SUB-COMMITTEE ON NAVIGATION,
COMMUNICATIONS AND SEARCH AND
RESCUE
5th session
Agenda item 14

NCSR 5/14
17 November 2017
Original: ENGLISH

DEVELOPMENTS IN GMDSS SATELLITE SERVICES

Analysis and assessment of the GMDSS performance of Inmarsat Global Limited

Submitted by the International Mobile Satellite Organization (IMSO)

<table>
<tr><td colspan="2" align="center">SUMMARY</td></tr>
<tr><td>Executive summary:</td><td>This document contains the annual report to IMO by IMSO on Inmarsat's public service obligations for the provision of recognized mobile satellite communication services in the GMDSS, as overseen by IMSO</td></tr>
<tr><td>Strategic direction:</td><td>5.2</td></tr>
<tr><td>High-level action:</td><td>5.2.5</td></tr>
<tr><td>Output:</td><td>5.2.5.4</td></tr>
<tr><td>Action to be taken:</td><td>Paragraph 60</td></tr>
<tr><td>Related documents:</td><td>NCSR 1/18/1; NCSR 2/14/1; NCSR 3/19; NCSR 4/18; NCSR 5/14/1; resolutions A.707(17), A.801(19), A.814(19) and A.1001(25)</td></tr>
</table>

Introduction

1   This document is the annual report to IMO by the International Mobile Satellite Organization (IMSO) on the performance of Inmarsat Global Limited (Inmarsat) as the mobile-satellite communication system recognized to operate in the GMDSS. The report is prepared and submitted in accordance with the provision of section 2.5 of the annex to resolution A.1001(25) on *Criteria for the provision of mobile satellite communication systems in the Global Maritime Distress and Safety System (GMDSS)*.

2   Inmarsat's public service obligations in respect to the GMDSS are established in articles 3(1) and 5 of the Convention on the International Mobile Satellite Organization and they are exercised through the Public Services Agreement (PSA) signed between IMSO and Inmarsat in 1999.

3   This report covers the period from 1 November 2016 to 31 October 2017. The previous report to IMO, covering the period 1 November 2015 to 31 October 2016, was made to the fourth session of the Sub-Committee in document NCSR 4/18.

Inmarsat communication systems for use in the GMDSS

4   Inmarsat offers a range of communication services to fulfil the functional requirements listed in resolution A.1001(25), in particular the maritime distress, urgency, safety and routine communications, including broadcast of maritime safety information (MSI). The GMDSS compliant communication systems currently supported and provided by Inmarsat, are listed as follows:

>   .1   **Inmarsat-C** is the base satellite communications system primarily used for distress alerting and reception of MSI, including shore-to-ship distress relay messages. It is a two-way store and forward system that can handle data and messages up to 32KB. Inmarsat-C is also utilized for other IMO systems such as Ship Security Alerting System (SSAS) and Long-Range Identification and Tracking of ships (LRIT); and

>   .2   **Inmarsat-F/77** provides two-way distress voice communication service for the GMDSS. It also supports urgency and safety priority communications in ship-to-shore and shore-to-ship direction.

Closure of Inmarsat-B system

5   Inmarsat, through IMSO, previously notified IMO of its intention to close the Inmarsat-B system with effect from 31 December 2014 (COMSAR 14/INF.6). Further to that, the company postponed the closure date by two years to 30 December 2016 due to the significant number of ships still utilizing the service at that time and notified IMO, through IMSO, of the new closure date (document NCSR 1/18/1).

6   In conjunction with IMSO, Inmarsat carried out the successful closure of the Inmarsat-B service on 11 January 2017. Inmarsat confirmed that no issues were reported to the company during or after completion of the closure procedure. This verifies the success of the public announcement campaign run by Inmarsat prior to the closure.

7   Closure of the Inmarsat-B service entails the need for consequential amendments to annexes 1, 5 and 6 of the GMDSS Master Plan which is in the process of being transformed into a new GISIS module by the IMO Secretariat.

Closure of Fleet-77 service

8   The Inmarsat-F77 service is scheduled to close by 1 December 2020 in accordance with the notification given to the Sub-Committee (NCSR 3/19/1).

9   Inmarsat F-77 terminal is not a direct carriage requirement in the GMDSS, therefore its closure is not expected to endanger the distress and safety communications, which are supported by the Inmarsat-C service in the first place. The Voice Distress service supported by Inmarsat Fleet-77 terminals may continue to be available subject to consideration by the Sub-Committee of IMSO's report on the recognition of the Inmarsat FleetBroadband Maritime Safety Data Service (MSDS) for use In the GMDSS (NCSR 5/14/1).

10   Inmarsat has reassured that the company will run a public announcement campaign akin to the one they ran for the closure of Inmarsat-B system in order to inform all affected users.

Inmarsat mobile-satellite communication system

11   Inmarsat mobile-satellite communication system is composed of: a space segment to provide communication links with the earth; a ground segment to control and maintain the space segment and network; maritime mobile terminals to communicate with the users; and terrestrial networks to support connectivity with the land-based users.

Inmarsat space segment

12   A diagram illustrating Inmarsat's current constellation of I-3 and I-4 satellites is provided below in figure 1. Satellites in both constellations are located on the geostationary orbit – 35,786 kilometres above the Earth's equator, and operate on the L-band frequencies (1.5/1.6 GHz) used by Inmarsat to provide GMDSS as well as non-GMDSS services.
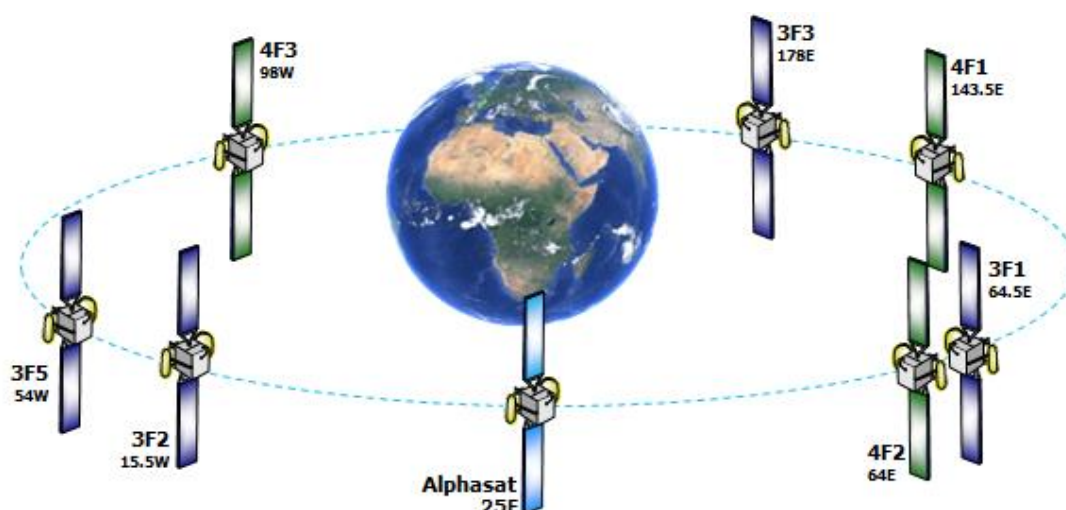

Figure 1: Inmarsat-3 and Inmarsat-4 satellite constellation – November 2017

13   The recognized GMDSS services provided by Inmarsat are managed through four primary Inmarsat-3 (third generation, I-3) satellites located over four ocean regions. Names and coverage map of the I-3 satellites are provided below in table 1 and figure 2, respectively.

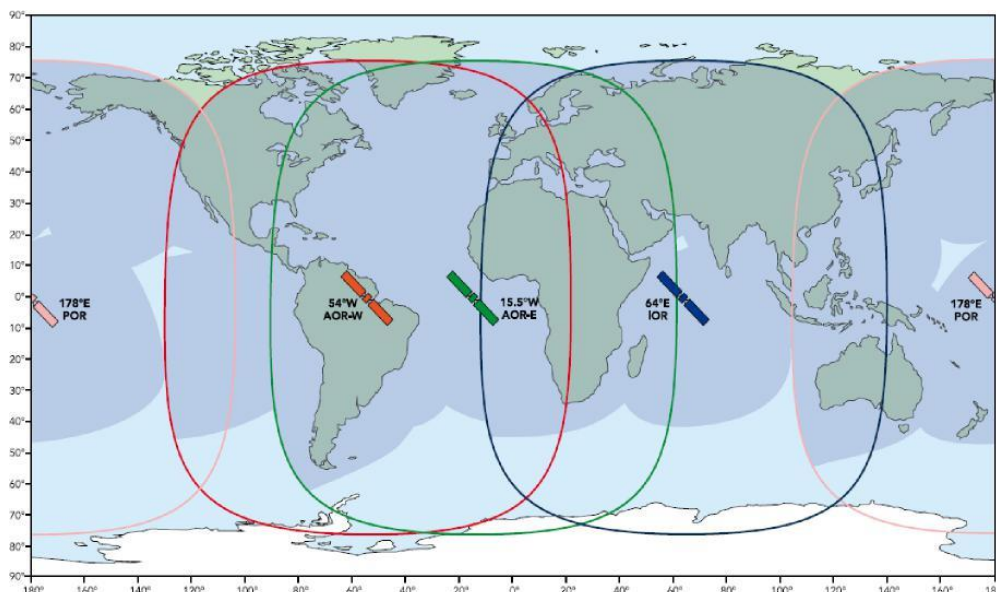| **IOR** Indian Ocean region	**AOR-E** Atlantic Ocean region East	**POR** Pacific Ocean region	**AOR-W** Atlantic Ocean region West
Inmarsat-3 F1 64.5°E	Inmarsat-3 F2 15.5°W	Inmarsat-3 F3 178°E	Inmarsat-3 F5 54°W

Table 1: Inmarsat-3 satellites

Figure 2: Inmarsat-3 satellites coverage map

14   In addition to the constellation of I-3 satellites, Inmarsat also operates four Inmarsat-4 (fourth generation, I-4) satellites to provide non-GMDSS safety and commercial services but also to ensure rapid restoration of essential GMDSS services in the unexpected event of a prime (I-3) satellite failure. The names and coverage map of the I-4 satellites are provided below in table 2 and figure 3, respectively.

APAC Asia and Pacific	EMEA Europe, Middle East and Africa	AMER Americas	MEAS Middle East and Asia
Inmarsat-4 F1 143.5°E	Inmarsat-4 F4A 25°E	Inmarsat-4 F3 98°W	Inmarsat-4 F2 64°E

Table 2: Inmarsat-4 satellites
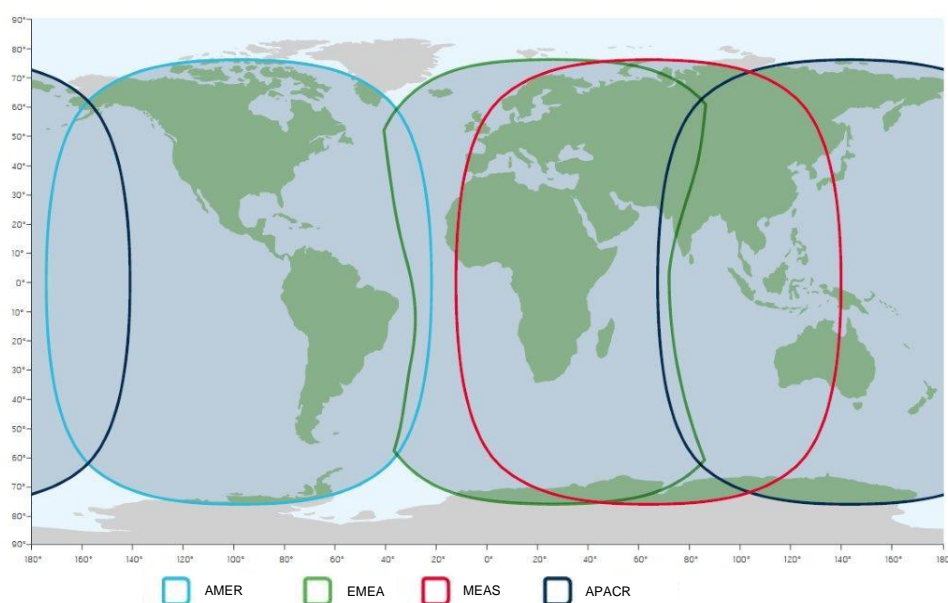

AMER   EMEA   MEAS   APACR

Figure 3: Inmarsat-4 satellites coverage map

Inmarsat ground segment

15   Inmarsat's ground segment comprises a network of Land Earth Stations (LESs), Network Coordination Stations (NCSs) and the Network Operations Centre (NOC).

16   Inmarsat LESs provide the essential interface between the space segment and the terrestrial networks using data, messaging, voice and IP services. At present, there are 63 Inmarsat B/F77 and 32 Inmarsat-C LESs located at various sites worldwide. These figures include also virtual LESs (hosted services) and illustrate the total number of points of access to the Inmarsat network. The number of LESs for each system is sufficient to ensure robust operation and provide redundancy in the event of local LES failures. These LESs support distress priority traffic, follow-up distress communications for search and rescue purposes and Inmarsat-C LES are also used for the promulgation of MSI messages.

17   Inmarsat operates an NCS in each ocean region to monitor and control the Inmarsat-C communications traffic in that region. Each NCS communicates with the LESs in its ocean region, the other NCSs and the NOC.

18   The Inmarsat NOC is located in London at the Inmarsat headquarters and functions around the clock to monitor and coordinate the activities of the NCSs and the LESs in each ocean region with an Operations Backup Centre (OBC) in Burum, the Netherlands providing geographical redundancy.

19   According to resolution A.801(19) on *Provision of radio services for the Global Maritime Distress and Safety System (GMDSS)*, each LES "should have a registered associated Rescue Coordination Centre (RCC) and have reliable communications by telephone, telex or other means". Table 3 below provides the list of Inmarsat-C LESs as well as their operators, names, geographical locations and IDs together with names of the associated RCCs where ship-to-shore distress alerts and distress priority messages are automatically routed to.

Country	LES Name	Region	LES Operator	LES ID	Associated RCC
Netherlands	Burum	AOR-E	Stratos Global	102	MRCC Falmouth
		AOR-E		112	JRCC Den Helder
		AOR-W		002	MRCC Falmouth
		AOR-W		012	JRCC Den Helder
Norway	Eik	AOR-E	Vizada	101	USCG Norfolk
		AOR-E		104	JRCC Stavanger
		AOR-W		001	USCG Norfolk
		AOR-W		004	JRCC Stavanger
France	Yamaguchi at Assaguel	AOR-E	KDDI	103	Opr. Centre, Tokyo
		AOR-E	Vizada	121	CROSS Griz-Nez
		AOR-W	KDDI	003	Opr. Centre, Tokyo
		AOR-W	Vizada	021	CROSS Griz-Nez
		IOR	Vizada	321	CROSS Griz-Nez
Italy	Fucino	AOR-E	Telecom Italia	105	CG Rome
		IOR		335	CG Rome

Country	LES Name	Region	LES Operator	LES ID	Associated RCC
United States	Santa Paula	POR	Vizada	201	USCG Alameda
		POR		204	JRCC Stavanger
India	Pune	IOR	TATA Comm	306	MRCC Mumbai
Australia	Perth	IOR	Stratos Global	302	MRCC Falmouth
		IOR		312	RCC Australia
		POR		202	MRCC Falmouth
		POR		212	RCC Australia
China	Beijing	IOR	MCN	311	MRCC Beijing
		POR		211	MRCC Beijing
Japan	Yamaguchi	IOR	KDDI	303	Opr. Centre, Tokyo
		POR		203	Opr. Centre, Tokyo
	Assaguel at Yamaguchi	POR	Vizada	221	CROSS Griz-Nez
Singapore	Sentosa	IOR	Singapore Telecom	328	Port Opr. Control Centre
		POR		210	Port Opr. Control Centre
Viet Nam	Hai Phong	IOR	Vishipel	330	MRCC Viet Nam
Russian Federation	Nudol	IOR	Morsviazsputnik	317	MRCC Moscow
	Nakhodka	POR	Morsviazsputnik	217	MRCC Vladivostok

Note: Information on LES names is correct as at October 2017 based on the most up-to-date information available to Inmarsat

Table 3: Inmarsat-C Land Earth Stations and associated MRCCs

Maritime mobile terminal

20   According to the reports received from Inmarsat, more than 172,000 Inmarsat-C, Mini-C and Inmarsat-F77 terminals were registered with Inmarsat at the end of October 2017. This includes around 85,000 Inmarsat-C, 76,000 mini-C and 11,000 Inmarsat-F77 terminals.

21   The number of Inmarsat-F77 terminals in use has declined by 1,783 since IMSO notified the Sub-Committee of Inmarsat's intention to close the Inmarsat-F77 service by 1 December 2020 (NCSR 3/19/1).

Terrestrial networks

22   Inmarsat's network is connected to RCCs, NAVAREA Coordinators and METAREA Issuing Services in order to facilitate distress priority traffic, follow-up distress communications and promulgation of MSI. The means of interconnection between Inmarsat network and RCCs or MSI providers varies from country to country and in some cases, include the use of dedicated lines or public switched telephone networks.

23   For instance, some LESs provide email, or internet (direct) drop access to the SafetyNET service that allows registered MSI providers to send Enhanced Group Call (EGC) messages using email from any computer with access to the internet. Each user interface has its own access procedure and syntax command, which should be checked with the Inmarsat-C LES operator or service provider.

24   In accordance with resolution A.801(19), the availability and robustness of the communication links between LESs and the associated RCCs, or other shore-based national agencies, are under responsibility of the Government(s) in whose territory the LES is located. Nevertheless, at least two LESs are located in each ocean region under Inmarsat's coverage area in order to provide a sufficient level of robustness as well as redundancy.

Availability

25   In accordance with section 3.5.2 of resolution A.1001(25), IMSO monitors the availability of Inmarsat's space segment, provision of spare satellite capacity and network control function, and reports to IMO on an annual basis. The network availability of a recognized mobile satellite communication system is expected to achieve at least 99.9% in a given year. In this context, the network availability of the Inmarsat-C and F77 systems during the 12-month period from 1 November 2016 to 31 October 2017 is shown below.

	IOR	AOR-E	POR	AOR-W
Space Segment (I-3 satellites)	100.00%	100.00%	100.00%	100.00%
Inmarsat-C	100.00%	100.00%	100.00%	100.00%
Inmarsat-F77	100.00%	100.00%	100.00%	100.00%

The definition of availability and methods of calculation in the Maritime Mobile Satellite Service are given in ITU Recommendation ITU-R M.828-2 (03/06), which superseded ITU-R M. 828-1 of 1992-1994.

Table 4: Inmarsat-C/F77 availability figures

26   These figures affirm that the core GMDSS systems operated by Inmarsat for distress alerting, SAR coordination, promulgation of MSI and general communications have achieved an availability above the 99.9% benchmark set out by resolution A.1001(25) during the reporting period.

Restoration of service and spare satellites

27   In accordance with section 3.6.1 of resolution A.1001(25), GMDSS service providers are required to provide spare satellite capacity and make arrangements to restore the recognized maritime distress and safety communications services to their normal availability not more than one hour after a partial or total satellite failure.

28   Inmarsat satisfies this requirement through its I-4 satellites constellation which ensures rapid restoration of essential GMDSS services in the unexpected event of a prime (I-3) satellite failure. Specific distribution of I-3 and I-4 satellites across the geostationary orbit provides sufficient level of overlap over the four ocean regions that are primarily covered by I-3 satellites.

Contingency exercises

29   In accordance with section 3.6.2 of resolution A.1001(25), IMSO and Inmarsat conduct contingency exercises to prove efficiency and effectiveness of the arrangements put in place by Inmarsat to restore the essential GMDSS services within one hour in case of a prime satellite failure. These exercises are performed according to the contingency changeover procedures prepared by Inmarsat for each of the primary I-3 satellites.

30   IMSO and Inmarsat have agreed, in principle, to perform one exercise for each I-3 satellite in a year. These exercises are usually performed at the NOC in London with active participation of staff from the Inmarsat Satellite Control Centre (SCC), NOC, company management as well as operators from the relevant LESs. IMSO and Inmarsat have also agreed to conduct at least one exercise at Inmarsat's OBC, at Burum in the Netherlands, in order to test the operational capacity and communication links there as well as to familiarize the NOC staff with the arrangements available at OBC.

31   IMSO actively participates in the planning, execution and review of all satellite contingency exercises and works with Inmarsat to broaden the scope of these events. During this reporting period, four contingency exercises were successfully carried out as shown in table 6 below:

IOR	AOR-E	POR	AOR-W
20 July 2017 Burum	21 February 2017 London	12 May 2017 London	30 November 2016 Burum

Table 6: Satellite contingency exercises

32   Following each exercise, Inmarsat submits a report to IMSO providing information on the outcome of the exercise, including lessons learned and areas identified for further improvement. Inmarsat keeps contingency change-over procedures under review and updates them based on the feedback received from OBS staff, LESs and IMSO. In addition to the regulatory nature, these exercises have proven to be an essential part of Inmarsat's ongoing training programme for the new and existing staff members stationed at London Headquarters, the backup facility and LESs.

Distress Priority Calls/Alerts through the Inmarsat systems

33   Inmarsat provides maritime distress and safety services, including distress alert/calls at no cost to the ships at sea in accordance with the provisions of resolution A.707(17) on *Charges for distress, urgency and safety messages through the Inmarsat system*.

34   Inmarsat uses the Distress Alert Quality Control System (DAQCS) to provide quantitative data on the number of Inmarsat-C distress alerts and Inmarsat-F77 priority calls processed. According to this, all distress alerts and calls through the Inmarsat-C/F77 systems during the period between 1 November 2016 and 31 October 2017 were handled correctly and delivered promptly to the associated MRCCs.

35   An Inmarsat-C distress alert is a pre-formatted data packet transmitted from the shipborne terminal to the associated MRCC upon activation of a dedicated distress button on the shipborne terminal. Total number of ship-to-shore Inmarsat-C distress alerts received during the aforementioned period is tabulated below.

	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
IOR	60	46	64	50	67	66	75	49	51	76	74	72
AOR-E	226	105	67	103	73	608	117	62	207	250	158	64
POR	29	144	22	30	23	27	23	30	37	52	39	37
AOR-W	55	63	45	69	71	497	51	29	62	50	51	84
Total	**370**	**358**	**198**	**252**	**234**	**1198**	**266**	**170**	**357**	**428**	**322**	**257**

Table 7: Inmarsat-C distress alerts received between 1 Nov 2016 and 31 Oct 2017

36   There was an unusual increase in the number of Inmarsat-C Distress Alerts during April 2017. Inmarsat's investigation in cooperation with the associated MRCC revealed that one vessel sent out 939 false distress alerts over a period of 4 days. Further explanation can be found below, under section "false distress alerts".

37   The numbers of ship-to-shore Inmarsat F-77 priority voice calls in the same period was as follows:

	IOR	AOR-E	POR	AOR-W	Total (previous year)
Safety	27	4	5	3	39 (17)
Urgency	11	14	13	9	47 (41)
Distress	34	14	49	4	101 (54)

Table 8: Fleet-77 voice priority calls received between 1 Nov 2016 and 31 Oct 2017

False distress alerts

38   Resolution A.814(19) on *Guidelines for the avoidance of false distress alerts*, highlights the role and responsibility of Administrations to avoid and stop transmission of false distress alerts from ships under their registries. The resolution contains a guideline for Administrations in the annex which invites Administrations to consider establishing and using national enforcement measures to prosecute those who:

- inadvertently transmit a false distress alert without proper cancellation, or who fail to respond to a distress alert due to misuse or negligence;
- repeatedly transmit false distress alerts; and
- deliberately transmit false distress alerts.

39   Each distress alert transmitted on Inmarsat-C system is considered real by Inmarsat, unless it is proven otherwise by the MRCC that receives it. Inmarsat monitors distress alert records daily for any suspected false alerts. When a suspected false distress alert is detected by the monitoring system or when notified by an MRCC of a suspected false distress alert, Inmarsat attempts to contact the ship concerned to find the underlying reasons of the false distress alerts and offers assistance if required. Unfortunately, not all the ships respond to these contacts and cooperate with Inmarsat at the expected level. Where ships respond to such calls, the reasons given for initiating false distress alerts invariably are attributed to human error, equipment test (use a real distress alerting service to test the terminal instead of built-in testing function) or malfunctioning equipment.

40   Inmarsat reported to IMSO in 2014 and 2016 about the large number of false distress alerts received from Inmarsat-C terminals installed on Moroccan fishing vessels. These false distress alerts were attributed to deliberate actions by ship crew, malfunctioning equipment or substandard installation of terminals.

41   Following constructive cooperation among IMSO, the Moroccan authorities and Inmarsat, the situation was stabilized around mid-November 2016. However, subsequent reports received from Inmarsat revealed that, despite the improvements, the problem was not resolved completely. Further to this, the IMSO Director General and a representative of Inmarsat visited the maritime and fisheries administrations of Morocco in Rabat in May 2017 to offer assistance to the local authorities.

42   IMSO and Inmarsat, noting that false distress alerts are still being received from some Moroccon fishing vessels, continue to monitor the situation and work in collaboration the local authorities to resolve this matter.

Broadcasting Maritime Safety Information

43   Inmarsat manages and operates the SafetyNET service to facilitate the broadcast of MSI from registered information providers to ships at sea. SafetyNET receiving capability is part of the Inmarsat-C and Mini-C shipborne equipment, which is one of the mandatory carriage requirements for ships engaged on voyages within the sea area A3 according to the provisions of SOLAS, chapter IV, as amended.

44   Certified SafetyNET users (NAVAREA Coordinators, METAREA Issuing Services and RCCs) submit their MSI messages, with the appropriate priority i.e. distress, urgency or safety, to LESs providing Inmarsat-C services for further broadcast of their messages to the intended geographical area. The International SafetyNET Coordinating Panel, in cooperation with the IHO and the WMO, undertakes the coordination of times for scheduled transmissions.

45   In accordance with resolution A.707(17) on *Charges for distress, urgency and safety messages through the Inmarsat system,* there are no charges to the mariners for reception of SafetyNET messages. Inmarsat broadcasts SafetyNET messages with distress or urgency priority free-of-charge and messages with Safety priority at a lower than standard messaging rates.

46   The number of MSI messages broadcast through the Inmarsat-C network fluctuates in the year based on various factors particularly the meteorological events and forecast. Table 9 below provides the number of MSI messages broadcast in this reporting period. On average, there were 31,899 messages per month including repeated messages.

	IOR	AOR-E	POR	AOR-W	Total
Nov'16	7,633	9,687	9,003	6,571	**32,894**
Dec'16	8,276	8,443	7,496	6,573	**30,788**
Jan'17	8,441	8,942	6,912	5,694	**29,989**
Feb'17	8,441	6,575	7,300	6,142	**28,458**
Mar'17	8,890	8,709	7,972	6,629	**32,200**
Apr'17	9,534	7,972	8,182	6,081	**31,769**
May'17	10,164	9,177	8,322	7,270	**34,933**
Jun'17	9,982	7,487	8,334	6,203	**32,006**
Jul'17	8,907	8,667	8,659	6,834	**33,067**
Aug'17	8,971	8,557	8,987	6,366	**32,881**
Sep'17	11,407	10,117	9,727	8,767	**40,018**
Oct'17	9,160	9,991	8,998	9,235	**37,384**

Table 9: EGC SafetyNET messages between 1 Nov 2016 and 31 Oct 2017

47   Refering to the information provided to the Sub-Committee at its third session (NCSR 3/INF.11), Inmarsat has developed and launched its SafetyNET II service for use by all certified SafetyNET users with effect from 14 November 2017. Inmarsat had worked with seven different NAVAREA Coordinators to test and improve the quality of SafetyNET II during a trial period prior to the official launch.

48   SafetyNET II runs in parallel to the existing SafetyNET service and does not require installation of new shipborne terminals. The new service is seamless for all seafarers.

49   With SafetyNET II, MSI providers and SAR services can create their messages using an interactive web-based interface and submit them directly to Inmarsat for simultaneous broadcasting over the Inmarsat-C and FleetBroadband networks. The service offers some new features such as broadcasts scheduling, message cancellation and multiple text input methods.

Recognition of FleetBroadband

50   Inmarsat, through the United Kingdom, applied to MSC for seeking recognition and use of the Inmarsat FleetBroadband MSDS in the GMDSS (MSC 97/7/4).

51   Further to invitation by the Committee (MSC 98/23, paragraph 11.32), technical and operational assessment of the Inmarsat FleetBroadband MSDS has been conducted by IMSO and a comprehensive report to this extend has been submitted for consideration of the Sub-Committee (NCSR 5/14/1).

Migration of GMDSS services from I-3 to I-4 generation satellites

52   Inmarsat's third-generation satellites (I-3) were launched in the second half of 90s and ever since have been in the service of the GMDSS. On 1 April 2016, one of the five I-3 satellites (I-3 F4) was decommissioned by Inmarsat (NCSR 4/18, annex). Considering the remaining life expectancy of the operational I-3 satellites, Inmarsat has developed a programme for the migration of GMDSS services from I-3 to I-4 satellites, which are currently used by Inmarsat to provide spare satellite capacity for the GMDSS services.

53   Further information on the migration programme will be provided to the Sub-Committee in a separate submission.

Inmarsat-6 satellites

54   Inmarsat confirmed placing orders for manufacturing of two Inmarsat-6 satellites, first of which is expected to be launched in 2020 followed by another soon thereafter. Inmarsat-6 satellites will reportedly support both L-band and Ka-band frequencies simultaneously hence providing backward compatibility with the I-3 and I-4 satellites and ensuring continuation of GMDSS services by Inmarsat beyond 2020.

Protection of L-band maritime satellite communications

55   IMSO has been made aware of a development at the Electronic Communications Committee (ECC) of the European Conference of Postal and Telecommunications Administrations (CEPT), which is considering a draft new ECC decision for authorizing the use of 1492-1518 MHz band in Mobile/Fixed Communications Networks Supplemental Downlink (MFCN SDL) within Europe, in order to provide additional broadband downlink capacity to mobile users.

56   The 1492-1518 MHz band is immediately adjacent to the Inmarsat MSS downlink band 1518-1559 MHz and, therefore, Inmarsat raised concerns in relation to the potential interference caused to Inmarsat terminals from SDL base stations deployed near to ports and waterways.

57   IMSO has been advised that this potential issue can be mitigated by implementing sound and standard network planning and engineering practices, which should be supported by careful coordination of the out-of-band emission limits, the in-band power limits and the limit on the maximum number of SDL Base Stations in a given area by the national Administrations.

58   The draft new decision is under consideration by the ECC. IMSO, together with Inmarsat, is closely following the developments at the ECC.

Conclusion

59   In view of the aforementioned information, it is IMSO's overall assessment that, during the period covered by this report, Inmarsat Global Ltd has continued to provide fully operational maritime mobile satellite distress and safety communication services for the GMDSS and fulfilled the company's public service obligation as stated in the PSA.

Action requested of the Sub-Committee

60   The Sub-Committee is invited to note the information provided in this document, including the conclusion of IMSO's overall assessment (paragraph 59) and in particular:

.1   closure of Inmarsat-B services on 11 January 2017 (paragraphs 5 to 7);

.2   intention to close the Inmarsat-F77 service by 1 December 2020 (paragraph 8);

.3   Inmarsat availability records between 1 November 2016 and 31 October 2017 (paragraphs 25 and 26);

.4   service restoration arrangements and spare satellites capacity by Inmarsat (paragraphs 27 and 28);

.5   ongoing programme of satellite contingency exercises (paragraphs 29 to 32);

.6   launch of SafetyNET II (paragraph 47); and

.7   potential interference caused to Inmarsat terminals by SDL base stations (paragraphs 55 to 58).

_____