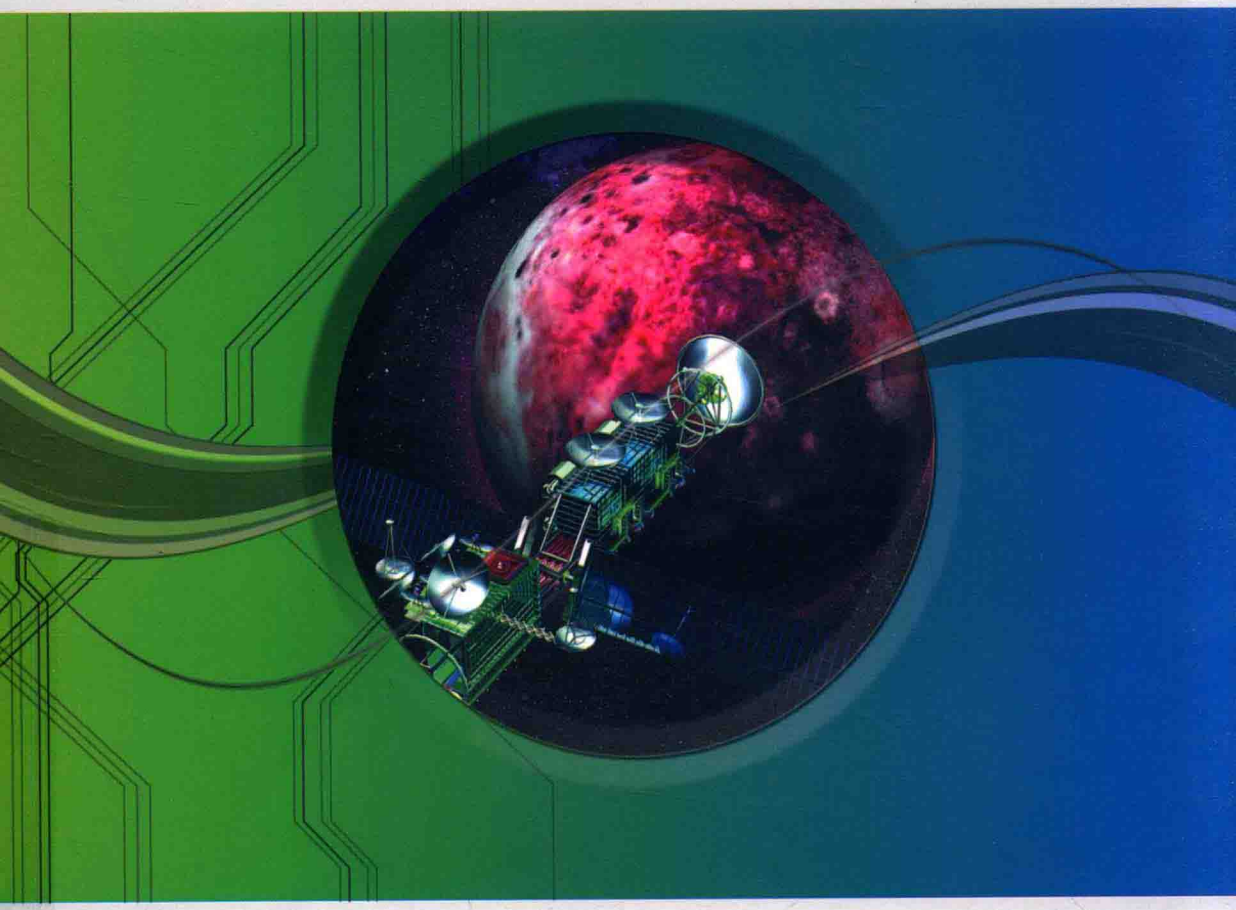
GMDSS无线电操作员培训教材

GMDSS英语阅读

主 编 张晓峰 于国栋 潘书策 唐寒秋



大连海事大学出版社

GMDSS无线电操作员培训教材

—GMDSS英语阅读—

主　编　张晓峰　于国栋　潘书策　唐寒秋

副主编　（按姓氏笔画排序）

刘锦辉　杨立新　汪龙生　郑有赋

魏武财

参　编　（按

刘　　影　高　妮

黄　

大连海事大学出版社

图书在版编目(CIP)数据

GMDSS英语阅读 / 张晓峰等主编. — 大连 ：大连海事大学出版社，2013.6
GMDSS无线电操作员培训教材
ISBN 978-7-5632-2872-0

Ⅰ.①G… Ⅱ.①张… Ⅲ.①全球海上遇险与安全系统—通信—英语—职业培训—教材 Ⅳ.①H31

中国版本图书馆CIP数据核字(2013)第137414号

大连海事大学出版社出版

地址：大连市凌海路1号 邮编：116026 电话：0411-84728394 传真：0411-84727996
http://www.dmupress.com E-mail:cbs@dmupress.com

大连住友彩色印刷有限公司印装 大连海事大学出版社发行

2013年6月第1版 2013年6月第1次印刷
幅面尺寸：185 mm×260 mm 印张：23
字数：465千 印数：1～3000册

出版人：徐华东

责任编辑：陈 亮 版式设计：解瑶瑶
封面设计：王 艳 责任校对：李继凯

ISBN 978-7-5632-2872-0 定价：59.00元

前　言

早在1966年政府间海事协商组织(1982年5月22日起更名为“国际海事组织”)就倡导能够研制一个“一船有难、八方支援”的系统,后来把研制的系统称为未来系统(Future System)。未来系统的重大技术支持包括两方面:一方面是20世纪70年代末期海事通信卫星(Marisat)发射至同步轨道;另一方面是1988年低极地轨道系统在巴黎草签的协议,以美国为首的资本主义阵营和以前苏联为首的社会主义阵营将冷战时期的产物,原本用于军事专业搜救和定位的地球上方的许多卫星转为民用,实现了未来系统的成熟,后来定名为全球海上遇险安全系统(Global Maritime Distress and Safety System,以下简称GMDSS)。1988年《国际海上人命安全公约》第四章作了修正,第一次把GMDSS的概念写入公约中,并在国际海事组织大会上的默认程序(Tacit Acceptance)中规定过渡期,即1992年2月1日至1999年2月1日。我国自1993年起在大连海事大学等全国航海类有培训资质的高校开始GMDSS培训,当时杨光治等一些老专家对我国的GMDSS教学与培训进行研究,并形成了非常优秀的教材。1997年我国在履行STCW 78/95公约中又有以大连海事大学为主导的许多专家对大纲进行了拟定,并官方划分GMDSS操作员证书的学科门类并沿用至今。2008年和2012年我国GMDSS无线电操作员大纲经过了重大修改后,我国各培训院校均应执行最新修改后的规则。

大连海事大学出版社先后组织了大连海事大学、上海海事大学、天津理工大学、广东海洋大学等高校的GMDSS专家,以及江苏海事职业技术学院、天津海运职业学院等许多专家进行了教材编写研讨,最后确定了由有多年培训经验的专家进行GMDSS无线电操作员培训教材的编写。该系列教材包括《GMDSS英语阅读》、《GMDSS综合业务》、《通信英语听力与会话》、《GMDSS设备操作与维护》及配套同步辅导用书,符合STCW马尼拉修正案对无线电操作员的要求主旨和内容,内容体系编写完全遵照中华人民共和国海事局最新颁布的考试和发证规则中的要求,其中既有教学读本,又有教学参考教材,适合于GMDSS无线电操作员学习GMDSS课程以及参加职务证书考试。

编者的话

《1978年海员培训、发证和值班标准国际公约马尼拉修正案》(以下简称《STCW公约马尼拉修正案》)已于2012年在中国以《中华人民共和国海船船员考试和发证规则》(以下简称《11规则》)实施。为了全面履行《STCW公约马尼拉修正案》,实施《11规则》,中华人民共和国海事局已于2012年将《全球海上遇险和安全系统(GMDSS)操作员考试大纲和评估规范》进行了修订,并入了《中华人民共和国海船船员适任考试大纲》,并于2012年7月1日起正式实施。为了适应《STCW公约马尼拉修正案》、《11规则》及新大纲的要求,我们于2012年开始工作,组织材料认真编写,终于让该书面市。

我们先进行调研,并结合目前我国GMDSS通信英语的培训状况,然后进行资料收集,对目前国际上流行的GMDSS相关资料,比如《英版无线电信号表》、《国际航空和海上搜寻救助手册》、《无线电规则》、《GMDSS手册》、《1978年海员培训、发证和值班标准国际公约》等进行了研究,所有的公约、宣传材料、规则的选取都是截至2012年9月的最新版本,以确保相关材料的有效性。此外,课文的编写考虑到国外船员培训中"模块"的概念,即课文之间的连接是松散联合,相同性质课文之间组成模块,该方法也比较符合目前国际海事组织推荐示范课程的思想。在章节安排上严格以《中华人民共和国海船船员适任考试大纲》无线电操作人员部分的章节先后为顺序,并借鉴了编写《通信英语》和《通信英语(第二版)》的成功经验,推出这本航海类本科、大专、高职、中专院校教学和培训中都可以使用的最新培训教材。

本教材由张晓峰、于国栋、潘书策、唐寒秋任主编,刘锦辉、杨立新、汪龙生、郑有赋、魏武财任副主编,刘学、宋浩然、宋影、高妮、黄焕、黄溢也参与了本教材的编写工作。

如果您对本教材有任何的建议和意见,请和大连海事大学出版社或者我们直接联系,我们将继续努力,认真完善。

编者

2013年初春

Contents

Module 1

GMDSS and Installations

该模块对应“GMDSS英语阅读”考试大纲中的“1 GMDSS系统与设备”，主要包括：

- GMDSS 基础知识（GMDSS 系统组成与通信功能，海区划分、ITU 证书要求，设备配备、维修要求）；
- Inmarsat 系统（Inmarsat 系统组成及工作原理、Inmarsat 通信业务、Inmarsat 船站及终端设备英版使用说明书、Inmarsat 船站及终端设备英版技术说明书）；
- 地面通信系统（地面通信业务、MF/HF 无线电设备与终端英版使用说明书、MF/HF 无线电设备与终端英版技术说明书、VHF 无线电设备英版使用说明书、VHF 无线电设备英版技术说明书）；
- 海上安全信息播发系统（海上安全信息概念、EGC 系统、NAVTEX 系统、NAVTEX 设备英版使用说明书、NAVTEX 设备英版技术说明书）；
- 定位与寻位系统（国际搜救卫星系统，EPIRB 设备的英版使用说明，EPIRB 的测试要求，SART 工作原理，SART 的英版安装、使用说明，SART 的测试要求）。

Chapter 1

The Basic Knowledge of the GMDSS

本章内容是GMDSS系统最基本的知识，主要介绍GMDSS是什么，系统如何划分，对无线电操作员有哪些基本要求等。此部分知识相当于Introduction，是整个内容的引言。从语言特点看，此部分内容呈现句子长，语法结构相对复杂，和基础英语结合更加紧密等特点。

Lesson 1
The GMDSS Components and Their Functions

本课内容主要涉及GMDSS系统基本概念、海区的划分、通信功能，包括报警、搜救协调通信、现场通信、寻位、播发海上安全信息、常规通信、驾驶台对驾驶台通信、搜救、无线电人员、台站识别等。

General

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 that they can assist in a co-ordinated SAR operation with the minimum delay. The system also provides for urgency and safety communications and the promulgation

of maritime safety information (MSI)—navigational and meteorological warnings and forecasts and other urgent safety information to ships. In other words, every ship is able, irrespective of the area in which it operates, to perform those communication functions which are essential for the safety of the ship itself and of other ships operating in the same area.

Recognizing that the different radio subsystems incorporated in the GMDSS system have individual limitations with respect to the geographical coverage and services provided, the equipment required to be carried by a ship is determined in principle by the ship's area of operation, which is designated as follows (regulation IV/2.1.12—2.1.15):

- Sea area A1—an area within the radiotelephone coverage of at least one VHF coast station in which continuous digital selective calling (DSC) alerting is available, as may be defined by a Contracting Government;
- Sea area A2—an area, excluding sea area A1, within the radiotelephone coverage of at least one MF coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government;
- Sea area A3—an area, excluding sea areas A1 and A2, within the coverage of an Inmarsat geostationary satellite in which continuous alerting is available; and
- Sea area A4—an area outside sea areas A1, A2 and A3.

In all areas of operation, the continuous availability of alerting is required. Criteria for establishing those GMDSS sea areas are given in resolution A.801(19).

Communications Functions in the GMDSS

The GMDSS comprises the following communications functions as required by regulation IV/4. These functions are individually performed by the radio subsystems set out in Part 3.

Alerting (regulation IV/4.1.1—4.1.3)

Distress alerting is the rapid and successful reporting of a distress incident to a unit which can provide or co-ordinate assistance, as prescribed in RR 32.9. This would be a rescue co-ordination centre (RCC) or another ship in the vicinity. When an alert is received by an RCC, normally via a coast station or a coast earth station, the RCC will relay the alert to SAR units and to ships in the vicinity of the distress incident. A distress alert should indicate the ship's identification and the position of the distress and, where practicable, its nature and other information which could be used for rescue operations (RR 32.10).

The communication arrangements under the GMDSS are designed to enable distress alerting to be performed in all three directions—ship-to-shore, ship-to-ship and shore-to-ship—in all sea areas (regulation IV/4.1.1—4.1.3). The alerting function is based on

both satellite and terrestrial means and the initial distress alert is primarily transmitted in the ship-to-shore direction. When the distress alert is transmitted by DSC on VHF, MF or HF, ships within DSC range of the ship in distress will also be alerted (ship-to-ship alerting).

A distress alert is normally initiated manually and all distress alerts are acknowledged manually. When a ship sinks, a float-free satellite emergency position-indicating radio beacon (EPIRB) is automatically activated.

The relaying of a distress alert from an RCC to ships in the vicinity of a distress incident is made by satellite communication or by terrestrial communication, using appropriate frequencies. In either case, to avoid all ships in a large sea area being alerted, an "area call" is normally transmitted so that only those ships in the vicinity of the distress incident are alerted. On receipt of a relayed distress alert, ships in the area addressed are required to establish communication with the RCC concerned to enable the assistance to be co-ordinated.

SAR co-ordinating communications (regulation IV/4.1.4)

In general, these are the communications necessary for the co-ordination of ships and aircraft participating in a search and rescue operation following a distress alert, and include communications between RCCs and any on-scene co-ordinator (OSC) in the area of the distress incident. These terms are defined in the annex to the International Convention on Maritime Search and Rescue, 1979, as follows:

- RCC is a unit responsible for promoting efficient organization of search and rescue services and for co-ordinating the conduct of search and rescue services operations within a search and rescue region.
- OSC is a person designated to co-ordinate search and rescue operations within a specified area.

For SAR operations, messages are transmitted in both directions, as distinct from "alerting", which is generally the transmission of a specific message in one direction only, and distress and safety traffic by radiotelephony and direct-printing telegraphy will normally be used for passing such messages.

The techniques which are available for SAR co-ordinating communications are radiotelephony or direct-printing telegraphy or both. These communications can be carried out by terrestrial or satellite means, dependent upon the equipment fitted on the ship and the sea area in which the incident occurs.

On-scene communications (regulation IV/4.1.5)

On-scene communications normally take place in the MF and VHF bands on frequencies designated for distress and safety traffic, by radiotelephony or direct-printing telegraphy. These communications between the ship in distress and assisting units relate to the provision of assistance to the ship or the rescue of survivors. When aircraft are involved in

on-scene communications they are normally able to use 3,023, 4,125 and 5,680 kHz. In addition, SAR aircraft can be provided with equipment to communicate on 2,182 kHz or 156.8 MHz or both, as well as on other maritime mobile frequencies.

Locating (regulation IV/4.1.6)

Locating is the finding of a ship/aircraft in distress or its survival craft or survivors, as defined by regulation IV/2.1.8. In the GMDSS this function is performed by means of 9 GHz SAR radar transponders (SARTs) carried by the ship in distress or its survivors, whose position is indicated when the SART is interrogated by the searching unit's 9 GHz radar. Use of the frequency 121.5 MHz in satellite EPIRBs is provided for homing by aeronautical SAR units.

Promulgation of maritime safety information (MSI) (regulation IV/4.1.7)

Ships need to be provided with up-to-date navigational warnings and meteorological warnings and forecasts and other urgent maritime safety information (MSI). MSI is made available by narrow-band direct-printing telegraphy broadcasts, using forward error correction, on the frequency 518 kHz (International NAVTEX service—regulation IV/2.1.7) and, for ships which navigate beyond the NAVTEX coverage, by broadcasts via the Inmarsat enhanced group call (EGG) system (known as the International SafetyNET system).

General radiocommunications (regulation IV/4.1.8)

General radiocommunications in the GMDSS are those communications between ship stations and shore-based communication networks which concern the management and operation of the ship and may have an impact on its safety (regulation IV/2.1.5). These communications can be conducted on any appropriate channel, including those used for public correspondence. Examples are orders for pilot and tug services, chart replacement, repairs, etc.

Bridge-to-bridge communications (regulation IV/4.1.9)

Bridge-to-bridge communications are inter-ship safety communications conducted from the position from which the ship is normally navigated (regulation IV/2.1.1), normally performed by VHF radiotelephony.

Search and Rescue

The International Convention on Maritime Search and Rescue, 1979, as amended in 1998 and 2004, gives the arrangements for the provision and co-ordination of search and rescue services. Parties to the Convention are required, either individually or in co-operation with other States, to establish the following basic elements of a search and rescue service:

- legal framework

- assignment of responsible authority
- organization of available resources
- communication facilities
- co-ordination and operational functions
- processes to improve the service, including planning, domestic and international co-operative relationships and training.

To help support search and rescue services, Parties are required to establish and agree search and rescue regions. IMO and the International Civil Aviation Organization (ICAO) co-ordinate member States arrangements with the aim of providing an effective world-wide system so that, wherever people sail or fly, SAR services will be available if needed. The current status of global search and rescue regions is shown on the maps.

IMO and ICAO have jointly developed the International Aeronautical and Maritime Search and Rescue Manual (IAMSAR Manual) to assist States in meeting their SAR obligations. Volume I deals with Organization and Management, Volume II with Mission Co-ordination and Volume III with Mobile Facilities. Ships are required to carry Volume III under regulation V/21 of SOLAS.

Radio Personnel

The GMDSS does not require dedicated radio operators but regulation IV/16 requires that ships carry personnel qualified for distress and safety communications. Operator's certificates are specified in RR 47 and specifications for the minimum standards of competency for GMDSS radio operators are given in the STCW Code, chapter IV, section B-IV/2.

Station Identities

The GMDSS uses a nine-digit number, called a Maritime Mobile Service Identity (MMSI), to identify a ship or a coast station. Three of these digits denote the geographical area of the Administration responsible for the station and these are known as the Maritime Identification Digits (MID). The structures of MMSIs are described in RR 19.

New Words

alerting [əˈlɜːtɪŋ]	*n.* 报警
amend [əˈmend]	*vt.* 修正
assignment [əˈsaɪnmənt]	*n.* (分派的)任务
communication [kəːmjuːnɪˈkeɪʃən]	*n.* 通信

competency [ˈkɒmpɪtənsɪ] *n.* 适任
co-ordination [kəʊˌɔːdɪˈneɪʃən] *n.* 协调
dedicated [ˈdedɪkeɪtɪd] *n.* 专门的
denote [dɪˈnəʊt] *vt.* 表示
domestic [dəʊˈmestɪk] *adj.* 国内的,家庭的
excluding [ɪksˈkluːdɪŋ] *prep.* 除外
facility [fəˈsɪlɪtɪ] *n.* 设备
framework [ˈfreɪmwɜːk] *n.* 框架,架构
function [ˈfʌŋkʃən] *n.* 功能
individually [ˌɪndɪˈvɪdjʊəlɪ] *adv.* 个别地
interrogate [ɪnˈterəʊgeɪt] *vt.* 触发
locating [ləʊˈkeɪtɪŋ] *n.* 寻位,定位
meteorological [ˌmiːtɪərəˈlɒdʒɪkəl] *adj.* 气象的
navigational [ˌnævɪˈgeɪʃənəl] *adj.* 航行的
practicable [ˈpræktɪkəbl] *adj.* 切实可行的
promulgation [ˌprɒməlˈgeɪʃən] *n.* 播发
radiotelephony [ˈreɪdɪəʊtɪˈlefənɪ] *n.* 无线电话
shipping [ˈʃɪpɪŋ] *n.* 船舶
survivor [səˈvaɪvə] *n.* 幸存者

Phrases, Terms, and Abbreviations

bridge-to-bridge communication 驾驶台对驾驶台通信
Contracting Government 缔约国政府
DSC (digital selective calling) 数字选择性呼叫
enhanced group call (EGC) 增强群呼
general radiocommunication 常规通信
geographical coverage 地理区域覆盖
have an impact on 对……有影响
HF (high frequency) 高频
IMO (the International Maritime Organization) 国际海事组织
International Aeronautical and Maritime Search and Rescue Manual (IAMSAR Manual) 国际航空和海上搜寻救助手册
International Civil Aviation Organization (ICAO) 国际民航组织
International Convention on Maritime Search and Rescue 国际海上搜救公约
Maritime Mobile Service Identity (MMSI) 海上移动业务识别
maritime safety information (MSI) 海上安全信息

MF (medium frequency)	中频
narrow-band direct-printing telegraphy (NBDP)	窄带直接印字电报
on-scene communication	现场通信
on-scene co-ordinator (OSC)	现场协调人
RCC (Rescue Co-ordination Centre)	救助协调中心
RR (Radio Regulations)	无线电规则
SAR radar transponder (SART)	搜救雷达应答器
Sea Area A1	(岸基 VHF DSC 覆盖的海区)A1 海区
Sea Area A2	(岸基 MF DSC 覆盖的海区)A2 海区
Sea Area A3	(Inmarsat 卫星覆盖的海区)A3 海区
Sea Area A4	(岸基 HF DSC 覆盖的海区)A4 海区
search and rescue authorities ashore	岸上搜救机构
STCW (The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers)	海员培训、发证和值班标准国际公约
survival craft	救生艇筏
the ship in distress	遇险船
VHF (very high frequency)	甚高频
with the minimum delay	(书面语)尽快

Exercise: Fast-Reading Comprehension

The Morse Code designed by Samuel Morse was encoded system based on combination of points and/or dashes. A 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 it.
   B. Morse Code invented it.
   C. Samuel Morse invented it.
   D. Communication experts invented it.
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 radiocommunication.
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 Radiocommunication.
   D. Why We Need Satellite Communication.

Lesson 2
Sea Areas and Certificate Requirements by ITU

GMDSS的重要概念之一就是四个海区的划分，四个海区的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海区是除A1海区之外的岸基MF覆盖区；A3海区是除A1、A2海区之外的Inmarsat同步卫星的覆盖区；A4海区是除A1、A2、A3海区之外的海区，就是两个极区。

The Concept of Division of the Sea Areas

The basic concept of the GMDSS is SAR as well as shipping in the immediate vicinity of the ship in distress as well as aircrafts unit to be alerted, and therefore the ships as well as aircrafts can attend the SAR operation with the 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. 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. Sea area A3 excludes the sea area A1 and A2 in the coverage area. Sea area A3 are hugely wide, including China coastal waters, etc.

Sea area A4 is the sea area other than sea area A1, A2, A3. Sea area A4 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.