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Ref. T2/6.04

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AMENDMENTS TO THE INTERNATIONAL SAFETYNET MANUAL

1 The Sub-Committee on Radiocommunications and Search and Rescue (COMSAR), at its sixth session (18 to 22 February 2002), taking into account the operational experience gained by the NAVAREA/METAREA Co-ordinators and Search and Rescue Services available worldwide, and feedback provided to the International SafetyNET Co-ordinating Panel, prepared a set of amendments to the International SafetyNET Manual and recommended them to the Maritime Safety Committee (MSC) for adoption.

2 The MSC, at its seventy-sixth session (2 to 13 December 2002), adopted the proposed amendments to the International SafetyNET Manual, as set out at annex, and decided that they should become effective on 1 January 2004.

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ANNEX

AMENDMENTS TO THE INTERNATIONAL SAFETYNET MANUAL

ANNEX 1

1 The amendments are given below as follows:

.1 throughout the publication amend the "International Maritime Satellite Organization" to read "International Mobile Satellite Organization (IMSO)";

.2 throughout the publication amend "International SafetyNET Broadcast Co-ordinating Panel" to read "International SafetyNET Co-ordinating Panel";

.3 throughout the publication where appearing, amend "CESs" to read "LESs";

.4 page iii, paragraph 2, fourth line, amend to read "…at Sea (SOLAS), 1974, as amended, as a requirement……";

.5 page iii, first footnote, and page 1, amend to read "SafetyNET™ and FleetNET™ are registered trademarks of the International Mobile Satellite Organization";

.6 page iv, add following text, Acknowledgement - Figures 1 - 5 are extracted from the Admiralty List of Radio Signals, Volume 5, with the permission of the United Kingdom Hydrographic Office;

.7 page vi, delete Annex 6 and renumber the remaining Annexes;

.8 page 1, paragraph 1.6, third line, amend to read "…via an Inmarsat-C land earth station.";

.9 page 1, paragraph 1.6, last line, delete (see annex 6, paragraph 1.3.1);

.10 Figure 1, second line, amend block to read "INMARSAT LAND EARTH STATIONS;

.11 page 4, delete paragraph 2.1 and insert the following text:

2.1 Land Earth Station (LES): A land station in the Inmarsat satellite communications system which provides interconnection between the satellite and shore systems such as telex and telephone;

.12 page 7, Figure 3, amend title to read "NAVAREAs/METAREAs WITH INMARSAT GLOBAL COVERAGE";

.13 page 11, paragraph 5.3, third line, delete (see annex 6);

.14 page 13, paragraph 7, rename, "**Land Earth Station functions**";

.15 page 13, paragraph 7.2, 3rd line, delete the words "in Annex 6";

.16 page 14, paragraphs 9.4.1, 9.6, 9.7, last line, amend to read ".... Distress and Safety System, as amended.";

.17 page 17, (Annex 1), paragraph 1, delete 3rd bullet;

.18 page 17, (Annex 1), old fourth bullet, amend to read "Advise land earth station (LES) operators ....";

.19 page 17, (Annex 1), paragraph 2, change 1st line of address to read, "International SafetyNET Co-ordinating Panel" and change phone numbers to:

Telephone: +44 (0)207 735 7611
Telex: 23588 IMOLDN G
Telefax: +44 (0)207 587 3210
E-mail: info@imo.org

.20 page 20, (Annex 2), Footnote, delete "see Annex 6, section 1.3.3(c);

.21 Annex 3, delete existing text and replace with following text:

"Annex 3

The Inmarsat system

1 There are three essential components of the Inmarsat system:

- the Inmarsat space segment - the satellites and their ground support facilities - planned and funded by Inmarsat;
- the Land Earth Stations (LESs) which provide an interface between the space segment and the national and international fixed telecommunications networks and which are generally funded and operated by the LES Operators who are Inmarsat Shareholders and distribute Inmarsat services; and
- the Ship Earth Stations (SESs) - the satellite communications terminals which are purchased or leased by individual ship owners/operators.

2 Shore-to-ship communications are in the 6 GHz band (C-band) from the LES to the satellite and in the 1.5 GHz band (L-band) from satellite to ship. Ship-to-shore communications are in the 1.6 GHz band from the ship to the satellite and in the 4 GHz band (C-band) from satellite to LES.

3 The space segment

3.1 To provide its space segment for global coverage, Inmarsat employs its own dedicated satellites.

3.2 This space segment is segmented globally into four regions: Atlantic Ocean Region East (AOR-E), Atlantic Ocean Region West (AOR-W), Indian Ocean Region (IOR), and Pacific Ocean Region (POR). Each ocean region is served by a dedicated satellite. Inmarsat has full contingency plan in place in the event of any satellite outage. These contingency plans are examined regularly and are witnessed by International Mobile Satellite Organisation (IMSO). The high polar regions cannot be seen by geostationary satellites (figure 3).

3.3 The Inmarsat Network Operations Centre (NOC) in the United Kingdom functions around the clock, co-ordinating the activities of the Network Co-ordination Stations (NCSs) and the LESs in each ocean region.

4 Land Earth Stations

The Inmarsat system is connected into the world-wide telecommunications networks via LESs. Many of these LESs provide Inmarsat-C EGC services. The wide spread of LESs around the world offers flexibility and the prospect of shorter landlines to access the desired LES.

5 Ship Earth Stations

5.1 Inmarsat-C EGC SESs are small, lightweight terminals, with small omnidirectional antennas, for providing message-type services. EGC receive capability is provided by Class 2 or 3 Inmarsat-C SESs. Interfaces via RS232 ports are provided for a personal computer or any other data terminal equipment for message generation and display. The antenna is small and light enough to be installed on any ship or boat.

5.2 Class 0 standalone EGC receivers provide the capability to receive SafetyNET and FleetNET messages only; there is no transmit capability for sending outgoing messages. The EGC antenna is identical to an Inmarsat-C antenna.

5.3 The technical requirements of all classes of equipment are found in the Annex 6 of the present publication."

.22 page 24, (Annex 4), paragraph 3, first sub-paragraph, amend to read ".... depending on the land earth station ....";

.23 page 24, (Annex 4), paragraph 3, second sub-paragraph, amend second line to read "...value according to the options specified in the following sections.";

.24 page 25, (Annex 4), insert a new paragraph 7 as follows:

7 For all the services provided below, a cancellation facility is provided for messages transmitted to a LES with category (b) repetition codes (see section c, paragraph 3.4.3.2). The CANCEL instruction takes the form:

CANCEL *[message reference number]* AT *[date/time]*

where the message reference number is the number given to the message provider by the LES on receipt of the initial message and the date/time is in the form DDHHMMZ MoMoMo YY.

For example:

CANCEL *[message reference number]* AT 211430UTC FEB 90

For example:

C_1: C_2: C_3: C_4: C_5
[text]
NNNN
CANCEL *[message reference number]* AT *[date/time group]*

Notes

1 Only the "text" is for transmission.

2 When included with a message for broadcasting, the LES message cancellation instructions will appear after the NNNN. There will be only one instruction to each line, but the facility to provide for more than one line of instructions is desirable.

3 If the cancellation instruction terminates after the message reference number, i.e. the *[date/time group] is* not included - then the instruction should be executed immediately.

4 It should also be possible for a CANCEL instruction to be sent to the LES's store and forward unit.

.25 page 25, (Annex 4), Section a, paragraph 1, add new text as follows "… the International SafetyNET Service. Broadcasts originated by the International Ice Patrol also follow the guidelines in this section.";

.26 page 26, (Annex 4), Section a, paragraph 3.3, second column, COASTAL WARNINGS, delete "as specified in paragraph 1.3.3(c) of Annex 6.";

.27 page 29, (Annex 4), Section b, paragraph 3.3, top of page, second column, delete the following text "as specified in paragraph 1.3.3(c) of Annex 6";

.28 page 30, (Annex 4), Section c, paragraph 1, amend last line to read ".... and Rescue, 1979, and the IAMSAR Manual;

.29 page 31, (Annex 4), Section c, paragraph 3.1, delete the text after $C_1 = 3$ (distress);

.30 page 31, (Annex 4), Section c, insert new paragraphs as follows:

3.4.1 The following repetition codes may be available at some Land Earth Stations (LESs) and may exceptionally be used for search and rescue broadcasts.

3.4.2 *Repetition codes (C_4)*

The C_4 repetition codes are divided into two categories:

(a) for messages that are required to be repeated a finite number of times; and

(b) for messages that are required to be repeated at specified intervals until cancelled by the information provider.

3.4.2.1 *Category (a) repetition codes*

01	transmit once on receipt
11	transmit on receipt followed by repeat 6 minutes later
61	transmit 1 hour after initial broadcast (twice)
62	transmit 2 hours after initial broadcast (twice)
63	transmit 3 hours after initial broadcast (twice)
64	transmit 4 hours after initial broadcast (twice)
66	transmit 12 hours after initial broadcast (twice)
67	transmit 24 hours after initial broadcast (twice)
70	transmit 12 hours after initial broadcast then 12 hours after the second broadcast (three times).
71	transmit 24 hours after initial broadcast then 24 hours after the second broadcast (three times).

Note: LES operators may offer other codes.

3.4.2.2 Category (b) repetition codes

A category (b) repetition code allows a message to be repeated indefinitely or until cancelled by the message provider. The repetition period can be set at between 1 and 120 hours. In addition, each transmission can be echoed after a fixed period of 6 minutes.

The repetition codes are of the form:

Multiplier x Delay

where the multiplier specifies the number of delay periods between each broadcast and the delay is a fixed number of hours.

The multiplier digit may be any digit from 1 to 5 as follows:

Multiplier

1 1 specified delay period between broadcasts
2 2 specified delay periods between broadcasts
3 3 specified delay periods between broadcasts
4 4 specified delay periods between broadcasts
5 5 specified delay periods between broadcasts

The delay digit coding is as follows:

Delay

2 1 hour delay; no echo
3 1 hour delay; with echo
4 6 hour delay; no echo
5 6 hour delay; with echo
6 12 hour delay; no echo
7 12 hour delay; with echo
8 24 hour delay-, no echo
9 24 hour delay; with echo

The various combinations are shown in the table below:

	Multiplier					
Delay	1	2	3	4	5	Echo
2	1	2	3	4	5	No
3	1	2	3	4	5	Yes
4	6	12	18	24	30	No
5	6	12	18	24	30	Yes
6	12	24	36	48	60	No
7	12	24	36	48	60	Yes
8	24	48	72	96	120	No
9	24	48	72	96	120	Yes

Examples:

1 Code 19 means "repeat broadcast every 24 hours with an echo 6 minutes after each broadcast".

2 Code 38 means "repeat broadcast every 72 hours with no echo".

.31 page 32, (Annex 4), Section c, paragraph 3.7, third line, delete all text in parenthesis.

.32 page 32, (Annex 4), Section c, add new section 4 as follows and renumber remaining sections:

Search and Rescue Co-ordination traffic

4 Search and Rescue Co-ordination messages should be addressed to circular or rectangular areas for the intent of co-ordinating the search and rescue of a vessel in distress. Priority of the message will be determined by the phase of the emergency.

4.1.1 C_1 – Message Priority

C_1 = 3(distress), 2(urgent), or (1) safety

4.1.2 C_2 – Service Code

Search and Rescue co-ordination to rectangular area $C_2 = 34$
Search and Rescue co-ordination to circular area $C_2 = 44$

4.1.3 C_3 – Address Code

Search and Rescue co-ordination to rectangular area ($C_2 = 34$) C_3 = 12 characters

Rectangular addresses will consist of 12 characters as follows:

$D_1D_2LaD_3D_4D_5LoD_6D_7D_8D_9D_{10}$

where: D_1 D_2 is latitude of south-west corner of the rectangle in degrees.

La is hemisphere N or S.

$D_3D_4D_5$ is longitude of southwest corner of rectangle in degrees, with leading zeros if required.

Lo is longitude E or W.

D_6D_7 is extent of rectangle in latitude (degrees).

$D_8D_9D_{10}$ is extent of rectangle in longitude (degrees).

A rectangle whose south-west corner is 12° S and 124° E, extending 10° north and 10° east, is coded as:

12S124E10010

Note: Latitude and longitude are limited by values from 00° to 90° latitude and 000° to 180° longitude.

Search and Rescue co-ordination to circular area (C_2 = 44) C_3 = 10 characters
See Section 3 for description of circular addressing

4.1.4 C_4 – Repetition code

C_4 = 11 (transmit on receipt followed by automatic repeat 6 minutes later)

4.1.5 C_5 – Presentation code

Always C_5 = 00, International alphabet number 5.

.33 page 32, new paragraph 5.1 (old 4.1), amend to read "C_1 = 2 (urgency) or 1 (safety)

.34 page 33, (Annex 4), Section d, third line, delete "(July 1993)"

.35 page 37, (Annex 5), paragraph 2, amend to read ".... Organization, IMSO, and the World Meteorological ..... amendments.

.36 page 37, (Annex 5), paragraph 3, last line, amend to read " on Radiocommunications and Search and Rescue with ..... tasks."

.37 page 38, delete current Annex 6 and insert the document at Annex 2 as the new Annex 6, (rewrite of current Annex 7), renumber remaining annexes

.38 page 48, amend figure number to 6-1

.39 page 49, delete Class 0 (Option 2, etc.) - no longer in the SDM

.40 page 49, amend to read "Figure 6-2 - EGC Receiver Option

.41 page 64, Sample Certificate, Change phone numbers for both organizations as follows:

IMO

Telephone	
National	020 7735 7611
International	+44 (0)20 7735 7611
Facsimile	+44 (0)20 7587 3210
Telex	23588 IMOLDN G

Inmarsat
Telephone:
National 020 7728 1000
International +44 (0)20 7728 1000
Facsimile +44 (0)20 7728 1044
Telex 297201 INMSAT G

ANNEX 2

Annex 6
EGC receiver specifications

These technical requirements were prepared by Inmarsat for equipment manufacturers and have been extracted from the System Definition Manual (SDM) for the Inmarsat-C communications system.

Enhanced Group Call (EGC) receive facilities will be used by SOLAS Convention ships as well as ships not required to comply with the requirements of the SOLAS Convention, as amended. It should be noted that EGC receive facilities intended to meet 1974 SOLAS Convention requirements must comply with the IMO Performance Standards contained in the Annex [ ] of the present publication.

The specific guidance given in this Annex has been carefully co-ordinated to ensure that the automatic functions of the SafetyNET receiver work properly and in a predicable way when combined with the automatic functions of the Land Earth Station. Land Earth Stations providing Inmarsat C services for the GMDSS must comply with all relevant aspects of the Inmarsat C SDM, including the provision of all SafetyNET message addressing facilities and options.

Technical requirements for
Enhanced Group Call Receiver for SOLAS compliant SESs

1 EGC SafetyNET receivers for SOLAS installations

1.1 *Background*

The Global Maritime Distress and Safety System (GMDSS) is a radiocommunications system based on satellite and terrestrial technology, designed to improve communications relating to distress and the safety of life at sea. It was adopted by the International Maritime Organization (IMO) in 1988, in the form of **Amendments to the International Convention for the Safety of Life at Sea (SOLAS), 1974** and came into effect on 1 February 1992. Implementation was completed on 1 February 1999.

It is the responsibility of national Administrations to determine whether a radio installation on board a ship meets the SOLAS requirements. This is done by national Type Acceptance or Approval testing of the sub-systems included in the installation and by inspection of the complete installation by a radio surveyor.

National Type Acceptance testing for SOLAS equipment will usually be based on GMDSS specifications and procedures prepared by the IMO and the International Electrotechnical Commission (IEC) on their behalf, although other national or regional specifications may be invoked as well.

The major IMO and IEC documents, which are identified in Section 1.2, not only summarize the general requirements for GMDSS equipment, but also the special requirements for SafetyNET EGC receivers for use in SOLAS installations, as specified by IMO/IEC.

To the extent possible, the technical requirements for SafetyNET EGC receivers for use in SOLAS installations have been harmonized with the above mentioned specifications, and conflicts between the documents should not arise. A number of the Inmarsat specifications have been completely revised to reflect the latest IMO/IEC requirements, for example the electromagnetic compatibility and environmental requirements.

1.2 *Principal relevant documents*

For Inmarsat-C and EGC GMDSS SESs, the principal relevant documents in addition to the Inmarsat-C SDM are:

i) **"General Requirements for Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids"**, published by the IMO as **Resolution A.694(17).**

ii) **"Performance Standards for Inmarsat Standard-C Ship Earth Stations Capable of Transmitting and Receiving Direct-printing Communications-Annex: Recommendations on Performance Standards for Inmarsat Standard- C Ship Earth Stations Capable of Transmitting and Receiving Direct-printing Communications"**, published by the IMO as **Resolution A.663(16).**

iii) "**Performance Standards for Enhanced Group Call Equipment Communications-Annex: Recommendations on Performance Standards for Enhanced Group Call Equipment**", published by the IMO as **Resolution A.664(16).**

iv) **"Shipbome Radio Equipment Forming Part of the Global Maritime Distress and Safety System and Marine Navigational Equipment",** published by the **IEC as IEC 60945.**

v) "**Global Maritime Distress and Safety System (GMDSS): Inmarsat-C Ship Earth Station and Inmarsat-EGC (Enhanced Group Call) Equipment. Performance Standards, Methods of Testing and Required Test Results**", published by the IEC as **IEC 61097-4 Part 4**.

2 Introduction

2.1 *Enhanced Group Calls*

Enhanced Group Calls are a message broadcast service transmitted over the Inmarsat-C communications system. The service allows terrestrial information providers to pass messages or data to Class 2 or Class 3 SESs with EGC receivers or Class 0 stand-alone EGC receivers.

Enhanced Group Call messages are sent to Land Earth Stations (LESs) by Information Providers using terrestrial facilities such as Telex, PSTN, PSDN. The messages are processed at the LESs and forwarded to the Network Coordination Station (NCS) which transmits them on the common channel.

In addition to Inmarsat system messages, there are two primary services offered by EGC: SafetyNET service and FleetNET service. SafetyNET is a service provided in the GMDSS for the dissemination of maritime safety information (MSI), such as navigational warnings, meteorological warnings and forecasts and other urgent safety related information. FleetNET is a commercial communication service allowing terrestrial information providers to send messages to pre-defined groups of subscribers.

Both the SafetyNET and FleetNET services make use of flexible addressing techniques to allow the reception of messages from a variety of service providers depending on the particular requirements of the user. The SafetyNET service utilizes a geographical area addressing technique to direct messages to SESs within a defined boundary. SafetyNET is not generally used to send messages to individual receivers. The FleetNET service employs closed user groups and unique receiver addressing to provide secure transmission of messages from the terrestrial information provider to the desired service recipient(s).

2.2 *EGC receiver*

An EGC receiver is defined as a single-channel receiver with a dedicated message processor. Mobile Earth Stations of Class 2 and 3 provide an EGC capability in addition to To-Mobile and From Mobile messaging capabilities as indicated in Figure 6.l. Class 0 SESs are self-contained EGC receivers as shown in Figure 6.2.

2.3 *Type approval*

Inmarsat-C SDM presents the technical requirements and recommendations for an EGC receiver. These requirements must be satisfied before the equipment can be utilized in the Inmarsat system. Procedures for type approval by Inmarsat of a manufacturer's design are provided in a complementary document entitled *"Type Approval Procedures for Inmarsat-C Mobile Earth Stations"* published by Inmarsat.

3 General Requirements

3.1 *Mandatory capabilities*

The mandatory capabilities of SafetyNET receivers for SOLAS applications are:

(a) Continuous reception of an NCS common channel and processing of the information according to the EGC message protocol; A Class 2 Inmarsat-C SES shall continuously receive the NCS common channel when not engaged in general communications;

(b) Automatic recognition of messages directed to fixed and absolute geographical areas and service codes as selected by the receiver operator or based upon input(s) from navigational equipment.

(c) SafetyNET receivers shall meet the requirements of IEC 61097-4 and IEC 60945; and

(d) Provision shall be made for a visual indication that the ship's position has not been updated during the last 12 hours. It shall only be possible to reset this indication by revalidating the ship's position.

3.2 *Optional capabilities*

Additional optional capabilities required for reception of FleetNET service broadcasts are:

(a) automatic recognition of uniquely addressed messages directed to a particular EGC receiver;

(b) automatic recognition of messages directed to a group to which the receiver operator subscribes;

(c) automatic response to group ID updates directed to that EGC receiver, adding or deleting group IDs as commanded.

4 NCS common channel selection

4.1 *General*

EGC receivers are equipped with facilities for storing up to 20 NCS channel numbers. Four of these are permanently assigned global beam channel numbers and frequencies as follows:

NCS	NCS Common Channel	
	Channel No.	Frequency
AOR (West)	11080	1537.70 MHz
AOR (East)	12580	1541.45 MHz
POR	12580	1541.45 MHz
IOR	10840	1537.10 MHz

These four Channel numbers are stored in ROM and are not alterable.

4.2 *NCS scanning*

Automatic NCS scanning, either as a result of high Bulletin Board Error Rate (BBER), or on a regular basis, is prohibited in SOLAS SafetyNET receivers. Instead, when the BBER is 80% or more out of the last hundred received bulletin board packets, an alarm shall be raised and the operator is advised to initiate NCS scanning manually.

5 Message processing requirements

The requirements of this section may be amended to comply with future recommendations of the IMO.

5.1 *General*

Acceptance or rejection of the EGC service code types is under operator control except that receivers shall always receive navigational warnings, meteorological warnings, SAR information and To- Ships distress alerts which are directed to a geographical area within which the receiver is situated.

5.2 *Display devices*

5.2.1 *Message display*

It is recommended that the EGC receiver have a printer.

The display, or printer if fitted, shall be capable of presenting at least 40 characters per line of text. The EGC receiver ensures that if a word cannot be accommodated in full on one line it shall be transferred to the next line.

5.2.2 *Status display*

For receive-only EGC receivers an indication of EGC carrier frame synchronization (or loss of synchronization) is required as a minimum.

5.3 *Printer requirements*

For a SOLAS SafetyNET receiver the printer requirements apply. Received EGC messages may be stored for later printing with an indication to the operator that the message has been received. However, distress or urgency priority calls are directly printed as well as stored. Means are also provided not to print or store the same EGC message after it has been received error free and printed.

Messages are not printed until completely received, even in the case of multi- packet messages.

A local audible alarm is sounded to give advanced warning of a printer "paper-low" condition.

All SafetyNET messages are annotated with the time (UTC) and date of reception. This information is displayed or printed with the message. Note that UTC can be deduced from the NCS frame number.

5.4 *Character codes*

For the EGC service, the International Reference Version of the International Alphabet 5 (IA5), also known as ASCII (a standard alpha-numerical character set based on 7-bit codes) as defined in **ITU-T Red Book Recommendation T.50**, is used.

5.5 *Operator control*

The following control functions and displays are provided as a minimum:

(a) selection of EGC carrier frequency;

For SOLAS SafetyNET receivers:

(b) means of inputting the following information:

(i) mobile's position coordinates;

(ii) current and planned NAVAREA /METAREA; and

(iii) current and planned Coastal service coverage areas.

Receivers are fitted with operator controls to allow the operator to select desired geographical areas and message categories as described in *Section 5.7*. Details of the geographical areas and message categories, which have been selected for reception by the operator, are readily available.

Attention is drawn to the additional requirements of **IEC 61097-4**, Section 3.5.2 for SOLAS SafetyNET receivers.

5.6 *EGC receiver memory capacity requirements*

Both temporary and non-volatile memory is required in an EGC receiver for the following purposes:

(i) message buffering;
(ii) maintaining message identification records;
(iii) storing position co-ordinates and NAVAREA geographical area data; and
(iv) storing expansion NCS common channel numbers.

5.7 *EGC* receiver addressing

The five basic methods of addressing EGC receivers are:

(i) all mobiles call;
(ii) Inmarsat system message addressing;
(iii) group addressing:
(iv) unique addressing; and
(v) geographical area addressing.

The type of address used in the header of an EGC packet is uniquely determined by the service code field.

5.8 *Message sequencing*

All messages are transmitted with a unique sequence number and the originating LES ID. Each subsequent transmission of the message will contain the original sequence number. This facility allows multiple printing of repeated messages to be inhibited.

5.9 *Geographical Area Addressing*

Geographical area addressing refers to messages transmitted to SESs in a particular area. The area may be expressed in terms of a fixed, pre-defined area such as the NAVAREA, or Coastal warning coverage area, or in terms of an absolute geographical address expressed as latitude and longitude coordinates on the surface of the earth.

An absolute geographical area address is a representation of a closed boundary on the surface of the earth given in the address field of the message header. The receiver recognizes two forms of absolute geographical addressing: rectangular and circular. Each form is specified in terms of an absolute position in latitude and longitude and further parameters that completely specify the boundary.

In order to process a geographical area address, the receiver must be programmed with the SESs current position. The position may be entered automatically from an external navigation aid or entered manually. The receiver shall provide notification to the operator when the position has not been updated for four hours. If the SESs position has not been updated for more than 12 hours, or is unknown because the equipment has been powered off, all SafetyNET messages with priorities higher than routine will be printed.

A geographical area address is considered valid for a particular SES if its current position falls inside or on the boundary specified by the address. It is a mandatory requirement that the operator be able to select more than one area, so that messages directed to other area(s) of interest can be provided. It is recommended that the operator be able to select at least four areas.

5.10 *Maritime Requirements*

When a message has been received error free and a permanent record made, the unique 16 bit sequence number, the LES identifier and the service code field associated with that message shall be stored in memory and the information used to inhibit the printing of repeated transmissions of the same message. **IEC 61097-4**, Section 3.4.10, refers.

The EGC receiver is capable of internally storing at least 255 such message identifications. These message identifications are stored with an indication of the number of hours that have elapsed since the message has been received. Subsequent reception of the same message identification shall reset this timer. After between 60 and 72 hours, message identifications may be automatically erased. If the number of received message identifications exceeds the capacity of memory allocated, the oldest message identification shall be erased.

6 Testing functions

It is recommended that all receivers have some self-testing capability.

6.1 *Link performance monitoring*

Means are provided for demonstrating that the receiver is functioning correctly and alerting the operator in the event of a malfunction. The SafetyNET EGC receiver continuously monitors the received bulletin board

error rate (BBER) as a measure of link performance whenever it is tuned and synchronized to a NCS (or LES) TDM. The receiver stores a count of the number of bulletin boards received in error out of the last 100 received. This count is continuously updated frame by frame.

7 Alarms and indications

The following alarms and indications are provided at a SOLAS SafetyNET receiver and meet the operational requirements for alarms stated in IEC 945.

7.1 *Distress/Urgency Priority Call Alarm*

For SOLAS SafetyNET receivers:

Provision is made for a specific audible alarm and visual indication at the position from which the ship is normally navigated to indicate receipt of a distress or urgency priority call, both EGC or individually addresses messages. It is not possible to disable this alarm and it is only possible to re-set it manually and then only from the position where the message is displayed or printed. **IEC 1097-4**, Section 3.4.6 refers.

7.2 *Other alarms and indications*

(i) High BBER: Section 6.1 refers;

(ii) Printer paper low: Section 5.3 refers;

(iii) Receiver fault indication;

(iv) Loss of receiver synchronisation: Section 6.1 refers; and

(v) Position update: Section 5.9 refers.

It is recommended that any of these conditions generate a common alarm signal at the SafetyNET receiver (separate from distress alarm caused by a distress alert initiation or a distress priority message initiation or reception), which is capable of being extended to a remote alarm panel (e.g. by means of relay contacts) should this be required.

Additional alarms and indications may be provided at the manufacturer's discretion.

8 Electromagnetic compatibility

The interference and electromagnetic compatibility requirements of **IEC 60945**, Section 3.5 apply.

9 Environmental conditions

SOLAS SafetyNET receivers shall operate satisfactorily under the environmental conditions specified in the SDM. The latest issues of **IEC 61097-4** and **IEC 60945** apply.

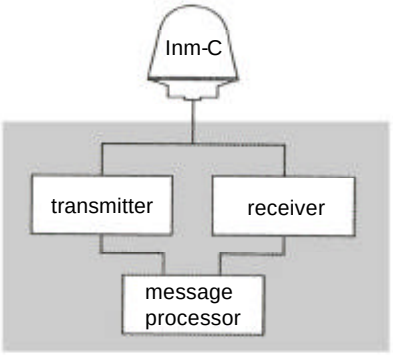
10 Optional features

10.1 *Reception of SafetyNET or FleetNET service only*

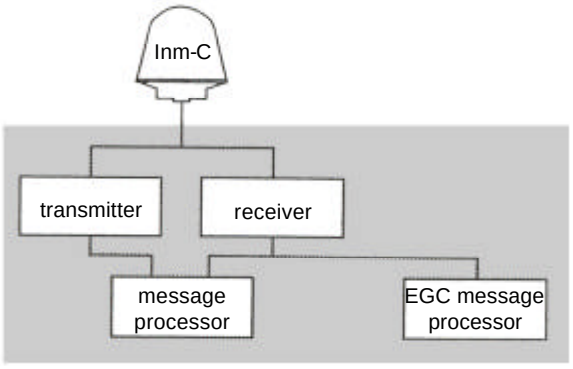
Manufacturers may choose to produce receivers capable of receiving both SafetyNET and FleetNET. In case of conflict between the two sets of technical requirements, the SafetyNET requirements shall apply.

11 Navigational interface

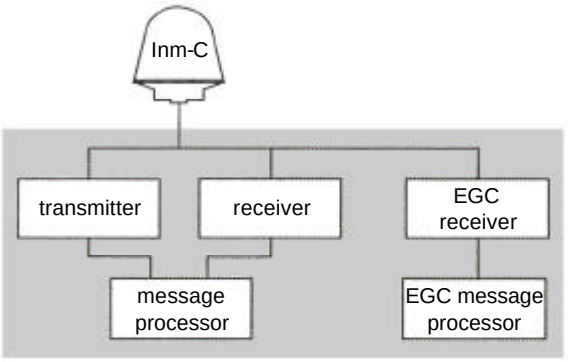
In order that a receiver's position may be automatically updated, receivers may be equipped with an interface to navigational instruments. A suggested standard interface is in IEC 61162, Part l (NMEA 0183) Standard for Interfacing Electronic Marine Navigational devices.



Class 1 (no EGC)

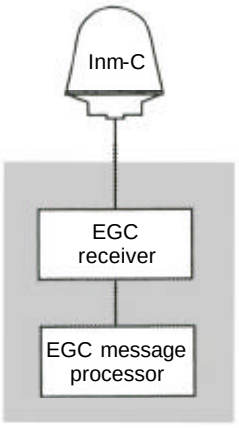


Class 2



Class 3

Figure 6-1 – Classes of Mobile earth stations



Class 0 (stand-alone EGC receiver)

Figure 6 - 2 – EGC receiver option