- Connecting the power
- Selecting RX frequency
- Selecting TX frequency
- Selecting ITU channel number
- Tuning the transmitter
- Selecting the class of emission
- Using volume conrol and squelch
- Using clarifier or RX fine tuning
- Controlling RF gain
- Using automatic gain control
- Using the 2182 kHz instant selector
- Testing the alarm generator
- Using the alarm generator

2.3. Maritime MF and HF antennas and their maintenance

B3. Purpose and use of Digital Selective Calling (DSC) facilities

3.1. The General principles and basic features of DSC
- DSC messages
- DSC attempt
- Single frequency call attempt
- Multi-frequency call attempt
- Call acknowledgement
- Call relay

3.2. Types of call
- Distress call
- All ships call
- Call to individual station
- Geographic area call
- Group call
- Call to individual station using automatic/semiautomatic service

3.3. The Maritime Mobile Service Identity (MMSI) Number System
- The Maritime Mobile Service Identity (MMSI) number system
- The nationality identification: Maritime Identification Digits (MID)
- Ship station numbers
- Group calling numbers
- Coast station numbers

3.4. Call categorisation and priority
- Distress
- Urgency
- Safety
- Ship business

3.5. Call telecommand and traffic information
- Distress alerts
- Designated distress message
- Undesignated distress message
- Distress coordinates
- Time and validity of distress coordinates
- Other calls and messages
- Working frequency and channel information

3.6. DSC facilities and usage
- The Channel-70 instant alert selector
- The 2187.5 kHz instant alert selector
- Manual settings J2B and F1B modes, e.g. 2187.5 kHz/2185.8 kHz and 8414.5 kHz/8412.8 kHz
- DSC data entry and display
- Updating vessel position
- Entering preset message
- Entering traffic information
- Reviewing received messages
- DSC watchkeeping functions and controls

3.7. Testing of DSC
- Internal self testing procedures
- Live transmission testing

C. OPERATIONAL PROCEDURES OF THE GMDSS AND DETAILED PRACTICAL OPERATION OF GMDSS SUBSYSTEMS AND EQUIPMENT APPROPRIATE TO NON-SOLAS VESSELS

C1. Search and Rescue (SAR) Procedures in the Global Maritime Distress and Safety System (GMDSS)

1.1. Sea Areas, the GMDSS master plan, and access to GMDSS facilities

1.2. The role of RCCs

1.3. Organisation of Search and Rescue

C2. Distress, urgency and safety communication procedures in the GMDSS

2.1. Distress communications via DSC equipment
- DSC distress alert
- The definition of a distress alert
- Transmission of a distress alert
- Transmission of a shore-to-ship distress alert relay
- Transmission of a distress alert by a station not itself in distress
- Receipt and acknowledgement of DSC distress alert
- Acknowledgement procedure
- Receipt and acknowledgement by a coast station
- Receipt and acknowledgement by a ship station
- Handling of distress alerts
- Preparations for handling of distress traffic
- Distress traffic terminology
- On-scene communications
- SAR operation

2.2. Urgency and Safety communications via DSC equipment
- The meaning of urgency and safety communications
- Procedures for DSC urgency and safety calls
- Urgency communications
- Safety communications

C3. Distress, urgency and safety communication procedures by radiotelephony in the old distress and safety system

3.1. Distress communications
- Radiotelephone alarm signal
- Format of the alarm signal
- Purpose of the alarm signal
- Distress signal
- The correct use and meaning the signal MAYDAY
- Distress call
- Distress message
- Acknowledgement of a distress message
- Obligation to acknowledge a distress message
- Correct form of acknowledgement
- Action to be taken following acknowledgement
- The control of distress traffic
- The correct use and meanings of the signals:
- SEELONCE MAYDAY
- SEELONCE DISTRESS
- PRUDONCE
- SEELONCE FEENEE
- Transmission of a distress message by a station not itself in distress
- The correct use and meaning of the signal MAYDAY RELAY

3.2. Urgency communications
- Urgency signal
- The correct use and meaning the signal PAN-PAN
- Urgency message
- Obtaining urgent medical advice through a Coast Radio Station

3.3. Safety communications
- Safety signal
- The correct use and meaning the signal SECURITE
- Safety message
- Special procedures for communications with appropriate national organisations on matters affecting safety

C4. Protection of distress frequencies

4.1. Avoiding harmful interference

4.2. Transmissions during distress traffic

4.3. Prevention of unauthorised transmissions

4.4. Test protocols and procedures
- Testing DSC equipment
- Radiotelephone test procedures

4.5. Guard bands

4.6. Procedures to follow when a false distress alert is transmitted

C5. Maritime Safety Information (MSI) systems in the GMDSS

5.1. Safety information transmitted by VHF/MF/HF radiotelephony

5.2. The NAVTEX system
- Purpose of NAVTEX
- NAVTEX frequencies
- Antenna fot the NAVTEX receiver
- Reception range
- Message format (transmitter ID, message type, message number)
- The NAVTEX receiver
- Selection of transmitters
- Selection of message type
- Message which cannot be rejected
- Use of subsidiary controls
- Ensuring the integrity of message output

C6. Alerting and Locating Signals in the GMDSS

6.1. Purpose and definition

6.2. Emergency Position Indicating Radio Beacons (EPIRBs)
- Registration and Coding
- Information contents of a distress alert
- Operation including automatic (float-free) and manual activation and avoidance of false alerts
- COSPAS/SARSAT 406 MHz EPIRB
- Inmarsat-E 1.6 GHz EPIRB
- VHF-DSC EPIRB
- 121.5 MHz homing function
- Mounting considerations

- Routine maintenance
- Testing
- Checking battery expiry date
- Checking the float-free mechanism

6.3. Search and Rescue Radar Transponder (SART)
- The main technical characteristics
- Operation
- Operating Height
- Effect of radar reflector
- Range of a SART transmitter
- Routine maintenance of a SART
- Checking battery expiry date

D. MISCELLANEOUS SKILLS AND OPERATIONAL PROCEDURES FOR RADIOTELEPHONE COMMUNICATIONS

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

1.1. Awareness of the existence and use of thet IMO Standard Marine Navigational Vocabulary and knowledge of the following basic signals:
- ALL AFTER; ALL BEFORE; CORRECT; CORRECTION; IN FIGURES; IN LETTERS; I SAY AGAIN; I SPELL; OUT; OVER; RADIO CHECK; READ BACK; RECEIVED; SAY AGAIN; STATION CALLING; TEXT; TRAFFIC; THIS IS; WAIT; WORD AFTER; WORD BEFORE; WRONG;

1.2. Recognised standard abbreviations and commonly used service codes

1.3. Use of international phonetic alphabet

D2. Regulations, obligatory procedures and practices

2.1. Awareness of international documentation
- Publications of the International Telecommunication Union (ITU)
- The List of Ship Stations
- The Annex to the List of Coast Staions which contains particulars of coast stations participating in the GMDSS
- The Alphabetical List of Call Signs
- The Manual for Use by the Maritime Mobile and Maritime Mobile-Satellite Services
- List of Coast Stations with which communications are likely to be established (watchkeeping hours, frequencies and charges)
- List of Coast Stations providing navigational and meteorological warnings and other urgent information for ships

2.2. Availability and knowledge of national documentation

2.3. Knowledge of the regulations and agreements governing the maritime mobile service
- Requirement for Ship Radio Licence
- Regulations concerning control of the operation of radio equipment by the holder of an appropriate certificate of competence
- Regulations concerning the radiotelephone log
- Preservation of the secrecy of correspondence

D3. Practical and theoretical knowledge of radiotelephone procedures

3.1. Practical traffic routines using radiotelephony
- Preliminary operations
- Correct use of call signs
- Procedure for establishing radio communications
- Intership calling

- Public correspondence
- Small craft safety
- Port operations and ship movement channels
- Calling a station providing a pilot service
- Control of communications and the role of coast stations
- Selection of frequencies to be used for traffic
- Reply procedure
- Duration of calls
- Traffic lists transmitted by coast stations
- Traffic reports transmitted by ship stations
- Procedure for unanswered call and garbled calls
- Difficulties in reception and inability to accept traffic
- Types of call and types of message which are prohibited

3.2. Practical traffic routines using DSC
- Calling a coast station or ship station by DSC
- Acknowledging receipt of a call using DSC
- Subsequent handling of traffic

3.3. Public correspondence procedures
- Establishing a radiotelephone link call via a coast station
- Ordering a manually switched link call
- Ending the call
- Calls to ships from Coast Radio Stations
- Special facilities calls
- Traffic charges
- The international charging and accounting system
- Accouting Authority Identification Code (AAIC)

ANNEX 2

EXAMINATION MODULE FOR THE MARITIME MOBILE SATELLITE SERVICE FOR VESSELS NOT SUBJECT TO A COMPULSORY FIT UNDER THE SOLAS CONVENTION

The examination should consist of theoretical and practical tests and should include at least:

1. The general principles and basic features of the maritime mobile-satellite service relevant to non-SOLAS vessels

1.1. Maritime satellite communications via Inmarsat systems
- Inmarsat space segment
- Ocean areas and satellite acquistion
- Communication services
- Telephone services
- Telex services
- Facsimile and Data service

1.2. Types of station in the maritime mobile satellite service
- Coast Earth Stations (CES), Land Earth Stations (LES)
- Network Co-ordination Station (NCS)
- Ship Earth Stations (SES), Mobile Earth Stations (MES)
- Inmarsat-A/-B/-C/-M systems

2. Operational procedures and detailed practical operation of ship earth stations in the GMDSS appropriate to non-SOLAS vessels

2.1. Inmarsat-C Ship Earth Station
- Components of an Inmarsat-C terminal
- 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

2.2. Inmarsat Enhanced Group Call (EGC) system
- Purpose of the EGC system
- Programming an SES for EGC reception
- Updating position
- Selecting NAV/MET areas