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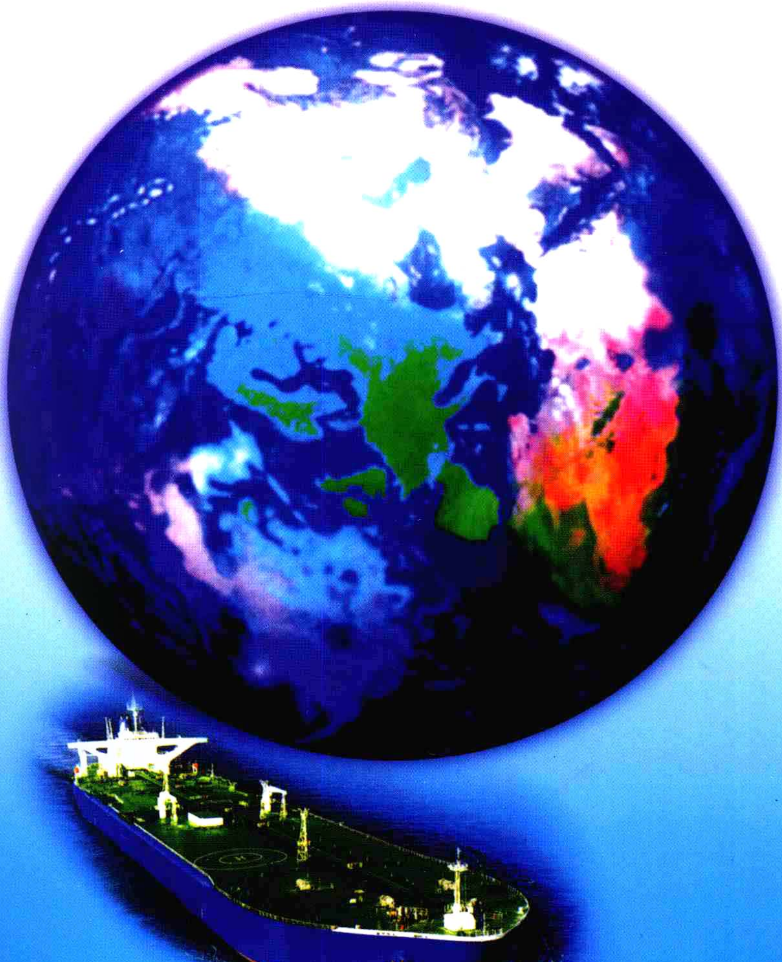
# 通信英语

# Communication English

（第2版）

张晓峰　吴金龙　主编



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# 内容提要

全教材共分七章，第一章 GMDSS 介绍，第二章 国际海事卫星系统和终端设备，第三章 近极地轨道卫星搜救系统和设备，第四章 地面系统、设备和技术，第五章 GMDSS 相关规则选读，第六章 GMDSS 中接收的航警电传电文选读，第七章 通信写作，内容涵盖了 GMDSS 框架、各种 GMDSS 设备英文说明、GMDSS 相关国际公约、阅读和写作指导等。

本教材内容符合 STCW95 公约对无线电人员要求、最新《无线电规则》对无线电人员的要求、2007 年中国“船员考试与评估大纲”GMDSS 通信英语子纲、各港口国和船旗国对 GMDSS 检查要求，可以作为航海类院校教学和培训教材。

# 使用说明

在新词中词性缩写，按下列含义

***n.*** noun 名词，***adj.*** adjective 形容词，***adv.*** adverb 副词，***conj.*** conjuction 连词，***vt.*** transitive verb 及物动词，***vi.*** intransitive verb 不及物动词，***v.*** transitive and intransitive verb 既可能是及物动词又可能是不及物动词。

# 前 言

2007年开始，我国的GMDSS新一轮培训大纲又经过多次研讨出台，在该大纲意在简化GMDSS通信英语强调应用能力，这一点得到了通信行业业内人士的初步认可。随之根据新的教学大纲的培训教材也已出版。

注意到我国通信英语教学各地的地域差异较大，完成通信英语教学也有自学、短期培训、纳入院校教学课程等多种形式，同时由于《通信英语》大纲的本身是高度概括，导致对通信英语培训和评估有不同的理解。有感于此，笔者回顾自1994年从事通信英语教学起多年的船员通信英语培训并结合目前国际海事有关GMDSS相关公约规范，各港口国、船旗国对GMDSS核查，我国船员GMDSS方面英语现状，各海事系统、搜救中心相关人员的通信英语水平现状，多数的航海类院校特别是高职类院校通信英语教学现状加以搜集提炼，并结合目前我国现行通信英语考试和评估大纲加以总结、概括、分析并进行提炼，最后形成本教材。

该教材既有船员工作的实用性，又有符合相关海事法规国际公约的符合性，同时又有依据将来GMDSS发展走向的前瞻性。内容力求精练，但不迎合目前国内GMDSS一种急功近利错误思想，根据近年来国际海事社会群体对GMDSS人员能力要求，港口国对GMDSS人员能力、通信设备状况等要求表明，GMDSS已经完全融入船舶驾驶员模块，同时对该类人员的要求更全面、更完善，这与目前我国航运界对GMDSS知识模块的“简化”思想相悖。为了达到国际航运组织、国际船东对相关人员的要求，并结合《无线电规则》、《SOLAS公约》、《STCW95公约》对无线电人员、设备的要求，兼顾《搜救公约》、《国际航空航海搜救手册》、《联合国海洋法》等相关公约的支持要求，笔者仔细研究了2008年青岛GMDSS大纲拟定会议的精华部分，考虑到航海类院校特别是航海类高职高专院校GMDSS教学时数和未来船东最低要求，我们认为有必要出一本综合考虑上述因素的新版《通信英语》(适合于教学和培训)的教材。本教材删除了《通信英语》第1版过时的内容和提法，对新内容进行分类并重新整合，形成目前的教材。

为了压缩篇幅，我们精炼了原教材的练习内容，只是保留了原来练习形式中的选择题，以增强学员应对海事局考试的能力，每个正文阅读段落中都提供了相关的新词和词组，这样既扩展了原教材内容，又压缩篇幅，使之更适用。

本教材的形成得益于有关“GMDSS英语语言研究”，该团队经过近5年的努力，先后完成了下列科研工作：1.收集目前GMDSS早期、现阶段英语为母语通信专家撰写的通信英语介绍、宣传册、技术研究等作为研究样本；2. 运用语言学基本原理对比通信英语各阶段的语言特点；3. 对未来通信英语发展做展望性预测；4. 研究遇险、紧急通信特征，给该类通信提出建设性的建议；5. 对现行的《GMDSS通信英语》实施进行调查，并及时向主管机构反馈以作为主管机构作为调整大纲的依据。该科研团队最初成员有张晓峰、李瑞云、李正亮等，2006年吴金龙、王坤龙、吴菲等加入团队。此外李正亮、王坤龙、吴菲还参与了第三章、第六章和附录的编写工作。本书全书由张晓峰、吴金龙共同执笔，张晓峰统稿。

编　者

2009年2月

# 目 录

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# 第一章　GMDSS介绍
# Introduction to the GMDSS

GMDSS是全球海上遇险和安全系统(Global Maritime Distress and Safety System)的缩写。该系统的研制主要源于“一方有难八方支援”的最初设想，在20世纪70年代末期，国际海事卫星公约的制定，标志着GMDSS正式筹划，当时的GMDSS被称为未来系统，着眼于沉船后，海上航船、空中飞行器、陆地协调机构的多角度全方位参与协同的搜救操作。该系统实施经历了两个阶段，过渡期1992年2月1日到1999年2月1日，主要是培训GMDSS人员、船舶公司按GMDSS规范要求配置无线电设备，1999年2月1日全面实施GMDSS。如果我们上船工作时在未来工作岗位涉及GMDSS框架的资料不是非常多，常见的有英版《无线电信号表》第五卷、型号比较老的GMDSS设备各种说明书前言部分等。该部分必须掌握的内容有常见缩写词、通信术语、英语常用词。

## 第一节　海上安全通信历史
## History of Maritime Safety Communications

海上通信源自于莫尔斯电报一种由点划组合表示语义的人工编码语言，由于其传输速度慢、拍发人需要受到特殊训练、传输时易受到天电干扰等原因，被现在的GMDSS取代。

**Beginning**

Radio was first used to save life at sea in March 1899 when it was used by a lightship to report that the steamer “Elbe” had ran aground. It was also in 1899 that the first ship was fitted with radio. Since that time radio communications have proved to be of paramount importance to safety at sea.

In 1912, some three months after the passenger ship “Titanic” disaster with the loss of 1507 lives, an international radio conference, met in London to review and amend the 1906 International Radiotelegraph Convention which prescribed the distress and calling frequencies, classes of ship service (watchkeeping), ships radio equipment, requirements for certification of operators for ship stations. Later in January 1914, also in London, an international maritime Conference adopted the first International Convention for the Safety of Life at Sea (SOLAS), which required certain ships to carry an MF radiotelegraph installation.

**The Existing Distress System before 1999**

The subsequent 1929, 1948, 1960 and 1974 SOLAS Conventions all required passenger ships and cargo ships of 1600 tons gross tonnage and upwards to carry a radiotelegraph station. It was not until 1948 that requirements for MF radiotelephone stations were included in the Convention and then only for ships of between 300 and 1600 tons gross tonnage not fitted with an MF radiotelegraph station. Limited requirements for a VHF radiotelephone station for safety of navigation were included in SOLAS in 1974 but it was not until 1981 that requirements for all SOLAS ships to be capable of communicating with each other by VHF and MF radiotelephone was achieved.

Subsequent World Administrative Radio Conferences (WARC) convened by the International Telecommunication Union (ITU) provided the radiotelephone distress call, radiotelephone distress and calling frequencies and reduced the distress bands as radio technology and equipment improved.

Until 1960, when IMO came into being, the ITU was solely responsible for all aspects of maritime radiocommunications, including distress and safety radiocommunications. The 1960s saw great changes and improvements in radiocommunications systems e.g. satellite communications, selective calling, direct-printing telegraphy etc. Both ITU and IMO recognized the advantages of these systems for improving all maritime radiocommunications.

The Morse radiotelegraphy and radiotelephone system, with a required MF communication range of 100-150 nautical miles, provided a distress system based on alerting, if time permitted, ships in the vicinity of the distress and coast stations within range. The system therefore did not cover ships which suddenly sank or ships in distress which were too far away from those who could assist. Furthermore the transmitting ratio of the Morse Code is much slower than the modern communication technology used by satellite.

**Improvement of Maritime Radiocommunications**

In February 1966 IMO decided to study the operational requirements for a maritime satellite communication system and in 1967 the ITU WARC invited IMO to continue this work.

In the early 1970s, IMO in close co-operation with ITU's International Radio Consultative Committee (CCIR), started active preparations for the establishment of a maritime satellite communication system to serve the maritime community; CCIR preparing the technical bases of the system and IMO the operational requirements, a cost benefit analysis and a draft Convention, which was adopted in 1977 and resulted in the establishment of the Inmarsat Organization in 1979. The work of Inmarsat the subject of another lecture, however, attached at Annex, is an address by Mr. C.P. Srivastava the previous Secretary-General of IMO to the 1989 Inmarsat International Conference, on the creation of Inmarsat and co-operation in developing the GMDSS which should be of interest.

In 1973 IMO adopted resolution A.273(Ⅷ), a policy document on development of the maritime distress system which outlined the steps that should be taken to gradually improve the existing system and ultimately achieve what was then the distant future system and is now known as the Global Maritime Distress and Safety System (GMDSS).

IMO also sought to improve search and rescue (SAR) world-wide for those in distress at sea and, concurrent with the development of the Inmarsat Convention, prepared the SAR Convention which was adopted in 1979. SAR under the Convention is based upon co-ordination of all SAR operations, wherever they occur in the world, by responsible authorities ashore (rescue co-ordination centres (RCCs)). As MF and VHF communications have limited range, in order to enable RCCs to meet their responsibilities under the SAR Convention, ships operating outside MF range needed a long range HF or satellite communication capability.

The advent of Inmarsat enabled the development of the GMDSS through a carefully considered integration of satellite and modern terrestrial radiocommunication techniques and procedures. Development of the GMDSS required very close co-operation between ITU and IMO, IMO developing the operational requirements and equipment performance standards and CCIR recommending the equipment technical specifications and procedures for its use, the ITU 1983 WARC adopting necessary provisions in the Radio Regulations to test the system and prove the various equipment to be used, the ITU WARC-MOB 87 adopting the necessary amendments to the Radio Regulations to introduce the GMDSS and IMO adopting in 1988 amendments to the SOLAS Convention, to implement the GMDSS on ships.

In the late 1970s several countries, particularly the United States and the former USSR, began experiments with satellites which resulted in the COSPAS-SARSAT system being established well before implementation of the GMDSS. Since that time the system has provided a significant contribution to SAR operation and assisted in saving hundreds of lives.

In the later 1970s IMO in co-operation with IHO, established the world-wide navigation warning service (WWNWS) for the co-ordination and broadcast of navigational warnings to ships. Since 1929 Contracting Governments to the SOLAS Convention have undertaken to broadcast meteorological warnings and forecasts to ships and to make arrangements for the reception of danger warnings and meteorological reports, co-ordinated by WMO through its world weather watch (WWW), from ships. These matters together with broadcasts of SAR and other urgent information provide the maritime safety information (MSI) element of the GMDSS.

The GMDSS had been fully implemented by first, February, 1999 and the Morse radiotelegraphy was out of service gradually after the implementation of GMDSS.

## New Words 生词

steamer ['sti:mə] ***n.*** 船舶、蒸汽机船
subsequent ['sʌbsikwənt] ***adj.*** 随后的
convene [kən'vi:n] ***vt.*** 召集
morse [mɔ:s] ***n.*** 莫尔斯
furthermore [fɜ:ðə'mɔ:(r)] ***adv.*** 而且
concurrent [kən'kʌrənt] ***adj.*** 一致地
paramount ['pærəmaunt] ***adj.*** 相对的
radiotelegraph ['reidiəu'teligrɑ:f] ***n.*** 无线电报
solely ['səu(l)li] ***adv.*** 仅仅地
radiotelephone ['reidiəu'telifəun] ***n.*** 无线电话
implementation [ˌimplimen'teiʃən] ***n.*** 实施
advent ['ædvənt] ***n.*** 来临

## Useful Phrases and Abbreviations 有用术语和缩写

The Global Maritime Distress and Safety System 全球海上遇险和安全系统
International Radiotelegraph Convention 国际无线电报公约
The International Convention for the Safety of Life at Sea (SOLAS) 国际海上遇险安全公约
The International Telecommunication Union (ITU) 国际电信联盟
World Administrative Radio Conferences (WARC) 世界无线电行政大会（国际电联下设机构）
MF (Medium Frequency) 中频
IHO (International Hydrographic Office) 国际水道测量组织
In close cooperation with 与……密切合作

## Exercise: Fast-Reading Comprehension 快速阅读训练

Morse Code designed by Samuel Morse was encoded system based on combination of points and/or dashes. Morse Code had been used at sea before implementation of the GMDSS. Compared with GMDSS system the Morse Code system has its disadvantages. For example, the transmitting ratios are very slow: A professional Morse Code Operator can only send at 140 letters per minute. Suppose every 5 letters compose of one word. Every minute a professional Morse Code Operator can only send 28 words a minute. It is very slower than a slow natural language speaker. The Morse Code Communications require special skills. Normally a Morse Code Operator requires special training to be professional, so there is only one or two crewmembers on board can operate the Morse Code. Suppose the Morse Code Operator was missing in a marine disaster, no one can send the distress message. The communication quality is worse: In Morse Code communication the interference is common, therefore successful communication in Morse Code is not 100% guarantee. The style of communication is very clumsy: For instance, I must send the following message if I want to call Tianjin Radio Station (Suppose my ship's call sign is BOBT). XSV XSV DE BOBT BOBT MSG K. The Morse Code Operator needs to be trained in order to understand the special Morse Code language. At the same time, the satellite techniques had improved since 1960s. Satellite communications used for maritime purposes were offered with technical support. Communication experts structured a new system which embodied the sore of distress communication. They hope that a three dimensions SAR system is required for distressed vessels. They called the system the future system before 1980s. They created different communication conventions, organize different organizations, urges communication equipment manufacturers to create the modern equipment. Finally, the GMDSS system was fully implemented in 1999.

1. Who invented the Morse Code?

   A. Nobody knows who invented.
   B. Morse Code invented it.
   C. Samuel Morse invented it.
   D. Communication experts invented.

2. Why was the Morse Code out-of-date?

A. The Morse Code was very easy for use.
B. The Morse Code has many disadvantages.
C. New equipment was put into use.
D. The system was very expensive.

3. Why was the GMDSS called as "future system"?
A. They didn't know when the system will be used.
B. They didn't know what will happen in the future.
C. The future work will be done for the system.
D. They created the system for implementation in the future.

4. Which transmission speed is slowest?
A. Daily voice communication in fluent English
B. Morse Code Transmission
C. Voice communication via satellite
D. GMDSS radio communication

5. What is the best title of this passage?
A. Introduction of the Morse Code
B. Introduction of the Satellite Communication
C. Brief History of Radio Communication
D. Why We Need Satellite Communication

## 第二节　海区的划分
## Separation of the Sea Areas

GMDSS 的重要概念之一就是四个海区的划分，四个海区划分规定了不同海区航行船舶必须配备的设备，这四个海区分别称为 A1、A2、A3、A4 海区。A1 海区是岸基 VHF 覆盖区、A2 海区是岸基 MF 覆盖区、A3 海区是 Inmarsat 同步卫星的覆盖区、A4 海区是除了 A1、A2、A3 海区之外的海区，就是两个极区。

The basic concept of GMDSS is SAR as well as shipping in the immediate vicinity of the ship in distress as well as aircraft unit to be alerted, and therefore the ships as well as aircraft can attend the SAR operation with minimum delay.

Ships are required to be carried out the GMDSS equipment according to their voyage areas. In a general rule, ships navigating in ocean-going routes must be fitted with more GMDSS equipment. In turn, ships navigating in offshore waters may be required to be fitted with less GMDSS equipment. Therefore, the navigable waters are divided into different areas, namely sea area A1, A2, A3, and A4.

Sea Area A1 is a sea area within the coverage area of at least one shore-based VHF stations. For example, the Maritime Safety Administration (MSA) Dalian Bureau establishes a VHF centre within Dalian Port Area, so the navigable waters within the radius of 15 n miles are called sea area A1. We use a communication term "line-of-sight communication".

Sea Area A2 is a sea area within the coverage area of at least one shore-based MF stations. For example, the MSA Tianjin establishes a MF centre for surveillance, so the navigable waters within the radius of 100 n miles are called sea area A2. A sea area A2 excludes sea area A1 in the same area.

Sea Area A3 is a sea area within the coverage area of at least one geostationary satellite communication. Normally, it is within the 70 degrees North and 70 degrees South. Area A3 excludes the sea area A1 and A2 in the coverage area. These areas are hugely wide, including China coastal waters, etc.

Sea Area A4 is the sea area except for sea area A1, A2, A3. Those areas are polar areas. In addition, most areas are the north polar area (The Arctic Sea), since the south polar area is mostly land.

Therefore, we can use a formula to express the surface of the earth in concept of the sea areas.

Surface of the earth = lands + sea area A1 + sea area A2+ sea area A3 + sea area A4.

The significance of the division is to provide the confirmation of receiving a distress alert in any navigable waters, and there is no a blind sector for distress alerting.

The basic equipment requirements vary according to ships' navigating in different sea areas. SOLAS ships refer to the ships with at least 300 gross tonnage and non-SOLAS ships refer to the ships with less than 300 gross tonnage. Normally, our training programs focus on SOLAS ships and we are required to familiarize the communication requirements for SOLAS ships. The following table shows the equipment requirements for SOLAS ships.

| **Equipment** | **A1** | **A2** | **A3 Inmarsat Solution** | **A3 HF Solution** | **A4** |
|---|---|---|---|---|---|
| VHF with DSC | × | × | × | × | × |
| DSC watch receiver channel 70 | × | × | × | × | × |
| MF telephony with MF DSC | | × | × | | |
| DSC watch receiver 2,187.5 kHz | | × | × | | |
| Inmarsat SES with EGC receiver | | | × | | |
| MF/HF telephony with DSC and telex | | | | × | × |
| DSC watch receiver MF/HF | | | | × | × |
| Duplicated VHF with DSC | | | × | × | × |
| Duplicated Inmarsat SES | | | × | | |
| Duplicated MF/HF telephony with DSC and telex | | | | | × |
| NAVTEX receiver 518 kHz | × | × | × | × | × |
| Float-free satellite EPIRB | × | × | × | × | 4 sets |
| SART | × or 2 sets | × or 2 sets | × or 2 sets | × or 2 sets | × or 2 sets |
| Handheld GMDSS VHF transceiver | × or 3 sets | × or 3 sets | × or 3 sets | × or 3 sets | × or 3 sets |
| For passenger ships the following has applied since First of July 1997 | | | | | |
| "Distress panel" (SOLAS CH.IV/6.4 and 6.6) | × | × | × | × | × |
| Automatic updating of position to all relevant radiocommunication equipment (SOLAS CH.IV/6.5) | × | × | × | × | × |
| Two-way-on-scene radiocommunication on 121.5 or 123.1 MHz from the navigating bridge (SOLAS Ch.IV/IV 7.5) | × | × | × | × | × |

Cargo ships of 500 gt and upwards and passenger ships: 2 sets.
Cargo ships of 500 gt and upwards and passenger ships: 3 sets.

## New Words 生词

shipping ['ʃipiŋ] ***n.*** 航行船舶总称
offshore ['ɔ(:)fʃɔ:] ***adj.*** 近岸的
bureau [bjuə'rəu, 'bjuərəu] ***n.*** 局
duplicated ['dju:plikeitit] ***adj.***双套的、复制的
upwards ['ʌpwədz] ***adv.***以上地
formula ['fɔ:mjulə] ***n.***公式
set [set] ***n.***（数量词）台
aircraft ['εəkrɑ:ft] ***n*** 航空器（飞行物总称）
water ['wɔ:tə] ***n.*** 水域
surveillance [sə:'veiləns] ***n.*** 监督
handheld [hændheld] ***adj.***便携的
exclude [iks'klu:d] ***v.*** 除外
geostationary [ˌdʒi(:)əu'steiʃənəri] ***adj.***静止的
familarize [fə'miljəraiz] ***vt.*** 熟悉

## Useful Phrases and Abbreviations 有用术语和缩写

Sea Area A1　A1 海区（VHF DSC 覆盖区）
Sea Area A2　A2 海区（MF DSC 覆盖区）
Sea Area A3　A3 海区（Inmarsat 覆盖区）
Sea Area A4　A4 海区（HF DSC 覆盖区）
Maritime Safety Administration 海事局
polar area 极区
The Arctic Sea 北冰洋
SOLAS ships 受 SOLAS 公约约束的船舶
passenger ships 客船（指载客 12 人以上）
gross tonnage 总吨

## Exercise: Fast-Reading Comprehension 快速阅读训练 Fast Reading Training

The basic concept of the GMDSS is that search and rescue authorities ashore, as well as shipping in the immediate vicinity of the ship in distress, will be rapidly alerted to a distress incident so they can assist in a co-ordinated search and rescue operation with the minimum delay.

The system will also provide for urgency and safety communications and the dissemination of maritime safety information (MSI), including navigational and meteorological warnings. In other words, every ship will be able, irrespective of the area in which it operates, to perform those communication functions considered essential for the safety of the ship itself and of other ships operating in the same area. Although satellite will play an important part in the GMDSS, they will not completely replace existing terrestrial radio. The GMDSS combines various subsystem into one overall system and the oceans are divided into four areas:

Area A1—within range of shore-based VHF coast stations (20—30 miles);

Area A2—within range of shore-based MF coast stations (excluding A1 areas), (in the order of 100 miles);

Area A3—within the coverage area of geostationary maritime communication satellites (excluding A1 and A2 areas), (approximately between 70° N and 70° S); and

Area A4—the remaining sea areas outside area A1, A2 and A3. The most important of these is the sea around the North Pole (the area around the South Pole is mostly land). Geostationary satellites, which are positioned above the equator, cannot reach this far.

In all areas of operation the continuous availability of alerting should be provided.

Equipment requirements vary according to the area (or areas) in which the ship operates. Coastal vessels, for example, will only have to carry minimal equipment if they do not operate beyond the range of shore-based VHF radio stations. Ships which go further from land will have to carry MF equipment as well as VHF. Ships which operate beyond MF range will have to carry HF or Inmarsat equipment in addition to VHF and MF. Ships which operate in area A4 will have to carry HF, MF and VHF equipment.

1. The passage could be described by the title ______.

   A.GMDSS technical requirements  B. Basic concept of the GMDSS

   C.Operation of GMDSS  D. SAR plan

2. According to the passage, the distress alerts could be sent to _______.

   A.any mobile units at any a system

   B. co-ordinated centre for all hazard waters

   C. both SAR authorities and the ships near the distress vessel

   D. coast stations which participate in the SAR operations

3. The SAR operation could be co-ordinated and assistance rendered ______.

   A.in slow minimum delay  B. without minimum delay

   C. with no response  D. with minimum delay

4. The maritime safety information contains _______.

   A.distress message  B. urgency message

   C. distress alert  D. navigational and meteorological warnings

5.According to the passage, both the satellite communications and terrestrial communications will ______.

   A. not be used in the GMDSS  B. be used only for general communications

   C.be replaced by Morse  D. be used in the GMDSS

6.The sea area A3 will be within the coverage of ______.

   A. Inmarsat satellites  B. HF radio communication station

   C. MF radio communication station  D. VHF radio communication station

7.The radio equipment to be carried on board GMDSS ship depends upon _____.

   A.the tonnage of the ship  B. the type of the ship

   C. the sea area in which the ship operates  D. the horse power of the ship

8.The ship sailing in area A4 has to be provided with the ______ equipment.

A.MF/HF/VHF　　B. MF/HF　　C. MF/VHF　　D. VHF/MF/Inmarsat

## 第三节　全球海上遇险与安全系统子系统介绍
## Introduction to Sub-systems of the GMDSS

GMDSS 是由搜救概念、组成框架文件、不同系统、设备、技术组成的复合体。GMDSS 子系统包括数字选择性呼叫系统、卫星通信系统（就是 Inmarsat 同步系统）、能发射气象和航行警告的海上安全系统、可以发射遇险报警的示位标（EPIRB）、搜救雷达应答器等。

The GMDSS is composed of several sub-systems which are coordinated through RCCs to provide all the required functions needed safety at sea. The main sub-systems can be grouped as follows.

**(1) DSC System**

This is an automatic calling system which makes the initial contact between two stations, groups of stations or stations in a selected area. The caller composes a short message which is transmitted directly to the receiving station(s). Dedicated radio frequencies have been allocated for this purpose in the VHF, MF and HF bands for short, medium and long ranges respectively.

When a call is received an alarm is sounded, in rather a similar way as an SMS message is received by mobile telephones. The received information is displayed on a small screen, often abbreviated in a way which needs to be interpreted. Among other things it indicates the purpose of the call and may direct the operator to a radiotelephone of radiotelex channel for subsequent communications.

If the caller is in distress, the ship's position and nature of distress are included in the DSC message. For distress and urgency alerts, the alarm sounds continuously until the received information has been read by the operator. DSC Distress alerts received by shore stations are automatically and immediately routed to the nearest RCC.

**(2) The Satellite Communication System**

Inmarsat is the only provider of GMDSS maritime communication services by satellite, but other providers may offer such services in the future, subject to authorization by IMO.

Inmarsat is a commercial enterprise and is currently the only provider of GMDSS maritime communications. Inmarsat also offer a full range of general communication and network solutions. Geographical coverage is between 76 degrees North and 76 degrees South.

**(3) The MSI System**

MSI includes navigational and meteorological warnings, meteorological forecasts, and other urgent or safety-related messages of importance to all vessels at sea and may also include electronic chart correction data. Broadcasts are MF telex (known as NAVTEX) for local MSI, and by Inmarsat-C or HF telex for long-range MSI (i.e., Navarea warnings, etc.). Some countries have elected not to establish NAVTEX services, in which case local warnings are broadcast using Inmarsat-C or HF telex (Argentina, Australia, Brazil, Indonesia and USA).

**(4) EPIRB System**

EPIRB alerting via satellite is carried out through the COSPAS-SARSAT network. The COSPAS-SARSAT network provides full global coverage via a series of satellites in polar orbits, supplemented by an additional series in geostationary orbit. The polar orbiting satellite can determine the EPIRB's position by the Doppler method; this does not require a position input at the EPIRB but it might take a few hours to accurately determine the location.

The geostationary satellites relay the EPIRB signal to earth with no delay, but are unable to determine position by Doppler method; however, they will relay the position if the EPIRB is a model which incorporates a GPS or manually entered position.

There is another type of EPIRB used only by Sea Area A1 vessels. This is not part of the satellite EPIRB system. It is a portable transmitter which sends a DSC Distress Alert on VHF and follows up with a SART signal. It is the SART signal which provides the Electronic Position Indication. The DSC Distress Alert indicates EPIRB emission instead of specifying the nature of distress. Ships receiving this type of DSC Distress Alert should take extra care to search for a SART on their 3cm radar equipment.

**EPIRBs: False alerts and guard receiver**

An EPIRB should be mounted in an exposed location, so that it may float free of obstruction if a vessel sinks. EPIRBs are not normally visible from the bridge, if an EPIRB is dislodged, or falls into the sea, it may transmit its distress message without those on board being aware that it has done so. Under some circumstances this can also occur when the EPIRB is removed for routine maintenance checks and battery replacement.

The false activation of a 406 MHz EPIRB which is not immediately detected onboard, will result in RCCs attempting to contact the ship. If contact is not established very quickly, full SAR procedures can often be initiated. This can place a heavy burden on people in SAR organizations, including volunteers. Moreover, there is a chance that a false distress alert will coincide with an actual distress situation, resulting in SAR resources being delayed in responding to a real distress. It can result in ships being diverted, and may involve helicopters or long distance flights by fixed-wing aircraft if the position indicated is in mid-ocean.

A device has been developed which can detect when an EPIRB has been activated. The Stanguard EPIRB Guard Receiver is designed to be fitted to a bulkhead in the wheelhouse. If an EPIRB signal is detected, it checks the transmission to see whether the EPIRB belongs to its own ship, or to another ship in the immediate vicinity. It then gives an audible alarm, and, at the same time, a visual indication as to whether the EPIRB signal is own ship or other ship.

If the indication is own ship the appropriate RCC must be informed immediately of a false alert before unnecessary SAR procedures are commenced.

If the indication is "other ship" then the officer of the watch knows that another vessel's EPIRB bas has activated and he can prepare to take appropriate action.