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AERONAUTICAL AND MARITIME SAR
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Agenda item 7.5

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SAR COMMUNICATIONS

NON-GMDSS COMMUNICATIONS SYSTEMS WHICH MAY BE USED FOR DISTRESS ALERTING

(Presented by Norway and Sweden)

SUMMARY

<i>Executive summary:</i>	This paper discusses future trends in SAR communications, development of new systems for use onboard ships and aircraft, that may be used for alerting and for increased capacities by RCCs
<i>Action to be taken:</i>	Paragraph 17
<i>Related documents:</i>	COMSAR 11/18 Section 6.20, 14.7, 14.10 and 14.11, COMSAR 11/6 (Report of JWG 13, section 7.3 and Recommendations 13/13 and 13/14) and COMSAR 11/6/3 (United States), 11/14 (Republic of Korea) and COMSAR 11/14/3 (Australia)

INTRODUCTION

1. COMSAR 11 (doc. COMSAR 11/18) in February 2007, considered the Joint Working Group's recommendation concerning the revision of SAR requirements and advances in communications and information technologies with the objective of improving the GMDSS and harmonizing it with aeronautical communications to update capabilities and improve interoperability. The Sub-Committee also noted the examples of topics provided in COMSAR 11/6/3 that could be considered by the Sub-Committee to review GMDSS in light of new communications technology.

2. Responding to JWG 13 (*Item 7.3 Future trends in SAR communications*), and the consideration by COMSAR 11, the issues have been discussed among communication experts in Norway and Sweden, satellite communication service providers and GMDSS experts and by fact-finding at an international communication conference, with focus on satellite communications, and technologies "around the corner" such as FleetBroadband, GSM onboard and a more general market acceptance of VSAT (Very Small Antenna Terminal).

3. As described in the report of JWG 13 (COMSAR 11/6), great advances of new technology and systems have been made since the designation of GMDSS. Ships and aircraft are for their commercial and safety communication equipped with this new technology. Satellite communication by online data for transferring and sharing of information is reality today.

(5 pages)

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4. It is therefore important that RCC's and RSC's are informed and familiar with the use of such systems for communications with vessels and aircraft involved in SAR operations, particularly in distant areas with limited access to and coverage of shore based GMDSS facilities. Modification and development of new GMDSS systems, functions and/or routines are normally a complicated and time consuming procedure as they are regulated in SOLAS chapter IV and based upon comprehensive performance standards.

5. In the GMDSS concept Maritime Safety Information (MSI) is distributed by NAVTEX, DSC VHF/MF voice transmissions and Inmarsat Enhanced Group Call (EGC). It should be discussed if MSI might be available for display on ECDIS, as part of the e-navigation concept, or to be downloaded via Internet from satellite terminals or mobile telephones.

6. GMDSS communications enable distress alerting ship-to-shore, ship-to-ship and shore-to-ship using both satellite and terrestrial means. Distress alerts are transmitted by Digital Selective Calling (DSC) and ships within DSC range are alerted (ship-to-ship). After a DSC Distress alert has been sent, the subsequent communication is handled on other frequencies/channels on VHF, MF or HF. Inmarsat and COSPAS-SARSAT are the only GMDSS approved providers of global satellite services. The limitations of GMDSS as a system for distress alerting are not the long distance communications in A3 or A4 areas, where Inmarsat services or COSPAS-SARSAT beacon processing are relayed to the RCC responsible for a Search and Rescue Region. New technology will probably be further developed for all distress and SAR communications in the future.

7. For alerts within an A1, coastal or dense traffic areas, experience from a number of maritime accidents point at the fact that the distress alerts are not sent by DSC, but instead according to the normal routine procedures, e.g. communication systems used on the daily basis are chosen to call for help from the outside world. The initial actions are often to call ships and/or coast radio stations in the vicinity. Distress alert is therefore broadcast on VHF channel 16 directly instead of using DSC on VHF.

8. Mobile telephone service providers cover in some coastal states, the whole or part of the coastal area and alerts to the SAR services are therefore directly transferred to RCC's or RSC's. Mobile phones in SAR, even though not being a GMDSS system is described in the IAMSAR Manual Volume I. Some SAR services are using information from Mobile phone service providers to track the position or region of the mobile phone to minimize a search area. To distribute SAR information regarding e.g. overdue craft, observation of red rockets/flares, SMS messages transmitted to subscribers in a specific area might be a routine procedure to be used by RCC.

9. Since GMDSS entered into force in 1999, new technology has been developed and many ship owners, as well for ocean trades as for coastal traffic, have installed commercial satellite terminals onboard their ships.

10. A large number of ships on ocean-going and coastal voyages are equipped with satellite systems that can be of use for SAR services all over the world. Providers of satellite services offer comprehensive voice, fax and data communications as broadband online E-mail, SMS, video conferencing, equipment for medical examination and reporting etc. Examples of above mentioned systems are Inmarsat FleetBroadband with global coverage (A3) and VSAT providers with regional coverage "tailor made" for certain trades or ship owners. VSAT operates normally in the Ku-band (12-18 GHz) and offers online communications on internet.

11. These new systems are primarily not designed for alerting, but may be used for subsequent SAR communications between ships and RCCs or RSCs, as a link to the On Scene Co-ordinator or for request and information in case of medical advice. In fact, a large number of ships today are “a PC in a network”, normally on-line all the time and available on an e-mail address or telephone.

12. Information regarding communication alternatives, additional to GMDSS, is proposed to be made available on international and national databases as ship’s registers, as SAR Data Provider’s (SDP), 406 MHz registers as COSPAS-SARSAT’S International Beacon Register Database - IBRD (<https://www.406registration.com>), links to registers held by service providers as via Inmarsat (<http://maritime.inmarsat.com/ShipsDir/default.aspx>). Telephone numbers to vessels equipped with commercial service systems are normally registered as land based subscribers, e.g. +46 31 1234567. Therefore, registers it should hold specifications on number to commercial satellite terminals on-board ships and aircrafts.

13. A combination of GMDSS, primarily for alerting, and satellite systems as Inmarsat FleetBroadband and VSAT, for SAR communication and information exchange, would be beneficial for SAR services. Information stored onboard should be made available in SAR operations. It would also improve capabilities in remote areas and for RCCs with large SRRs as a basis for fact analysis and decisions for SAR operational planning.

14. The E-navigation strategy was discussed by COMSAR 11, documents 11/14 (Republic of Korea) and COMSAR 11/14/3 (Australia) which propose improvements of GMDSS and utilization of technology to handle the communication network for E-navigation, and also that the potential components of the E-navigation strategy issues are connected with search and rescue, data communication links, and operation of the GMDSS. COMSAR 11 also agreed, with respect to E-navigation that broadband communication on a global basis using satellite technology would be necessary.

15. In the introduction of new communication possibilities in the GMDSS, one has to take into account a possible addition of workload to SAR services. Contacting a number of different communication providers- and systems, might introduce a “not wanted” additional time-frame that we have to overcome before introducing such systems. One common system for alerting could be vital. A “new GMDSS” must take into account that SAR services must have readily access to available communication information- and systems, and a simple way to access the systems in use, so that no additional time-frame is introduced in the alerting of and communication with ships that might rescue someone in distress.

16. Its proposed that:

- a. The issue of GMDSS approval of a combination of the above mentioned systems, to achieve communication procedures for systems normally used by ships on a daily basis, should further be discussed and conveyed to NAV Sub-Committee and the Co-ordinator of the Correspondence Group on E-navigation for future work and guidance as described in item 14.12 in COMSAR11/18;
- b. Administrations should be encouraged to hold information in SAR Data Providers (SDP) databases on communication data as e-mail addresses, fax and Voice IP telephone numbers to ships equipped with other satellite systems than GMDSS approved;

- c. Amend IAMSAR as proposed in the attached annex; and
- d. Alternative solutions may be developed for MSI distributions.

ACTION REQUESTED BY THE ICAO/IMO JWG-SAR

17. The ICAO/IMO JWG-SAR is invited to discuss the issue and consider the proposals and take action as appropriate.

ANNEX

IAMSAR VOLUME I

Appendix G - Mobile Communication Services

G.7 Satellite Communications

Add new paragraph G.7.5 as follows:

Many vessels are equipped with systems that provide comprehensive online connections for Internet, voice, fax and data communications for functions as online E-mail, SMS, video conferencing, equipment for medical examination and reporting. Inmarsat FleetBroadband is such a system which offers global coverage. Similar services with regional “tailor made” coverage are offered by a large number of commercial VSAT (Very Small Antenna Terminal) satellite providers that also may be of use for SAR services. VSAT operates normally in the Ku-band (12-18 GHz).

The above mentioned commercial satellite systems are primarily not designed for alerting, but may be used for subsequent SAR communications between ships and RCCs or RSCs or as a link to the On Scene Co-ordinator.

IAMSAR VOLUME II

Chapter 2 - Communications

Add new paragraph 2.7.7 as follows:

2.7.7 Large numbers of ocean-going and coastal vessels are equipped with satellite systems that can be of use for SAR services. Providers of satellite services offer comprehensive voice, fax and data communications as broadband online for functions as E-mail, SMS, video conferencing and medical examination. Examples of above mentioned systems are Inmarsat FleetBroadband with global coverage, and VSAT providers with regional coverage “tailor made” for certain trades or ship owners. VSAT operates normally in the Ku-band (12-18 GHz) and offers online communications on internet.

These new systems are primarily not to be used for alerting, but could be used for SAR subsequent communications between ships and RCCs or RSCs, as a link to the On Scene Co-ordinator or for request and information in case of medical advice.

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