

**Recognition of Iridium mobile satellite system in the GMDSS**

Submitted by IHB

**SUMMARY**

Executive Summary: This document provides up-date details of the application for consideration of Iridium Satellite LLC to become a Global Maritime Distress and Safety System (GMDSS) mobile satellite services provider, which are relevant to WWNWS-SC

Action to be taken: Paragraph 2.

Related documents: NCSR 3/11/1 dated 22 December 2015

1. See attached document.
2. The Sub-Committee is invited to note the information provided and take action as appropriate.

SUB-COMMITTEE ON NAVIGATION,  
COMMUNICATIONS AND SEARCH AND  
RESCUE  
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Agenda item 11

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**ANALYSIS OF DEVELOPMENTS IN MARITIME RADIOCOMMUNICATION  
SYSTEMS AND TECHNOLOGY**

**Recognition of Iridium mobile satellite system in the GMDSS**

**Submitted by the United States**

**SUMMARY**

*Executive summary:* This document describes a practical way forward, through a two-step process, for completing the recognition of Iridium as a GMDSS satellite service provider in accordance with the requirements of resolution A.1001(25), and consistent with the IMSO Group of Experts Report on the assessment of the Iridium system (NCSR 3/11)

*Strategic direction:* 5.2

*High-level action:* 5.2.5

*Output:* 5.2.5.7

*Action to be taken:* Paragraph 11

*Related documents:* Resolution A.1001(25); MSC.1/Circ.1414; NCSR 3/11; NCSR 1/12 and MSC 95/22

**Introduction**

1 Based on the provisions of resolution A.1001(25) and on the results of IMSO's Expert Group Report on the technical and operational assessment of the Iridium system (NCSR 3/11 hereinafter referred to as the Report), this document reviews the outcome of the Report and describes a practical two-step approach for completing the recognition of Iridium as a GMDSS mobile satellite services provider. This two-step process would consist of: (i) agreement to incorporate the Iridium mobile satellite system into the GMDSS subject to the conditions set out in the annex attached hereto, and (ii) final recognition, when the Maritime Safety Committee is satisfied that the remaining criteria are met. These two steps are necessary because a provider is only able to meet certain provisions of resolution A.1001(25) if it is already part of the GMDSS, such as using approved equipment, connecting to RCCs and MSI providers, and integrating certain operational requirements as discussed below. The Report acknowledges the Iridium mobile satellite system currently meets or will meet all of the provisions that are

possible to meet at this time. The Iridium system should, therefore, be incorporated into the GMDSS, subject to meeting those provisions which can only be met when a proposed provider is unconditionally incorporated into the GMDSS.

## Discussion

2 Resolution A.1001(25) requests the Maritime Safety Committee "(a) *to apply the criteria set out in the annex to the resolution, through the procedure set out in section 2 of the annex, to evaluate satellite systems notified by governments for possible recognition for use in the GMDSS, within the context of the relevant regulations of SOLAS chapter IV*"; **and** "(b) *to ensure that mobile satellite communication systems recognized by the Organization for use in the GMDSS are compatible with all appropriate SOLAS requirements, and also that such recognition takes into account existing operational procedures and equipment performance standards*".

3 The MSC tasked IMSO with a technical and operational assessment of Iridium's capability to meet these provisions. The Report's annex contains a list of all of the criteria in the annex to resolution A.1001(25). The Report effectively divides the criteria of resolution A.1001(25) into two categories: those which Iridium does meet now, and those which Iridium can only meet once it is integrated into the GMDSS.

4 While careful analysis is needed to understand the effect of the narrative and annex and the "met" or "will be met" designations, the outcome is clear: Iridium has demonstrated all those technical and operational capabilities that can be demonstrated prior to integration with other elements of the GMDSS. These capabilities include, from the Report's annex: functional requirements, capacity, priority access, coverage, pre-emption, and restoration and spare satellites<sup>1</sup>.

5 Although the Report is highly technical, in summary it supports the view that Iridium is ready to be incorporated into the GMDSS, meeting those elements that are possible to meet before integration with other elements of the system. The Report shows:

- .1 The operator of the Iridium satellite system is fully funded and viable, both for its current and next-generation satellite systems.
- .2 The current and future satellite systems consist of 66 Low-earth orbit satellites and spares covering complete coverage of the globe including in the Polar regions. The network has sufficient capacity to handle projected call and message volumes, and this capacity will be improved with the second-generation system.
- .3 The report highlights the difficulty of calculating "availability" for a system like Iridium, but states that the current system achieves end-to-end call completion greater than 99%. This measure, a proxy for calculated availability, will see improvement to at least the expected 99.9% on deployment of the initial few satellites scheduled to launch in early 2016.

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<sup>1</sup> Under several of these headings, the Report indicates that the particular criterion is contingent upon approved terminals, connection to the RCC or initiation of broadcast MSI services. The Report has also made a recommendation related to a backup for the gateway (which is itself not among the criteria in the annex to resolution A.1001(25)).

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- .4 The system has built-in redundancies throughout the network; almost every part of the network is duplicated. The maximum time the system could be unavailable in the case of a satellite failure would be 5.6 minutes.
  - .5 The system has been in continuous operation since 1999 using spectrum assignments that are properly coordinated and notified according to the ITU Radio Regulations.
  - .6 Iridium is capable of handling the required prioritization and pre-emption of distress, urgency, safety and routine communications.
  - .7 Iridium has the capability to broadcast MSI.

Taken together, these facts support incorporation of Iridium into the GMDSS, so that Iridium will be able to continue to make progress toward meeting the criteria for final recognition as listed in the attached annex.

6 By contrast, most of the criteria that the Report indicates remain outstanding include matters which are not principally in the sole power of Iridium to conclude, because they depend upon the actions of other organizations including IMO, IMSO, and of Contracting Governments and Administrations<sup>2</sup>. Where a criterion "will be met", it will be met by connection of RCCs to the network, availability of approved maritime mobile terminals, or implementation of the MSI broadcast service (depending on the item). Where a criterion is "partially met", it will be met once an approved terminal is available or when the broadcast system is being used by MSI providers (depending on the item).

7 It is clear that the remaining criteria noted above could not be undertaken unless the applicant is already incorporated into the GMDSS. In order to proceed, the Sub-Committee should forward a recommendation to the Committee to proceed in two stages: (i) incorporation into the GMDSS system, including those matters which are the technical and operational capabilities which the mobile satellite system has met as a first phase; and (ii) final recognition, including those matters which can only be met subsequently through implementation and integration as a second phase. Final recognition is anticipated to be completed in 2018. Such an approach is consistent with resolution A.1001(25), which suggests a two-step approval process as stated in the preamble and quoted in italics at paragraph 2 above.

8 It is also worth recalling in Circular MSC.1/Circ.1414, under the worst case scenario, the recognition procedure would require two meetings of the NCSR (previously called COMSAR) Sub-Committee and would take between two and three years. This is now the third session at which this matter has been considered by the Sub-Committee. Positive indication from the MSC that Iridium's network can be incorporated into the GMDSS would encourage Administrations, intergovernmental organizations and commercial entities to work with the applicant within a commercially reasonable timeframe. It would also be in accordance with the MSC 95 direction that recognition of Iridium mobile satellite system as a GMDSS provider should be treated as an urgent matter (MSC 95/22).

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<sup>2</sup> Examples include matters such as the adoption of performance standards by the Organization; the development, trial and deployment of equipment meeting those standards; entry of identifiers into international databases; and, the interface of such equipment and the Iridium system to RCCs and SAR authorities, MSI providers and other organizations needing recognition or approval to use the system. There are also other matters such as the amendment of SOLAS chapter IV, to take into account the additional recognized mobile satellite systems, and the amendment of several other documents which are not all the sole responsibility of IMO, such as the Joint IMO/IHO/WMO MSI Manual, and the IAMSAR Manual.

9 The two-step approach to completing the recognition process is consistent with the Report as the annex to that Report clearly delineates what resolution A.1001(25) criteria are currently met by Iridium, and what criteria will be met upon implementation and integration of the Iridium system into the GMDSS. Those conditions which must be met for final recognition are attached to this document in the annex.

### **Conclusion**

10 The United States supports the conclusions of the IMSO Group of Experts Report and believes that the Sub-Committee's recommendation to the Committee should be to incorporate Iridium into the GMDSS given that the current technical and operational capabilities have been demonstrated. The United States also concludes that final recognition should be contingent upon meeting remaining conditions noted in the IMSO Expert Group Report which are related to performance standards, integration with RCCs and MSI broadcast, which are presented in the annex. This approach is within the technical competence of the Sub-Committee according to resolution A.1001(25) and the verification and evaluation role described.

### **Action requested of the Sub-Committee**

11 The Sub-Committee is invited to:

- .1 recommend to the Committee that the Iridium mobile satellite system be incorporated into the GMDSS subject to the conditions set out in the annex, and
- .2 recommend to the Committee that the Iridium mobile satellite system be granted final recognition upon satisfying the conditions set out in the annex.

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**ANNEX**

<b>REQUIREMENTS FOR FINAL RECOGNITION</b>		
<b>Resolution A.1001(25) Paragraph</b>	<b>Requirement (brief description)</b>	<b>Resolution A.1001(25) Provision</b>
2.2.2.1	Conforms with all criteria in Res. A.1001(25)	Will Comply
2.2.2.2	Charging policies (Res. A.707(17)	Will Comply
2.2.2.4	Sign PSA with IMSO	Will Comply
3.1.1	Ship-to-shore distress alerts	Will Comply
3.1.2	Shore-to-ship distress relay alerts	Will Comply
3.1.3	Rescue coordinating communications – ships/ shore	Will Comply
3.1.4	Ship-to-shore transmission of Maritime Safety Information (MSI)	Will Comply
3.1.5	Shore-to-ship broadcasting of MSI	Will Comply
3.1.6	General communications – ships/shore	Will Comply
3.3.2.3.2	Auto-recognize access priority- shore-to-ship communications	Will Comply
3.3.2.3.5	Auto-recognize and route distress communications to MRCC	Will Comply
3.3.2.4	Auto-recognize-prioritize-route-restrict safety and urgency calls	Will Comply
3.5.1	Continuous availability for distress and safety communications	Will Comply
3.5.3	Advise on planned outages-scheduled downtime-restoration	Will Comply
3.5.4	99.9% Network availability	Will Comply
3.6.2	Performance in accordance with PSA	Will Comply
3.8	Information to be made available to SAR authorities	Will Comply
3.9	Reception and addressing of distress alerts	Will Comply
3.11	Test facilities/capabilities	Will Comply
4.1.1.2	Earth station connected to associated RCC	Will Comply
4.4.1	Reliable communications links to one or more associated RCCs	Will Comply
4.4.3	Alarms for distress/urgency messages; monitored connections	Will Comply
4.4.4	Reliable communications links to network for MRCCs distress alert relays and distress traffic	Will Comply
4.6.2	PSTN use/connection and transfer of distress traffic	Will Comply
4.7.1	Distress alerts/calls/messages connection to PDN and transfer of identity	Will Comply
4.7.2	PSTN connections for transfer of distress alerts/messages	Will Comply
4.8.2	Notification of non-delivery of distress alerts/messages – within 4 minutes	Will Comply
4.9.2	Facilities for MSI broadcast – automatic, continuous and reliable reception	Will Comply
4.9.3	MSI – to provide 4 levels of priority	Will Comply
4.9.4.1	MSI broadcasts to entire region covered by system	Will Comply

<b>4.9.4.2</b>	MSI broadcasts to NAVAREAS and METAREAS	Will Comply
<b>4.9.4.3</b>	MSI broadcasts to user chosen temporary areas	Will Comply
<b>4.9.5.1</b>	MSI broadcasts for SAR coordination/distress relays	Will Comply
<b>4.9.5.2</b>	MSI broadcasts for NAV warnings	Will Comply
<b>4.9.5.3</b>	MSI broadcasts for MET warnings and forecasts	Will Comply
<b>4.9.6.1</b>	Scheduling MSI broadcasts/transmitted unscheduled broadcasts	Will Comply
<b>4.9.6.2</b>	Auto repetition of MSI broadcast- specified by MSI Provider	Will Comply
<b>4.9.7</b>	Ability for shipborne terminal to ignore MSI messages already received	Will Comply
<b>4.9.8</b>	Provide facilities for broadcasts similar to NAVTEX to areas not covered by NAVTEX	Will Comply