

SUB-COMMITTEE ON
RADIOCOMMUNICATIONS AND SEARCH
AND RESCUE
17th session
Agenda item 5

COMSAR 17/5/1
16 November 2012
Original: ENGLISH

CONSIDERATION OF DEVELOPMENTS IN INMARSAT AND COSPAS-SARSAT

Analysis and assessment of the GMDSS performance of Inmarsat Global Limited

Note by the International Mobile Satellite Organization (IMSO)

SUMMARY

Executive summary: This document provides analysis and assessment of the performance by Inmarsat Global Limited of the Company's obligations for the provision of maritime services within the GMDSS, as overseen by IMSO. The information covers the period from 1 November 2011 to 31 October 2012. It is assessed that, during this period, Inmarsat has continued to provide a sufficient quality of service to meet its obligations under the GMDSS.

Strategic direction: 5.2

High-level action: 5.2.5

Planned output: 5.2.5.4

Action to be taken: Paragraph 9

Related documents: COMSAR 14/INF.6; MSC 88/8/3; MSC/Circ.1077; resolutions MSC.130(75) and A.1001(25)

Introduction

1 This document is the formal report to IMO by the International Mobile Satellite Organization (IMSO) on the performance by Inmarsat Global Limited (Inmarsat) of that Company's public service obligations in respect to the GMDSS, as established in articles 3(1) and 5 of the Convention on the International Mobile Satellite Organization, and Clause 2.1.2 of the Public Services Agreement between IMSO and Inmarsat (PSA), submitted in accordance with the requirement of section 2.5 of resolution A.1001(25). This report covers the period from 1 November 2011 to 31 October 2012. The previous report to IMO, covering the period 1 November 2010 to 31 October 2011, was made to the sixteenth session of the COMSAR Sub-Committee in document COMSAR 16/5/1.

Status of the Inmarsat Network

2 The operational status of key elements of the space and ground segments of the relevant Inmarsat systems is summarized in the following table:

	AOR-E	POR	IOR	AOR-W
OPERATIONAL SATELLITES	INMARSAT-3 F2 15.5°W	INMARSAT-3 F3 178°E	INMARSAT-3 F1 64.5°E	INMARSAT-3 F4 54°W

2.1 The table shows four operational Inmarsat-3 satellites in the primary locations over four ocean regions. Inmarsat operates other satellites to provide non-GMDSS services and these satellites are configured to act as on-orbit spares for the rapid restoration of essential GMDSS services in the event of a prime satellite failure. Operational procedures are in place to ensure that full sparing capability is retained with this arrangement of the constellation and these procedures are exercised to demonstrate and maintain their effectiveness.

Performance of the Inmarsat Network

3 Availability figures for each service/ocean region

3.1 The availability of all GMDSS components, including distress alerting, SAR Coordination, MSI broadcast and general communications within the Inmarsat system during the 12-month period from 1 October 2011 to 30 September 2012 is shown in the following table:

	AOR-E	IOR	POR	AOR-W
SPACE SEGMENT	100.0000%	100.0000%	99.8318%	100.0000%
INMARSAT-B/F77	100.0000%	100.0000%	99.8301%	100.0000%
INMARSAT-C	100.0000%	100.0000%	99.9172%	100.0000%

The definition of availability and methods of calculation are based on the approach adopted in section 3.5 of CCIR Report 918 (MOD F) "Availability of Communications Circuits in the Maritime Mobile Satellite Service", dated 15 December 1989.

3.2 These figures illustrate the effective reliability of the core GMDSS components, and may be taken as a measure of the availability of the GMDSS services which rely on those components, including those providing general communications. The figures tabulated in paragraph 3.1.1 above indicate that availability of the core GMDSS services was generally very satisfactory during the reporting period. Availability in the POR is reduced because of a significant period of satellite non-availability which took place on 22 October 2011.

3.3 Neither Inmarsat C, the base satellite communications service for the GMDSS which is used for distress alerting, SAR coordination communications and broadcast of Maritime Safety Information as well as SSAS, LRIT and general communications, nor Inmarsat B/F77 which may be used in the GMDSS for distress calling and general communications, experienced any periods of non-availability in AOR-E, AOR-W or IOR during the period.

3.4 The availability of the Inmarsat FleetBroadband network, which is not part of the GMDSS but is used extensively by shipping worldwide for general communications, was 99.98 per cent over the same period.

3.5 It should be noted that the availability figures do not include any element of the communication links from any LES to MRCCs or other national agencies, which are entirely a matter for the country concerned.

Apparent loss of satellite control in POR on 22 October 2011

3.6 On Saturday 22 October 2011 Inmarsat lost control of the Inmarsat 3rd generation satellite (I3F3) acting as the prime satellite over the Pacific Ocean Region (POR). Details of this incident, and the actions taken to recover maritime distress and safety services, were reported in the last annual report to the Sub-Committee (COMSAR 16/5/1, section 3.2). Since the date of that report, IMSO and Inmarsat have put in place procedures to ensure that any problem with an on-orbit satellite providing GMDSS services is not allowed to develop beyond a certain level without IMSO being made aware of the potential problems. In addition, Inmarsat has developed revised internal procedures intended to improve management decision-making in the event that a similar incident occurs again.

Number of Land Earth Stations providing GMDSS Services

3.7 At present, 80 Inmarsat-B/M/F77 and 37 Inmarsat-C Land Earth Stations, located at various sites worldwide, provide the essential ground-based gateways for GMDSS related communications using e-mail, telex, and telephony. The figures include virtual as well as real LESs and illustrate the total number of points of access to the network. There are enough LESs in each system to ensure robust operation and provide alternatives in the event of local failure. These LESs also operate the Inmarsat space and ground segments for distress alerting, follow-up communications and promulgation of MSI.

Number of Ship Earth Stations

3.8 Inmarsat had over 170,000 registered GMDSS-capable mobile terminals at the end of October 2012, *of which more than 145,000 were Inmarsat C and mini-C terminals*. In view of the competitive environment in which the company operates, Inmarsat does not make public the breakdown of these totals.

Number of Distress Priority Calls/Alerts through the system

3.9 All distress alerts and calls through the Inmarsat system during the period between 1 November 2011 to 31 October 2012 were handled correctly and delivered promptly. Inmarsat uses the Distress Alert Quality Control System (DAQCS) to provide quantitative data on the number of distress priority calls, alerts and messages.

3.10 The numbers of **ship-to-shore Inmarsat-C** distress alerts received were as follows:

	AOR-E	AOR-W	IOR	POR	Total
Nov 11 – Oct 12	295	157	349	199	1000
Nov 10 – Oct 11	411	216	309	196	1132

These figures include distress alerts originated by Inmarsat Mini-C terminals, not all of which are GMDSS compliant.

3.11 The numbers of **shore-to-ship Inmarsat-C** distress priority messages were as follows:

	AOR-E	AOR-W	IOR	POR	Total
Nov 11 – Oct 12	183	78	398	503	1162
Nov 10 – Oct 11	205	87	587	868	1747

These figures include distress priority messages originated by Inmarsat Mini-C terminals, not all of which are GMDSS compliant.

3.12 The numbers of **ship-to-shore** priority calls via F77 were as follows:

Priority	AOR-E	AOR-W	IOR	POR	Total (previous year)
Safety	37	29	53	21	140 (162)
Urgency	134	76	165	76	451 (559)
Distress	48	11	152	18	229 (236)

3.13 The numbers of **shore-to-ship** priority calls via F77 were as follows:

Priority	AOR-E	AOR-W	IOR	POR	Total (previous year)
Safety	11	0	4	0	15 (27)
Urgency	0	0	0	0	0 (0)
Distress	21	11	32	6	71 (208)

3.14 The number of **ship-to-shore voice distress** priority calls via Inmarsat B was as follows:

AOR-E	AOR-W	IOR	POR	Total
6	6	61	60	133 (13)

3.15 In general, the distress and safety usage of these Inmarsat systems is not widely different from that of the previous year.

- the total number of Inmarsat C distress alerts in all ocean regions is generally of a similar level to that seen in previous years;
- For F77, the number of ship-to-shore priority voice calls has remained at broadly similar levels to previous years. However, there is an apparent decrease in the numbers of shore originated priority calls via F77 compared with the previous year; and
- in spite of an increase in the IOR and POR, the overall number of distress priority calls via Inmarsat B in all Ocean Regions reflects the diminishing use of this legacy system, which is due for closure at the end of 2014 (COMSAR 14/INF.6).

Action to reduce false alerts

4 Inmarsat continues to contact those vessels concerned with the transmission of multiple distress alerts and, where the alerts have apparently been false, seeks to assist the vessel to improve its procedures to avoid such occurrences in future. Where vessels respond to such approaches by Inmarsat, the reasons given for initiating false distress alerts invariably are attributed to human error, equipment test or equipment fault. However, many vessels do not respond to these contacts and no further action by Inmarsat is possible.

4.1 Following the request by the Sub-Committee at its fifteenth session (COMSAR 15/16, paragraph 5.4), IMSO has now agreed with Inmarsat a procedure whereby the Director General of IMSO will write to the flag State of any vessel that does not respond to the approach by Inmarsat after they have initiated apparent multiple false distress alerts. There have been no such cases during the last year.

SafetyNET MESSAGES

5 SafetyNET messages consist of Maritime Safety Information (MSI) broadcasts via the Enhanced Group Call (EGC) capability of Inmarsat C. The messages are originated by authorised Information Providers, which include NAVAREA Co-ordinators, MET Area Issuing Services and some Rescue Co-ordination Centres. The standards against which most of these broadcasts are issued have been established by the International Hydrographic Organization (IHO) and World Meteorological Organization (WMO). The total number of SafetyNET calls worldwide fluctuates according to the season, but has been generally stable at a slightly higher level of usage during the past year. For example, while 27,229 were issued during October 2011, 32,782 were issued during October 2012 and the average number of messages issued each month during 2012 was 30,931.

SATELLITE FAILURE CONTINGENCY EXERCISES

6 The programme of satellite failure contingency exercises, carried out by Inmarsat at the request of IMSO and noted in paragraph 2.1 of this and previous reports, continues. These exercises are designed to ensure that Inmarsat is able to restore the essential maritime distress and safety services (distress alerting, SAR Co-ordination communications and Maritime Safety Information (MSI) broadcasts) within one hour after a confirmed satellite failure, as required by resolution A.1001(25). Exercises include participation not only by Inmarsat's satellite control, network operations staff and management, but also the active involvement of relevant Land Earth Station Operators (LESOs).

6.1 Exercises are planned to be carried out, in general, every three months and a different ocean region is chosen for each exercise. During 2012, satellite failure contingency arrangements were exercised in the POR (March), AOR-W (July) and IOR (November). The exercise in the IOR during November was carried out at the Operational Backup Centre (OBC) at Burum in the Netherlands, in order to exercise the staff, communications and decision-making at that emergency stand-by facility.

6.2 IMSO participates actively in the planning, execution and review of all satellite failure contingency exercises and continues to work with Inmarsat to broaden the scope of these events. In this regard, the most recent of these exercises was initiated without giving most of the staff concerned any prior warning that it was to take place.

Evolution of the Maritime Mobile Satellite Services

7 On 14 March 2012 the Inmarsat 2F4 satellite, which had been providing lease services from a location over Singapore at 109° East, and was available for use as an emergency spare in the event of a prime satellite failure over the IOR or POR, suffered an anomaly with one of its batteries and was de-commissioned early, exactly one month short of its 20th birthday.

7.1 On 31 October 2012 the Land Earth Station at Thermopylae, Greece, ceased providing Inmarsat C service. There remains a sufficient number of Land Earth Stations in the Inmarsat C network to provide full GMDSS coverage across the network.

7.2 IMSO earlier provided information to the Committee (MSC 88/8/3) relating to the intention by Inmarsat to seek future recognition and approval for the Inmarsat FleetBroadband FB500 terminal to be used in GMDSS ship installations. Inmarsat, in coordination with IMSO, has now developed the specific elements of FB500 service that are expected to be required by the Organization before FB500 terminals could be approved for such use. A document providing information on the Inmarsat FleetBroadband FB500

terminal and recommending it for use in GMDSS ship installations is expected to be submitted to this session of the Sub-Committee.

Conclusions

8 Inmarsat's maritime business remains the largest single contributor to the company's revenues. This is recognized by the company and reflected in the amount of effort given to the promotion and development of the maritime sector. At the same time, Inmarsat continues to provide maritime distress and safety services for the GMDSS at either no cost or a special rate.

8.1 In view of the foregoing review of the status and performance of the relevant Inmarsat systems, it is IMSO's overall assessment that, during the period covered by this report, Inmarsat Global Limited has continued to provide fully operational maritime mobile satellite distress and safety communication services for the GMDSS and fulfil the company's public service obligation as stated in paragraph 2.1.2 of the PSA.

Action requested of the Sub-Committee

9 The Sub-Committee is invited to note:

- .1 the information provided on the status and performance of the Inmarsat network (sections 2 and 3);
 - .2 the ongoing programme to reduce false distress alerts by contacting vessels which originate repeated false alerts, including the procedure whereby IMSO will write to the flag State of vessels that do not respond these contacts (section 4);
 - .3 the information provided on the international SafetyNET broadcast (section 5);
 - .4 the ongoing programme of satellite failure contingency exercises (section 6);
 - .5 the information provided on the evolution of the maritime mobile satellite services (section 7); and
 - .6 the contents of this report in general, and in particular the conclusion that Inmarsat Global Limited has continued to provide a sufficient quality of service to meet its obligations under the GMDSS during the period covered by the report (paragraph 8.1).
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