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DEVELOPMENTS IN GMDSS SERVICES, INCLUDING GUIDELINES ON MARITIME SAFETY INFORMATION (MSI)

Analysis and assessment of the GMDSS performance of Inmarsat Global Limited

Submitted by IMSO

SUMMARY

Executive summary:	This document is an annual report on the provision of recognized mobile satellite services in the GMDSS by Inmarsat, as overseen by IMSO.
Strategic direction, if applicable:	7
Output:	7.2
Action to be taken:	Paragraph 95
Related documents:	NCSR 8/14/1; NCSR 9/10/3; NCSR 10/10/4; resolutions MSC.450(99), MSC.514(105), A.707(17) and A.1001(25)

Introduction

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

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 are exercised through the Public Services Agreement (PSA) signed between IMSO and Inmarsat in 1999.

3 This report covers the period from 1 January to 31 December 2023. The IMSO's previous report, covering 1 January to 31 December 2022, was submitted to the tenth session of the Sub-Committee in document NCSR 10/10/4.

Inmarsat GMDSS services overview

Inmarsat services 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: maritime distress, urgency, safety, and routine communications, including the broadcast of maritime safety information (MSI) and search and rescue (SAR) related information.

5 The recognized services specified in resolution MSC.450(99) on *Statement of recognition of maritime mobile satellite services provided by Inmarsat Global Ltd*. and which are currently operational are as follows:

.1 Inmarsat C;

.2 Inmarsat Fleet Safety in the coverage area under the Inmarsat-4 Middle East and Asia (MEAS) region; and

.3 International SafetyNET services.

Inmarsat C

6 Inmarsat C uses a two-way store and forward communication system to transmit and receive messages from ship-to-shore, shore-to-ship and ship-to-ship. In addition to being recognized for use in the GMDSS, Inmarsat C is also used to implement the Long-range identification and tracking (LRIT), vessel monitoring system (VMS) and ship security alert system (SSAS) applications.

7 In the GMDSS, Inmarsat C is used for distress alerting and messaging, shore-to-ship distress relay messages, urgency, safety and general radiocommunications, and reception of MSI and SAR related information.

8 Due to the nature of distress alerts, the ship earth station (SES) will continue to send multiple alerts over the Inmarsat network until acknowledged by the rescue coordination centre (RCC).

Inmarsat Fleet Safety

9 Inmarsat Fleet Safety is operated through the Inmarsat FleetBroadband network (ELERA). It is a maritime digital data service that supports commercial voice and data communication and GMDSS compliance for voice and data distress, and urgency and safety communications. In addition to being recognized for use in the GMDSS, Inmarsat Fleet Safety is also used to implement the LRIT requirements. They can also be used for VMS and SSAS applications.

10 There is currently no type-approved or wheel marked onboard equipment for the Fleet Safety service. Operational release of the service is expected to be mid-2025.

SafetyNET and SafetyNET II

11 SafetyNET and SafetyNET II services enable the international broadcast and automatic reception of MSI and SAR-related information via the Inmarsat Enhanced Group Calling (EGC) system and received on board via Inmarsat C, Fleet Safety and non-SOLAS Fleet Safety terminals.

12 SafetyNET II is an enhancement to the SafetyNET system. It provides an interactive secure web-based interface for MSI providers to create and submit messages to Inmarsat for simultaneous broadcasting over multiple Inmarsat networks, including Inmarsat C and Fleet Safety. The service offers features such as enhanced broadcast scheduling, message cancellation and multiple text input methods.

13 Inmarsat launched its SafetyNET II service in November 2017 for use by all certified EGC users. SafetyNET II runs in parallel with the SafetyNET service and does not require installation of new shipborne terminals.

14 Inmarsat advised that SafetyNET II has reduced the cost of broadcasting for its SafetyNET II users by removing the cost of broadcasting over multiple satellites and introducing pay as you go or set price plans.

15 Inmarsat has fully implemented the IMO agreed application programming interface (API) standard within SafetyNET II. This enables MSI providers to create and disseminate MSI through an API to multiple satellite providers simultaneously. This service is available for navigational, meteorological and SAR related information broadcasts.

RescueNET

16 RescueNET is an extension of the SafetyNET II platform which is used free of charge by RCCs. There are currently 73 SAR accounts on RescueNET. Access to RescueNET is independent of land earth stations (LESs) and instead uses a secure web interface to the Inmarsat Maritime Safety Servers, providing a single interface for the GMDSS services and Inmarsat safety services, including:

- reception of Fleet Safety distress alert;
- distress alert relay broadcasts;
- monitoring of SAR EGC broadcasts;
- SAR coordination broadcasts;
- reception of distress priority message;
- transmission of distress priority message;
- distress chat;
- access to vessel databases;
- access to SAR database;
- live tracking of a vessel in distress; and
- API access for broadcasting of SAR EGC.

Coverage

Inmarsat C

17 Inmarsat's geostationary earth orbit (GEO) satellite constellation provides coverage for Inmarsat C as illustrated in figure1.

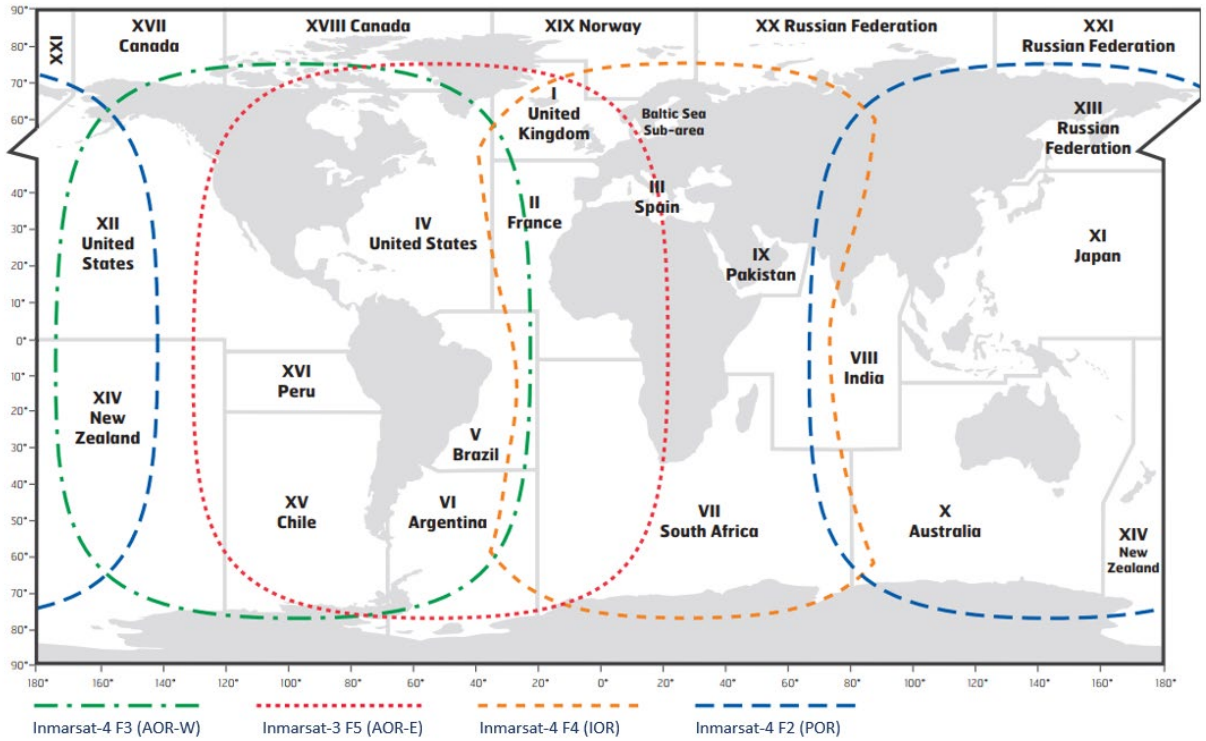

Figure 1 – Inmarsat C coverage

18 On 21 November 2023, the Inmarsat C services in the Pacific Ocean Region (POR) were migrated from the I-4 F1 satellite to I-4 F2 as shown in figure 1; see paragraph 0 for further information on the I-4 F2 move. There was an interruption of service for less than two minutes resulting from this migration during which time any messages would have been held and retransmitted. Inmarsat confirmed there were no distress communications during this migration period.

Inmarsat Fleet Safety

19 Resolution MSC.450(99) recognizes the maritime mobile satellite services provided by the Inmarsat Fleet Safety service in the coverage area under the Inmarsat-4 Middle East and Asia (MEAS) region that is overlapped by the Alphasat (I-4 F4) and I-4 Asia Pacific (I-4 F2) satellites, as shown in figure 2. In this area, Inmarsat is able to provide redundancy for its global Fleet Safety service.

20 Inmarsat continues to develop additional redundancy for the Fleet Safety service which requires satellite constellation reconfiguration. As such, in April 2023, to enable the development of global redundancy of Fleet Safety, the I-6 F1 has been repositioned and was activated at 83.5° E. It has since replaced I-4 F2 in the MEAS position which was originally in an orbital slot 19.5° west of the I-6 F1 position. In this new location, the MEAS ocean region covered by I-6 F1 has been renamed as IOE (Indian Ocean East).

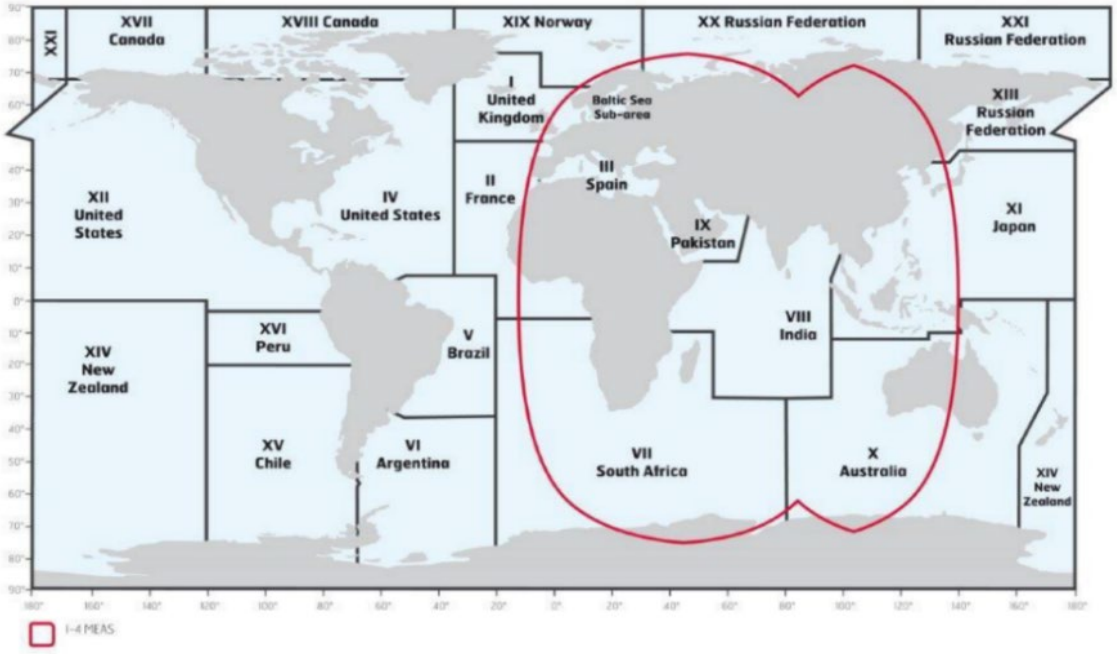

Figure 2 - Fleet Safety coverage as per resolution MSC.450(99)

Systems used in the provision of Inmarsat's GMDSS services

Space segment

21 The recognized mobile satellite services provided by Inmarsat for Inmarsat C are delivered through three primary fourth generation satellites (I-4) and one primary third generation satellite (I-3) located over four regions.

22 The primary satellites used to provide coverage for Inmarsat C are shown in table 1.

Satellite	Ocean Region	Orbital slot
I-4 F3	Atlantic West (AOR-W)	98º W
I-3 F5	Atlantic East (AOR-E)	54º W
I-4 F4 (Alphasat)	Indian (IOR)	25º E
I-4 F2	Pacific (POR)	143º E

Table 1 - Inmarsat C primary satellite locations

23 The primary satellites are in GEO, 35,786 kilometres above the Earth's equator. They operate using L-band frequencies (1.5/1.6 GHz) for links between SES and satellites, and on C-band frequencies (4/6 GHz) for feeder links between satellites and LES.

Space segment back up arrangements

24 In the event of a partial or full payload failure of the I-3 F5 (AOR-E) satellite, the I-4 F3 (AOR-W) and I-4 F4 (Alphasat/IOR) are used to maintain and restore Inmarsat C maritime safety services over the AOR-E coverage gap.

25 In the event of a partial or full payload failure of the I-4 F3 (AOR-W), I-4 F2 (POR/APAC) and I-4 F4 (Alphasat/IOR) satellites, the Contingency C-LES network and satellites are used to restore Inmarsat C maritime safety services over the AOR-W, POR or IOR coverage gap.

26 The Contingency C-LES consists of a stand-alone Inmarsat C LES located in Burum in the Kingdom of the Netherlands. The host computer in Burum is the heart of the Contingency C-LES and is used to configure and operate three Satellite Access Stations (SAS) located in Dongara (Australia), Fucino (Italy) and Santa Paula (United States).

27 The satellites used with the Contingency C-LES network are I-3 F1, I-3 F2 and I-3 F3, which are no longer in a GEO and process around the Earth by 1 degree per day. All of these satellites are configured to work with the ground stations at Dongara, Santa Paula and Fucino.

Ground segment

28 Inmarsat's ground segment comprises a network of LES, Network Coordination Stations (NCS) and SAS. The Network Operation Centre (NOC) is located at Inmarsat's Headquarters in London, United Kingdom. The NOC functions twenty-four hours a day to monitor and coordinate the activities of the ground segments in each ocean region.

Ground segment backup arrangements

29 The NOC was previously supported by an Operations Backup Centre (OBC), located in Burum, the Kingdom of the Netherlands, which provided geographical and functional redundancy. During the COVID-19 pandemic, disaster recovery via the OBC was no longer possible due to the Kingdom of the Netherlands closing their borders, rendering the OBC inaccessible to Inmarsat.

30 Inmarsat therefore developed a remote disaster recovery plan that enabled remote access to the NOC systems and services from anywhere in the world. Inmarsat GMDSS hardware remains geographically dispersed; however, the reliance on a physical OBC has been replaced by remote disaster recovery procedures. Inmarsat provided documentation to IMSO on this and has committed to keeping IMSO updated on any developments.

Update on Inmarsat GMDSS systems and services

Constellation

I-6 F2 satellite

31 In 2021 and 2023, Inmarsat launched the I-6 series satellites (I-6 F1 and I-6 F2 respectively). Inmarsat intended to use the I-6 satellites to extend the Fleet Safety service for use in the GMDSS globally. IMSO was informed on 24 August 2023 that I-6 F2 had suffered a power sub-system anomaly during its orbit raising phase. IMSO has continued to monitor the situation during regular communication with Inmarsat, and Inmarsat recently advised IMSO that there is no expectation of the satellite being used operationally and an insurance claim has been made in respect of its failure.

I-4 F2 satellite

32 During October and November 2023, the orbital location of I-4 F2 was changed from 64° East to 143° East as part of the evolution of Inmarsat's constellation. There was no impact to Inmarsat's GMDSS services during this relocation.

Inmarsat acquisition

33 On 31 May 2023, Viasat Inc., a global communications company, announced the completion of its acquisition of Inmarsat and that the combined company would be led by Mr. Mark Dankberg as Chairman and CEO and Mr. Guru Gowrappan as President.

34 It has also been confirmed that Viasat's new global international business headquarters will be in London and corporate headquarters will continue to be in Carlsbad, California. Further decisions regarding organizational structure and leadership will be determined as part of the ongoing integration process.

35 On completion of the acquisition transaction, Viasat and Inmarsat representatives met with the Director General to provide an update and gave a presentation during the forty-ninth session of the IMSO Advisory Committee in November 2023.

36 Furthermore, Viasat has expressed its reassurances that it is committed to ensure the PSA between IMSO and Inmarsat will continue to operate for many years to come and that the maritime business and safety will play a strategic role in the future. Viasat had also made a commitment, as part of the acquisition, to use the name Inmarsat for their maritime business as a recognition to the importance of the Inmarsat maritime and safety connection.

Agreements with RCCs and MSI providers

37 Inmarsat's network remains connected to 73 RCCs and all IMO certified NAVAREA, METAREA Coordinators and RCCS to facilitate distress, urgency and safety priority traffic, follow-up distress communications and promulgation of MSI and SAR related information.

IMSO GMDSS-related activities related to Inmarsat

Potential risks to C-band spectrum usage at Inmarsat's Burum land earth station

IMSO Actions

38 In April 2021, the Sub-Committee noted information provided by IMSO in document NCSR 8/7/8, concerning the potential risks to C-band spectrum usage at Inmarsat's LES at Burum in the Kingdom of the Netherlands from 5G related services which could affect the provision of Inmarsat's GMDSS services.

39 In May 2023, IMSO provided an update on this matter in document NCSR 10/10/4, which included the final recommendations of the Kingdom of the Netherlands' advisory committee to the Kingdom of the Netherlands Ministry of Economic Affairs which provided Inmarsat some time as they prepared to transition their services to Greece.

40 After the tenth session of the Sub-Committee, the Director General of IMSO held several meetings with representatives of both the Kingdom of the Netherlands and Greece to seek assurances regarding the continuity of Inmarsat's services.

Actions by the Kingdom of the Netherlands and Greece

41 In September 2023, the Director General received a message from the Ministry of Economic Affairs and Climate Policy in the Kingdom of the Netherlands confirming that the Minister had announced mid-August that the current protection to satellite communications in the 3 400 3 800 MHz band would be removed as of February 2024. The message also advised that further talks would take place soon between the Ministry of Economic Affairs and the Greek Minister of Digital Governance and confirmed that there would be a formal response to IMSO's letter of April 2023.

42 On 3 October 2023, the Director General received a letter from the Greek Minister of Digital Governance to the Minister of Economic Affairs and Climate Policy in the Kingdom of the Netherlands. Although there was no change on the conditions of the licence granted to Inmarsat with regard to the five-year term and the option to renew for another five years, the letter noted that the C-band spectrum auctioned for International Mobile Telecommunications

(IMT) 5G services included a strict prerequisite that no interference shall be caused to satellite services. This measure aimed to ensure that there would be no conflicts or disruptions to the satellite services provided by Inmarsat.

43 On 12 October 2023, the Director General was advised that Inmarsat had reached an agreement with the relevant authorities in the Kingdom of the Netherlands and Greece that, subject to being signed, would give them reassurance that they would be able to continue to access spectrum from their site in Thermopylae, Greece until at least 2032.

44 On 18 December 2023, the Director General received a message from the Ministry of Economic Affairs and Climate Policy in the Kingdom of the Netherlands confirming this agreement with Inmarsat for its relocation to Thermopylae by 1 February 2024.

45 IMSO confirms that the affected services have now been migrated to Thermopylae.

Spectrum protection

46 During 2023, IMSO continued to participate in the work at the International Telecommunication Union Radiocommunication Sector (ITU-R) related to the protection of GMDSS terminals operating in the frequency band 1 518 to 1 559 MHz from IMT systems. IMSO's participation in this work at ITU was aimed at ensuring that appropriate mitigation measures were considered in the development of this report and recommendation.

47 In this regard, IMSO contributed to the development of a new ITU-R report on *Adjacent band compatibility studies of IMT systems in the mobile service in the band 1 492-1 518 MHz with respect to systems in the mobile-satellite service in the frequency band 1 518-1 525 MHz*; and a new ITU-R Recommendation on *Technical and regulatory measures to provide compatibility between IMT and MSS, with respect to MSS operations in the frequency band 1 518-1 525 MHz for administrations wishing to implement IMT in the frequency band 1 492-1 518 MHz*. The work on the new Report and Recommendation was completed in June 2023.

Oversight of Inmarsat

Regulatory framework

48 The IMSO Directorate performs oversight of Inmarsat to ensure the provision of the recognized mobile satellite communication services to seafarers in accordance with the requirements set out in resolution A.1001(25) on *Criteria for the Provision of Mobile Satellite Communication Systems in the GMDSS*.

Notification of difficulties relating to EGC broadcasts

49 Resolution A.705(17), as amended by resolution MSC.468(101), sets a requirement that cases of difficulty affecting the broadcast of MSI and SAR-related information through the EGC system(s) of recognized mobile satellite service providers should be brought to the attention of IMSO.

Service Outages

Outage notification regulatory framework

50 Resolution A.1001(25) requires Inmarsat to advise IMSO of planned outages and unscheduled interruptions of recognized services (see 'Network events and service outages' below). Inmarsat has to inform IMSO as soon as possible regarding planned outages and

unscheduled interruptions. IMSO works closely with Inmarsat and other stakeholders to understand the extent of the outage or interruption to service, and the impact of the issue on the provision of GMDSS services.

51 IMSO keeps stakeholders such as IMO, International Hydrographic Organization (IHO) and World Meteorological Organization (WMO) informed, as appropriate, during outages and keeps track of the impact of the outage in relation to the IMO requirement (as set out in resolution A.1001(25)) that recognized services are available 99.9% of the time (equivalent to 8.8 hours of downtime per year).

52 Under the terms of the PSA, IMSO reports annually to IMO through the Sub-Committee on such events and their resultant impact on the availability figure.

Reported Outages

53 Inmarsat has reported two service outages affecting their GMDSS services during this reporting period.

April 2023 service outage

54 As reported orally at NCSR 10, on 16 April 2023 at 22.30 UTC, a contingency process was initiated on the Inmarsat I-4 F1 satellite (which provides coverage in the POR) due to a service outage. The sequence of events is reported below:

.1 At 23:08 UTC, Inmarsat took the decision to migrate the Inmarsat C GMDSS services from the I-4 F1 satellite to their I-3 contingency satellites.

.2 On 17 April at 01:22 UTC distress capability was partially available in the POR, however, distress capability was not available in some parts of the POR until 05:21 UTC. Inmarsat confirmed that there was no distress traffic during this outage period.

.3 On 17 April 2023 at 15:51 UTC, IMSO received an update that EGC broadcast was intermittent, but distress messaging was functioning correctly in both directions.

.4 On 18 April, IMSO received further information from a Member State regarding NAVAREA XI, informing that there was no EGC service via Inmarsat in the POR. IMSO notified the Chair of the EGC Coordinating Panel, IHO and WMO regarding the possible issues with the EGC based on the feedback received.

.5 On 18 April 2023 at 14:00 UTC, IMSO held a conference call with Inmarsat to establish the cause of the outage and expected service restoration time. IMSO continued to closely monitor the incident with the information provided by Inmarsat and feedback received from Member States and MSI providers. IMSO kept IMO, the EGC Panel and other stakeholders informed of the outage and issued circulars to IMSO Member States accordingly.

.6 At 18:42 UTC on 18 April, the contingency ended and all services on I-4 F1 were fully restored.

.7 As a result of this outage, there was no service in 84% of the POR (taking into account the overlap with adjacent ocean regions) for 2 hours and 14 minutes, and no traffic in 76% of the service area for an additional 3 hours and 38 minutes. There continued to be a delay in the delivery of MSI broadcasts until the service was restored on I-4 F1 on 18 April.

55 Lessons learned from the incident have resulted in training for operators, a revision to the satellite payload reconfiguration procedure and a reconfiguration of the message database in the Contingency LES.

August 2023 service outage

56 On Thursday 31 August at 00.08 UTC, the I-4 F1 satellite suffered a loss of the carrier in the return direction. This caused a service outage for all services from ship to shore on the satellite.

.1 At 00:45 UTC the contingency procedure was activated. Due to some issues encountered during the contingency process, MSI broadcasting capability was lost at 02:07 UTC.

.2 Inmarsat C distress and MSI broadcast capabilities were restored at 03:35 UTC.

.3 As a result of this outage, there was no Inmarsat C distress service in 84% of the POR (considering the overlap with adjacent ocean regions) for 3 hours and 26 minutes.

IMSO analysis and actions

Impact assessment

57 Subsequent to both outages, IMSO continued a close dialogue with Inmarsat to fully understand the impact of these outages. This involved several meetings, and review of follow-up reports from Inmarsat. Using data provided by Inmarsat and information from other sources, IMSO was able to conduct its own analysis of the outages and arrive at an agreement with Inmarsat on the impact. This was a learning experience for both Inmarsat and IMSO.

Detailed training exercise

58 IMSO requested and participated in a detailed assessment and training exercise on the contingency process which was held in November 2023 at Inmarsat headquarters in London to better understand difficulties encountered during these service outages. This exercise resulted in valuable discussions with domain experts on the operation of Inmarsat C and the latest contingency arrangements.

Visit to the contingency C-LES site in Fucino (Italy)

59 In February 2024, as a result of a further request, IMSO visited the contingency C-LES site in Fucino, Italy with the aim of ensuring that the lessons learned from the outages had been implemented. The contingency C-LES equipment at Fucino is similar to that at the other contingency C-LES sites at Dongara (Australia) and Santa Paula (USA). This visit provided a valuable opportunity for IMSO to witness a live demonstration of the contingency procedure, which is now tested by Inmarsat on a monthly basis, and to inspect the ground facilities used to implement it.

60 IMSO particularly noted the high level of redundancy provided within the critical ground infrastructure.

61 IMSO continues to work closely with Inmarsat to ensure that lessons are learned and implemented to ensure the reliability and resilience of the contingency arrangements.

Availability

IMSO analysis

62 IMSO has calculated that the combined outages set out in the section above result in a corrected availability figure for the period 01/01/23 to 31/12/23 in POR of 99.91%, which is within the 99.9% availability requirement as set out in clause 3.5.4 of resolution A.1001(25). The historical context of this availability figure is provided in table 2.

Component	Ocean region	Availability		
		2023	**2022**	**2021***
Space Segment	IOR	100.00%	100.00%	100.00%
	AOR-E	100.00%	100.00%	100.00%
	POR	99.91%	100.00%	99.98%
	AOR-W	100.00%	100.00%	100.00%
Inmarsat C SafetyNET (II)	IOR	100.00%	100.00%	100.00%
	AOR-E	100.00%	99.99%	100.00%
	POR	99.91%	100.00%	99.99%
	AOR-W	100.00%	99.99%	100.00%
Fleet Safety	MEAS	GMDSS service not yet in use		

Table 2 – Inmarsat availability history

63 As the primary satellite for Fleet Safety was in the MEAS location, it was unaffected by either of these outages.

Outcomes

64 Both outages individually put Inmarsat in breach of section 3.6.1 of resolution A.1001(25), which requires that "the recognized maritime distress and safety communication services in the area concerned can be restored to their normal availability, not more than one hour after the failure occurs".

65 On 11 October 2023, the IMSO Director General sent a letter to Inmarsat to advise them of this non-compliance issue and lessons learned from the incident have resulted in further training for operators and a revision to Inmarsat's internal operational procedure with the aim of reducing delays in restoring service.

Contingency exercises

Regulatory framework

66 IMO resolution A.1001(25) sets out a requirement that spare satellite capacity and other arrangements should be provided to ensure that, in the event of a partial or total satellite failure, the recognized maritime distress and safety communication services in the area concerned can be restored to their normal availability, not more than one hour after the failure occurs.

Collaborative work

67 IMSO works with Inmarsat to ensure that this requirement is met, through regular liaison and contingency exercises intended to prove the efficiency and effectiveness of such arrangements put in place by Inmarsat. These exercises are performed according to the contingency change-over procedures prepared by Inmarsat for each of the primary satellites.

* The actual period represented here is 1 October 2020 to 31 December 2021.

Frequency

68 The contingency exercises are usually conducted four times a year, usually at the Inmarsat NOC in London, and are monitored by IMSO. The contingency exercises performed in 2023 are shown in table 3.

Date	Region	Location
7 March	IOR	London
27 June	POR / Contingency C-LES	London
10 October	AORE	Remote
12 December	AOR-W / Contingency C-LES	London

Table 3 – Inmarsat contingency exercises during 2023

Remote contingency exercise

69 To evaluate the effectiveness and modality of the remote contingency exercise, the October contingency exercise was held remotely. IMSO concluded that, while remote modality provides a good backup in situations such as the COVID-19 pandemic or when travel is not possible, it cannot be a replacement for in-person exercises.

Outcomes

70 Following each exercise, IMSO provides feedback to Inmarsat on the contingency procedures, either to ensure understanding or to suggest improvements to the process. Inmarsat submits a report to IMSO providing information on the outcome of the exercise, including lessons learned and areas identified for further improvement.

71 Inmarsat keeps contingency change-over procedures under review and updates them based on the feedback received from the OBC, LES and IMSO Directorate. These reports are kept confidential between the IMSO Directorate and Inmarsat due to their sensitive content.

72 In addition to their regulatory nature, these exercises have proven to be an essential part of Inmarsat's ongoing training programme for both new and existing staff members.

Distress Alerts through the Inmarsat system

73 The total number of ship-to-shore Inmarsat C distress alerts events during the reporting period and the recent historical context is provided in table 4. Figure 3 provides the same information in graphical form.

Month	Ship-to-shore Inmarsat C distress alerts		
	2023	**2022**	**2021**
January	85	89	73
February	64	90	65
March	69	65	67
April	64	62	63
May	76	63	76
June	82	57	69
July	78	80	73
August	77	63	74
September	67	97	87
October	78	59	54
November	70	68	63
December	72	67	70
TOTAL	**882**	**860**	**834**

Table 4 – Inmarsat distress alerts 2021 – 2023

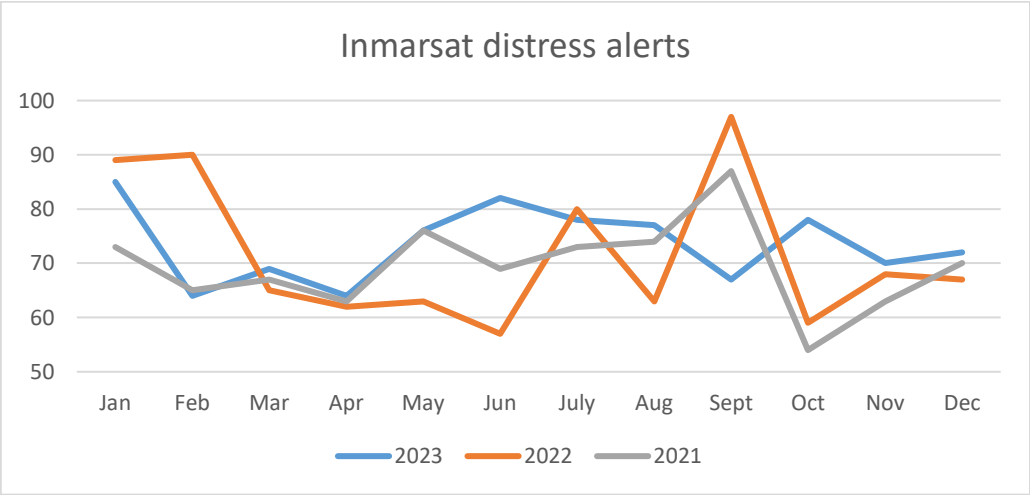

Figure 3 – Inmarsat distress alerts

False distress alerts

Regulatory framework

74 Resolution MSC.514(105) 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 them to consider establishing and using national enforcement measures to prosecute those who:

.1 inadvertently transmit a false distress alert without proper cancellation, or who fail to respond to a distress alert due to misuse or negligence;

.2 repeatedly transmit false distress alerts; and

.3 deliberately transmit false distress alerts.

75 Every distress alert is considered real unless it is proven otherwise by the MRCC that receives it. When an MRCC provides feedback on a false distress alert, Inmarsat attempts to contact the ship concerned to find the reason for the false distress alerts and assists if required.

76 The causes of false distress alerts reported to the satellite service providers are usually due to human error, equipment testing (i.e. using a real distress alert to test the terminal instead of using the built-in testing function) or malfunctioning equipment.

77 On occasion, IMSO can use its technical or diplomatic resources to take action to help resolve issues related to false distress alerts. Such cases are set out below.

June 2023 false distress alerts

78 In June 2023, Inmarsat requested IMSO's assistance regarding an Inmarsat C terminal in Abu Dhabi which had been transmitting repeated distress alerts, despite several attempts to contact the users. IMSO worked with Inmarsat to help establish the location of the terminal.

79 When Inmarsat was able to contact the vessel, it was discovered that the crew had attempted to run a performance verification test but instead had sent a distress alert by accident. Because the terminal was faulty, it kept sending the distress alert without them knowing. The terminal was disconnected and replaced.

August 2023 false distress alerts

80 In August 2023, Inmarsat requested IMSO's assistance regarding a deactivated Inmarsat C terminal on board a Moroccan vessel which had been transmitting repeated distress alerts, despite multiple attempts to contact the users.

81 IMSO contacted the Moroccan maritime authority who arranged for the Inmarsat C terminal to be removed from the vessel within one day of IMSO's request. Inmarsat verified that the problem had been resolved.

Administrations' support required

82 IMSO notes the time and effort spent by both SAR Operators and recognized providers in identifying and dealing with false distress alerts. In this regard, Administrations are requested to note the main reasons for false distress alerts as set out in paragraph 0 and to make efforts to reduce such causes of false distress alerts, and to expediate their resolution when they do occur.

Maritime safety information

83 Inmarsat manages and operates the SafetyNET and SafetyNET II service to facilitate the broadcast of MSI from certified information providers to ships at sea. SafetyNET and SafetyNET II receiving capability is part of the Inmarsat C and Fleet Safety SES, 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.

84 Certified EGC 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 EGC services, or SafetyNET II, for further broadcasting of their messages to the intended geographical area and automatic reception on Inmarsat C and Fleet Safety SES simultaneously. The International EGC Coordinating Panel, in cooperation with IHO and WMO, undertakes the co-ordination of times for scheduled transmissions.

85 Inmarsat is contracted for broadcast of MSI messages by all 21 IMO approved NAV/MET Areas.

86 The number of MSI messages broadcast through the Inmarsat networks fluctuates over the year based on various factors, particularly meteorological events and forecast. Table 5 provides the number of MSI messages broadcast per month over the past three years (including repetitions). Figure 4 provides the same information in graphical form.

Month	Number of MSI broadcasts		
	2023	2022	2021
January	44142	37570	40856
February	39268	43250	40153
March	43772	42051	53833
April	37191	37237	66796
May	49024	35683	38974
June	43319	34351	34506
July	40859	38748	38992
August	47633	43015	43066
September	44885	43876	42603
October	45933	42951	41273
November	47160	42809	37776
December	47892	43473	36829
TOTAL	531078	485014	515657

Table 5 – Inmarsat MSI broadcasts between 2021 and 2023

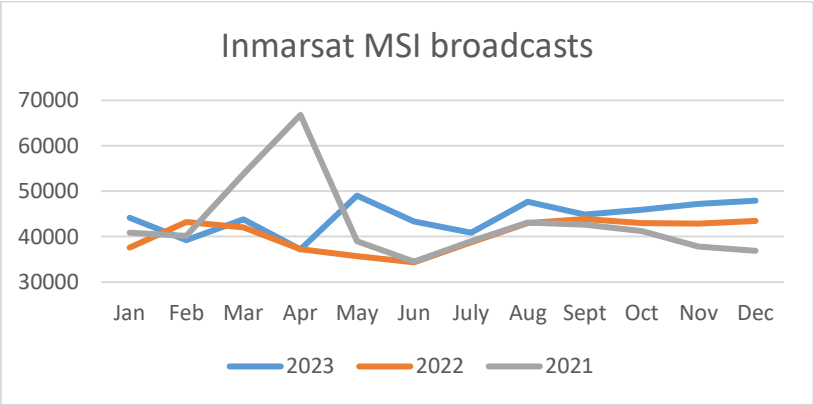

Figure 4 – Monthly Inmarsat MSI broadcasts between 2021 and 2023

Resolution A.707(17) compliance

87 Inmarsat provides maritime distress, urgency, 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*.

88 There are no charges to mariners for the reception of SafetyNET and SafetyNET II messages. Inmarsat broadcasts SafetyNET and SafetyNET II messages with distress priority free-of-charge and messages with safety and urgency priority at a lower cost than standard messaging rates. All urgency and distress communications over the RescueNET system are free of charge to SAR authorities.

Public Services Committee (PSC) meetings

89 The aim of the PSC meetings is primarily to discuss any matters which may affect the ability of Inmarsat to fulfil its public service obligations. The PSC is composed of the Chief Executive Officer ("CEO") of the Company/or Most Senior Executive of the Company and/or a Senior Executive directly appointed by the CEO/or the Most Senior Executive of the Company and the Director General of IMSO and/or a Senior Executive of the Organization appointed by the Director General.

90 During 2023, PSC meetings were held on 9 March, 25 July, and 30 November. For time efficiency and effectiveness, the frequency of the PSC meetings has been reduced from four to three per year. The frequency will vary if needed.

Conclusions

Inmarsat C

91 Regarding the Inmarsat C service, it is IMSO's conclusion that during the period covered by this report, Inmarsat maintained the 99.9% availability requirement, but failed, on two occasions, the requirement set out in clause 3.6.1 of resolution A.1001(25), which requires that "the recognized maritime distress and safety communication services in the area concerned can be restored to their normal availability, not more than one hour after the failure occurs".

Fleet Safety

92 Changes to the constellation as set out paragraph 19, which aim towards eventual global coverage for Inmarsat Fleet Safety, have resulted in a change in the area under which Inmarsat is able provide redundancy for the Inmarsat Fleet Safety service.

93 There is currently no operational impact to vessels resulting from this situation as there is currently no type-approved or wheel marked onboard equipment for the Inmarsat Fleet Safety service.

94 IMSO will continue to liaise with Inmarsat on this matter and will advise the Sub-Committee when Inmarsat Fleet Safety service becomes global.

Action requested of the Sub-Committee

95 The Sub-Committee is invited to note the information provided in this document and, in particular, to:

.1 invite Administrations to encourage their MSI providers and SAR services to migrate to using SafetyNET II rather than using SafetyNET given the cost and functionality benefits (paragraphs 14 and 15);

.2 note the need for support from Administrations in addressing the issues related to false distress alerts (paragraph 82);

.3 note IMSO's conclusion on the performance of Inmarsat C (paragraph 91); and

.4 note IMSO's conclusions with regards to the coverage area for the Inmarsat Fleet Safety service (paragraphs 92 to 94).