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## **NEW MARITIME SAFETY AND COMMERCIAL SERVICES IN 2002**

JOINT WMO/IOC TECHNICAL COMMISSION FOR OCEANOGRAPHY AND MARINE  
METEOROLOGY (JCOMM) SHIP OBSERVATIONS TEAM.

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### **Brief notes on existing services**

Inmarsat operates four communication systems Inmarsat A, Inmarsat B, InmarsatC, Inmarsat mini-M and Inmarsat E distress alerting system which are the right choice for safety at sea and commercial communications.

**Inmarsat A** is the original analogue Inmarsat satellite communication system that provides voice, telex, fax, data (9.6 kbit/sec) and high speed data (56/64 kbit/sec) services. The system is GMDSS compliant and provides telephone and telex distress calling to a Rescue Coordination Centre.

**Inmarsat B** is a digital successor to Inmarsat A and offers similar capabilities but with more efficient use of the resources and low call charges. The system is also GMDSS compliant and provides telephone and telex distress calling to a Rescue Coordination Centre.

**Inmarsat C** is a cornerstone of the GMDSS supporting 5 out of 9 communication functions defined in the IMO SOLAS Convention, Chapter IV. It is a packet data communication system providing store and forward messaging including e-mailing, distress alerting and distress priority messaging to associated Rescue Coordination Centres, reception of maritime safety information via the International SafetyNET service, data reporting and polling service. It is also very important that Inmarsat C is used to send messages to a short code or two-digit address, e.g. sending meteorological reports, navigational hazards and warnings, request for medical advice and medical assistance, requests for search and rescue assistance and sending ship position reports to shore authorities.

EGC SafetyNET provides an efficient and low-cost means of transmitting maritime safety information to vessels at sea and is used by meteorological, hydrographic, search and rescue and coastguard co-ordination authorities. Messages are addressed to ships at sea using IMO defined NAVAREAs/METAREAs, coastal areas or sea areas defined by a circular, e.g. area around vessel in distress or rectangular area.

**Inmarsat mini-M** is the smallest, lightweight and cost effective satellite communication system that provides high quality voice, data, fax and e-mail services at the speed of 9.6 kbit.sec. It operates via Inmarsat spot beams in four ocean regions like a cellular phone with maritime coverage. The system is small in size and low weight and can be easily installed on smaller maritime users. Inmarsat Mini-M is not GMDSS compliant and does not support safety services.

**Inmarsat E** is an Emergency Position Indicating Radio Beacon (EPIRB) system which provides distress alerting capability via Inmarsat satellites. Distress alerts are handled automatically and received at associated Rescue Coordination Centres within, typically, two minutes after activation. Inmarsat E EPIRBs have built-in Global Positioning System (GPS) receivers, which provide accurate distress position information and are small and lightweight enough to be installed on smaller vessels. Two Land Earth Stations in each out of four Inmarsat ocean regions give 100% redundancy in case of failure or outages associated with any of the LESs.

The Inmarsat E system supports “Float Free” EPIRBs which incorporate the following features: integrated GPS receiver which is accurate to within 200 metres; automatic activation when the EPIRB is hydrostatically released by “floating free”; remote activation and information input from vessels bridge or other manned situation; optional Search and Rescue Radar Transponder (SART); optional 121.5MHz locator beacon; high intensity, low duty cycle flashing light.

## **WHAT IS NEW**

### **Inmarsat Fleet**

Inmarsat Fleet F77, unveiled at Europort exhibition in November 2001, is the first in new family of Inmarsat services for the maritime industry in eight years and brings a new dimension to maritime safety. Fleet F77 is the only service that meets the International Maritime Organisation’s latest requirements – IMO Resolution A.888(21) “Criteria for the provision of mobile satellite communication systems in the Global Maritime Distress and Safety System (GMDSS)”, by providing voice prioritisation and pre-emption.

This essential new prioritisation function comes as standard on Fleet F77 and allows the interruption and clearing of lower priority communications and routine calls to give way to voice communication for high priority distress, urgency and safety needs. The Resolution A.888(21) states that any system being designed for use in the GMDSS after 1 February 1999 should be able to recognise the four levels of priority in both ship-to-shore and shore-to-ship directions:

- Distress;
- Urgency;
- Safety; and
- Other (general/routine) communications

Rescue authorities calling a vessel equipped with Fleet F77 will always be able to contact a ship, even if the voice or data channel is in continuous use at a lower priority. Not only will pre-emption work seamlessly, it will always work in a hierarchical manner: Distress priority P3 call will pre-empt all other communications; Urgency priority P2 call will pre-empt both safety P1 and routine P0 calls; and Safety priority P2 call will pre-empt a routine P0 call.

The introduction of Fleet F77 to the Inmarsat communications portfolio reinforces their continued commitment to the provision of international maritime safety. In addition, Inmarsat consistently exceeds the minimum IMO requirement for 99.9% system availability for ship-shore distress alerts.

**The new IMO criteria were formulated following a maritime rescue incident in November 1994. The passenger liner “Achille Lauro” caught fire and sank off the coast of Somalia. The majority of the passengers (930) were subsequently rescued by the tanker “Hawaiian King”, and the tanker “Chevron Perth” rescued a further 133. Upon being rescued, the survivors were keen to contact family and friends to let them know they were safe and well. In addition, the world’s press was also keen to talk to survivors, to get first-hand accounts of the incident.**

The subsequent increase in usage of the Inmarsat A terminal onboard the “Hawaiian King” prevented the Maritime Rescue Co-ordination Centre (MRCC) from contacting the ship. The situation was safely resolved by the MRCC using additional Inmarsat safety equipment, Inmarsat C, to alert the “Hawaiian King” to clear the voice channel on their Inmarsat A for safety communications.

Fleet F77 was at the design stage at the same time that the Resolution A.888(21) was being drafted. Once the new requirements were made clear, Inmarsat incorporated these into the design of Fleet F77. Provision of pre-emption in both directions also means that Inmarsat land earth station operators (LESOs), which provide Fleet F77 services, are capable of offering this valuable safety service.

In addition to an advanced safety service, Fleet F77 will also deliver a wide range of commercial communications needs; voice, fax and data services at speeds of up to 64 kbit/s, including mobile ISDN and mobile packet data service (MPDS), where users are charged for the amount of information sent and received rather than the time for which they are connected. This will enable mariners to send and receive information on real-time basis, rather than the traditional practice of logging on once or twice a day.

Selection of mobile ISDN or MPDS depends on what a maritime user wants to send or receive. As a general rule, the mobile ISDN service is best used when transmitting large files or if a data speed or of the utmost importance. The MPDS can be more efficient for applications that are interactive in nature such as e-mail, web or Intranet access.

Fleet F77 supports a range of powerful new applications through its high speed data capability which include secure access to information online, image transfer, video and digital image communications. Fleet77 also delivers e-mail, Internet and Intranet access plus a choice of two fax services. Some of maritime specific applications include graphical ocean charts and weather displays, navigational chart updates, database queries, accessing online safety information, telemedicine, vessel’s telemetry transmission.

### **Inmarsat mini-C**

Inmarsat mini-C is a low-power and compact communications solution for small vessel markets such as fishing vessels, yachting, inland waterways. Mini-C is an evolution of the existing Inmarsat C technology and supports all standard services combined with a significantly reduced level of power consumption. Low power consumption also offers the possibility of using a solar-fed battery power source where required.

Inmarsat mini-C offers two-way messaging and e-mailing, position reporting and polling, ship-to-ship communications. This makes mini-C an ideal portable and inexpensive solution to fulfill basic messaging, tracking and security communications requirements for small maritime users.

Mini-C provides ship-to-shore and shore-to-ship telex and e-mail communications, position reporting and tracking applications, short access code address messaging for maritime safety services such as sending meteorological reports to meteorological centers, sending navigational hazards and warnings, request for medical advice and assistance, sending position reports to shore authority.

In future an enhanced Inmarsat mini-C model, to be available in early 2002, will also provide emergency alerting for non-SOLAS ships and reception of maritime safety information via the EGC SafetyNET service. In the merchant marine sector, it can also deliver commercial information for shipping and transport companies, fishing and merchant fleet data applications, anti-piracy and navigation aids. Inmarsat mini-C can also be installed as supplementary terminals for crew communications, to complement existing communications services onboard.

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