



International Mobile Satellite Organization

ADVISORY COMMITTEE

Nineteenth Session

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Agenda item 5

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GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)

**MATTERS RELATED TO THE PROVISION OF SATELLITE SERVICES FOR THE
GMDSS**

Executive Summary:	this document provides information on various issues affecting the provision of GMDSS services via Inmarsat
Action to be taken:	to note the information provided
Related documents:	none

1 BACKGROUND

The Director intends, in future, to provide the Advisory Committee with regular brief reports on any matters of importance concerning the provision of satellite services for the GMDSS that have arisen or progressed since the Committee's last session.

2 CONTINGENCY EXERCISE

2.1 IMO Assembly resolution A.888(21) includes provisions relating to the restoration of distress and safety services in the event of total satellite failure, as follows:

"3.7.1 Spare satellite capacity and arrangements prepared in advance should be provided for ensuring, in the event of a partial or total satellite failure, restoration of the maritime distress and

safety communication services in the area concerned to their normal availability, within no more than one hour after the event of a satellite failure.

3.7.2 Adequate information on the means and arrangements prepared for restoration of the maritime distress and safety communication services in the event of a satellite failure should be notified to the Organization."

2.2 As part of the ongoing programme of regular exercises to demonstrate Inmarsat's ability and readiness to restore the distress, safety and other maritime and aeronautical services in the event of a major prime satellite failure, a programmed Contingency Exercise for the Indian Ocean Region was held on 11 April 2007. The exercise was attended by the Deputy Director/Head of Operations. The exercise involved the participation of all relevant Land Earth Station Operators (LESOs). During this exercise, the maritime distress and safety services were successfully restored within the one-hour timescale required by IMO.

3 POTENTIAL LAND EARTH STATION FAILURES

A few days before the Contingency Exercise, an event occurred which highlighted the necessity for Administrations to ensure they have back-up arrangements in place to route distress and safety traffic if the Land Earth Station which normally carries their traffic should fail. Inmarsat has been advised to remind Administrations, and SAR and MSI Authorities in particular, of the vital need for such back-up arrangements.

4 SPECTRUM ISSUES

4.1 The Director has been made aware of a potential threat to the continued operation of Inmarsat maritime satellite services for the GMDSS, arising from proposals within ITU for a re-designation of certain frequencies currently used by Inmarsat for GMDSS satellite downlink feeder channels. The ITU will consider this proposal at the next World Radio Conference later this year. An explanatory note, provided by Inmarsat, is annexed to this document.

4.2 The Director has discussed this issue with Inmarsat, other interested industry figures, and the IMO Secretariat. The level of concern is near-universal, but it is now too late for Member States to make formal submissions to ITU on the subject. A co-ordinated position is therefore being developed through the IMO Secretariat, and it is understood that the IMO Representative will raise the point at the WRC when introducing the IMO co-ordinated submission on other issues.

POTENTIAL C-BAND INTERFERENCE AFFECTING GMDSS SERVICES

In order to avoid misunderstanding over the potential interference issues at C-Band, Inmarsat has provided the following text:

1) All Inmarsat satellites have their feeder downlink within the range 3550-3700 MHz. This is a part of the band 3400-3700 MHz which is known as "extended C-band". Telemetry downlinks, vital for controlling the satellites in orbit, are near 3950 MHz.

2) The Inmarsat-4 satellites can not be tuned to other C-band frequencies outside the range 3550-3700 MHz, and of course cannot be tuned to frequencies in other FSS bands (e.g. Ku-band). The Inmarsat-4 satellites can be expected to operate at least until 2020 and hopefully well beyond.

3) Earth stations are vulnerable to interference; not just on the same frequencies as their operations, but also on other frequencies (due to low noise amplifier saturation). There have been examples in several countries around the world where terrestrial access systems have been deployed in C-band and FSS earth stations have suffered interference as a consequence.

4) In theory, if the bands we use were to be used for IMT systems, sharing could be feasible if there was sufficient geographical separation between the IMT stations and the satellite earth stations. The separation distances between IMT base stations and satellite earth stations are at least 10s of kilometres, and sometimes 100s of kilometres. Hence there would be large "holes" in the IMT system coverage. In some countries (such as The Netherlands), the exclusion zone covers the whole country. One of the largest land earth stations used by Inmarsat is at Burum, in the Netherlands.

5) In most cases, sharing cannot be considered a practical solution. Two things may happen.

- Inmarsat earth stations will be under significant risk of interference.

- Inmarsat earth stations will be under significant pressure to be closed down. In India for example, all earth station operators (including Inmarsat's LESO) have been instructed by the regulator to vacate the band 3400-3700 MHz to allow for the unfettered deployment of terrestrial wireless systems. (This instruction is currently being challenged).

6) In other bands which have been identified for IMT (e.g. 2500-2690 MHz), after the band was identified for IMT, steps have been taken at the ITU level and the regional level to remove or constrain satellite services, so that IMT can enjoy unfettered access to the band.

7) Although adding an identification for IMT to C-band in the Radio Regulations will not immediately affect Inmarsat, it would almost certainly be the start of the process that will place Inmarsat's current and future services under grave threat.
