Status of EGC SafetyNET Services, Inmarsat Maritime Safety Services today and tomorrow

WWNWS-2 Meeting
Australia, Sydney
9-13 August 2010

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Maritime Safety Services Department

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Agenda

- General overview of Inmarsat-C system and services

- Inmarsat-C "Arctic trial" and results

- New Change Proposal (CP) for the SDM and manufacturers with Arctic areas

- List of Inmarsat-C LESs and availability of Short Access Codes (SACs)

- Overview of Inmarsat FleetBroadband (FB) system and services

- "505" Emergency service

- GMDSS services on FB

- Plans for provision of new "EGC SafetyNET" services on FB

- Isat Phone
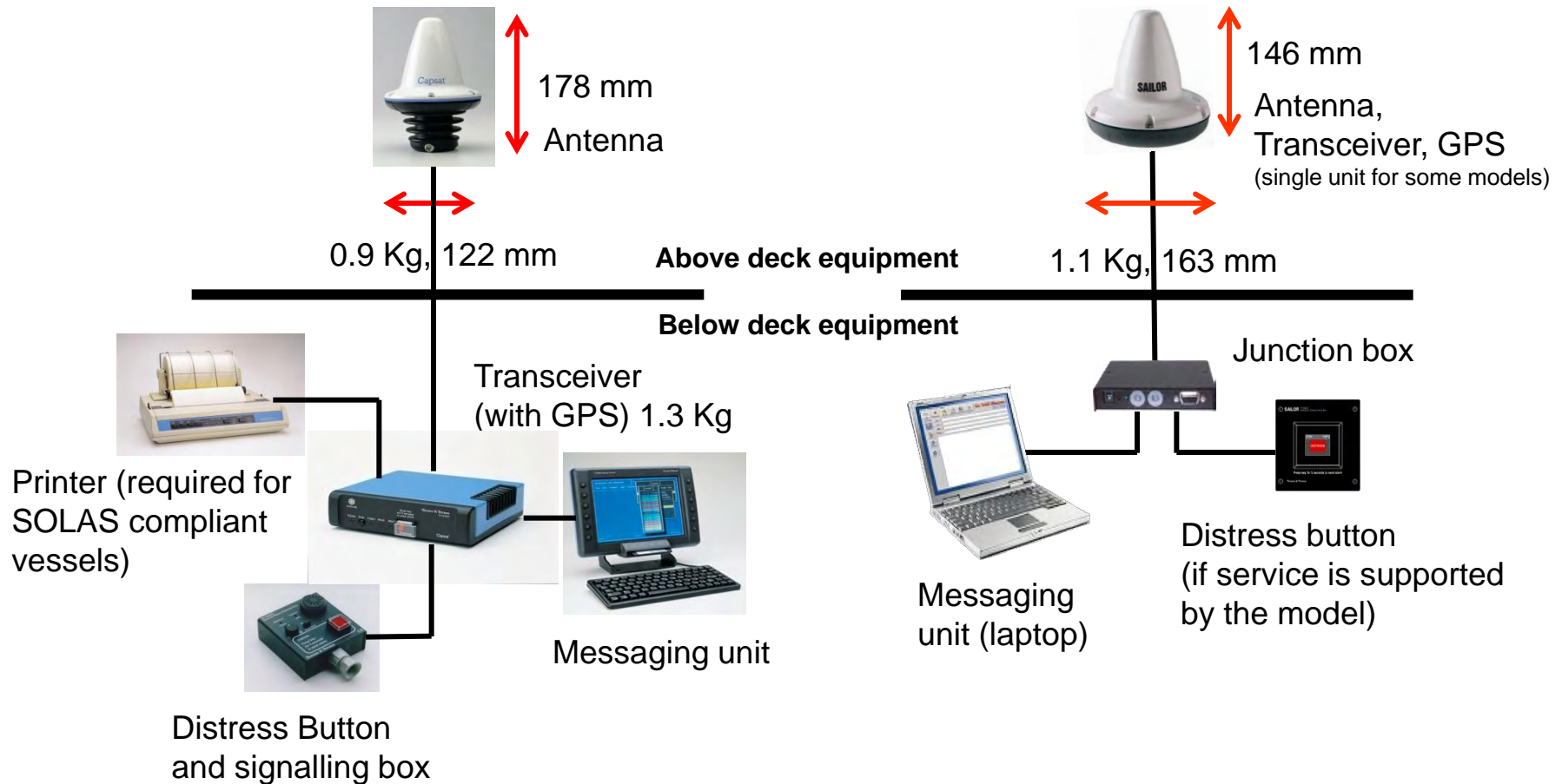
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The Inmarsat Network
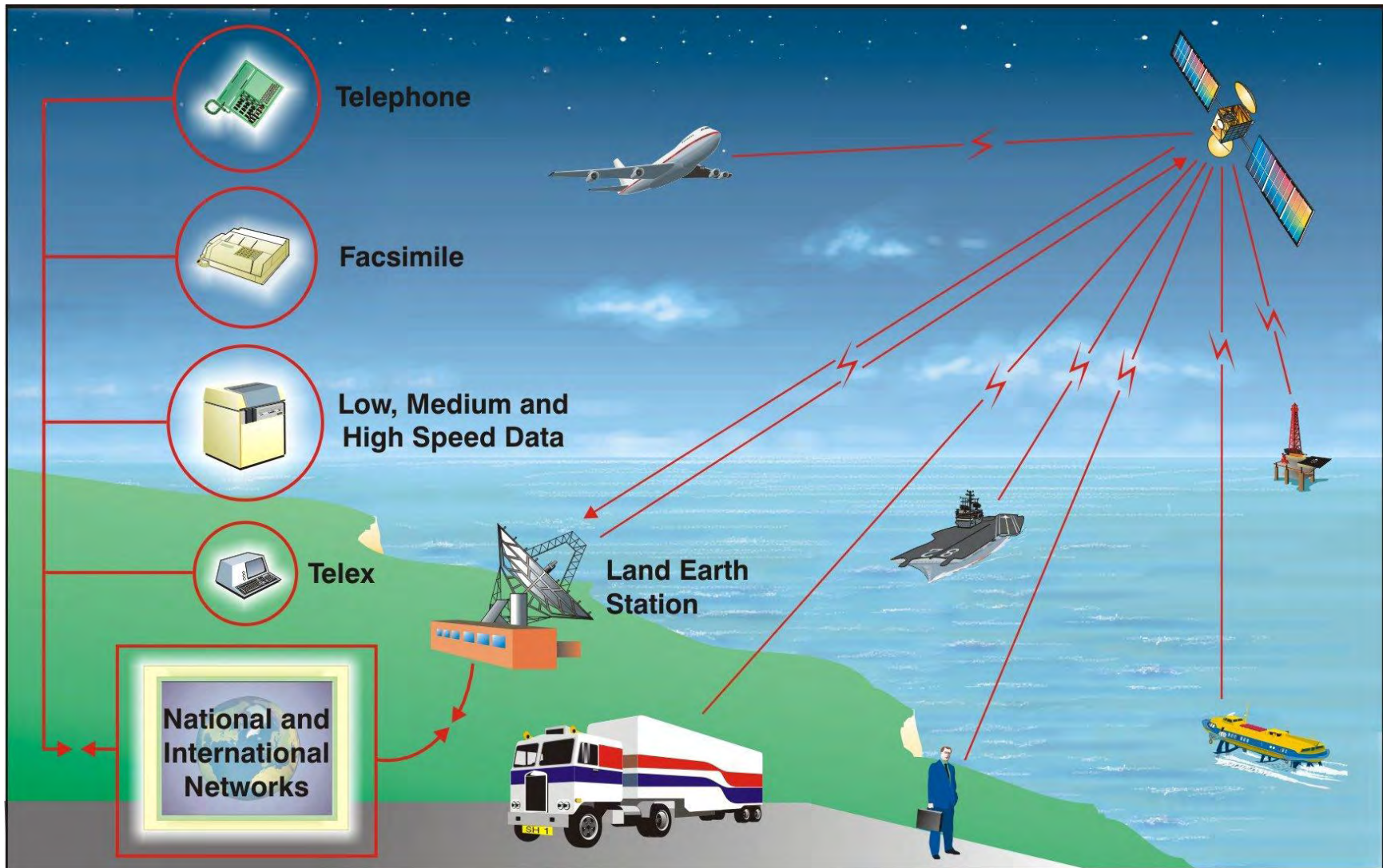
Inmarsat C Enhanced Group Calling broadcast SafetyNET and FleetNET
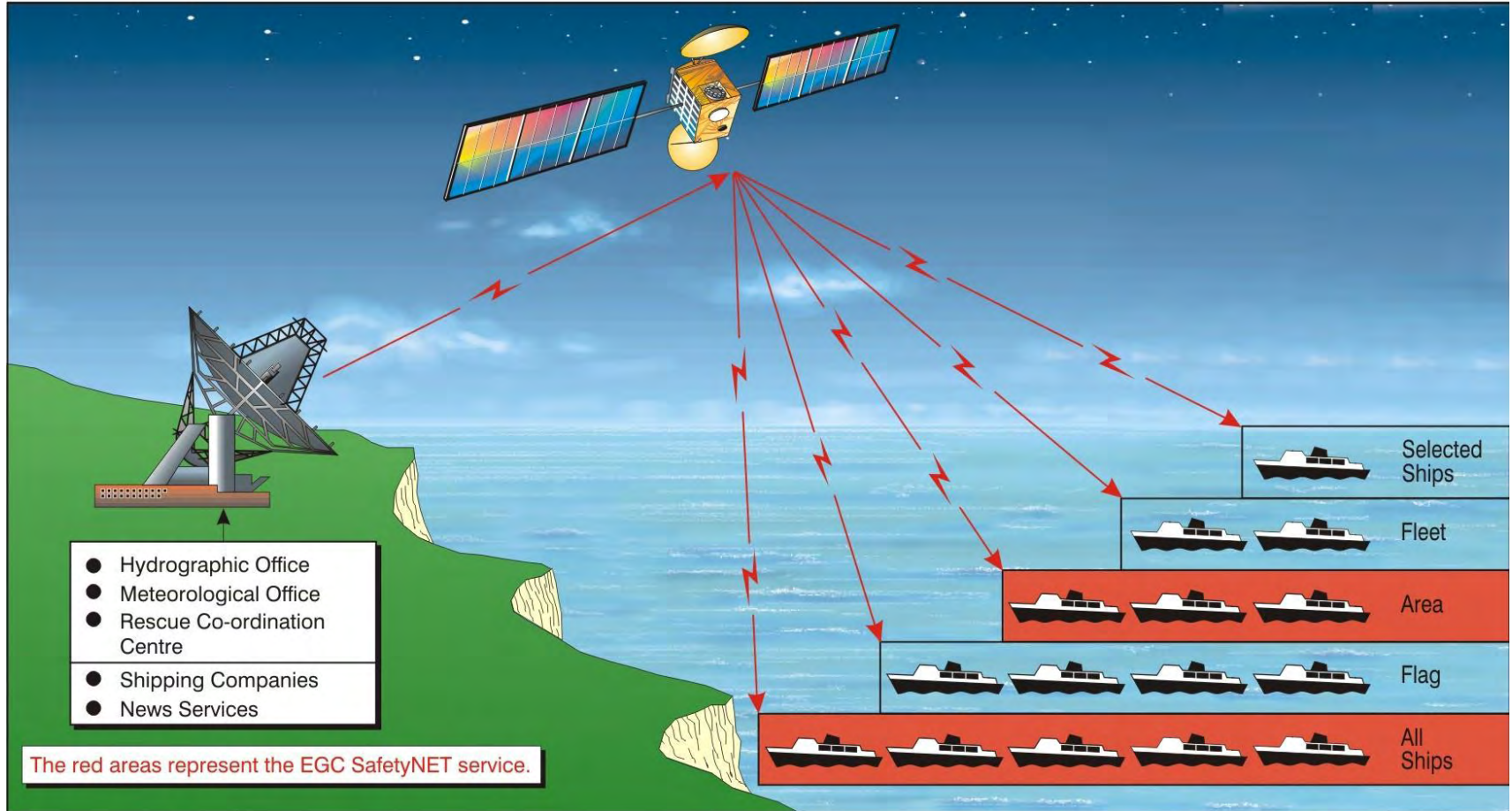
FleetNET is a *commercial* broadcast service

Inmarsat C and Inmarsat mini-C maritime terminals
(with Distress capability)

178 mm
Antenna

146 mm

Antenna,
Transceiver, GPS
(single unit for some models)

0.9 Kg, 122 mm **Above deck equipment** 1.1 Kg, 163 mm

Below deck equipment

Junction box

Transceiver
(with GPS) 1.3 Kg

Printer (required for
SOLAS compliant
vessels)

Distress button
(if service is supported
by the model)

Messaging
unit (laptop)

Messaging unit

Distress Button
and signalling box

*Note: No power supply is shown for both configurations*

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Inmarsat C/Mini-C characteristics and services


Antenna   Messaging unit Transceiver (with GPS) Distress button   Printer

- Global coverage (between 76º North and 76º South under 5º and above antenna elevation angle)

- Store and Forward communication system (ship-to-shore, shore-to-ship and ship-to-ship)

  - messages delivered to telex, fax (text, one way only), PSDN/PSTN, another mobile, SAC, Internet (e-mail)

- Non-stabilised omnidirectional antenna, small size and weight

- Low power consumption, compatible with national alphabets

- Some mini-C models are approved for GMDSS and support Distress Calling and EGC functions

- More than 82,000 Maritime Inmarsat C and 55,000 Inmarsat mini-C SESs

- Main part of the GMDSS satellite equipment – required by SOLAS Convention, Chapter IV

  - Distress Calling - distress alerting and distress priority messaging

  - Enhanced Group Calling (EGC) EGC SafetyNET and EGC FleetNET

  - Ship Security Alerting service (SSAS)

  - Data reporting and polling service (position monitoring, tracking, LRIT)
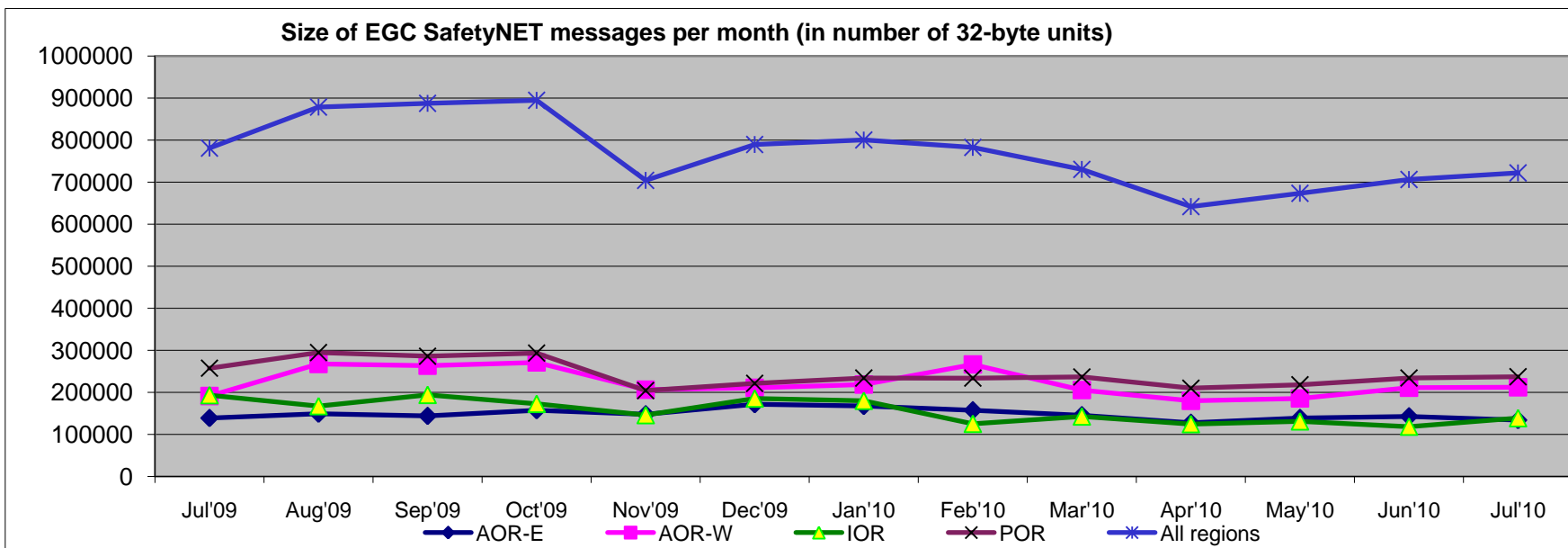
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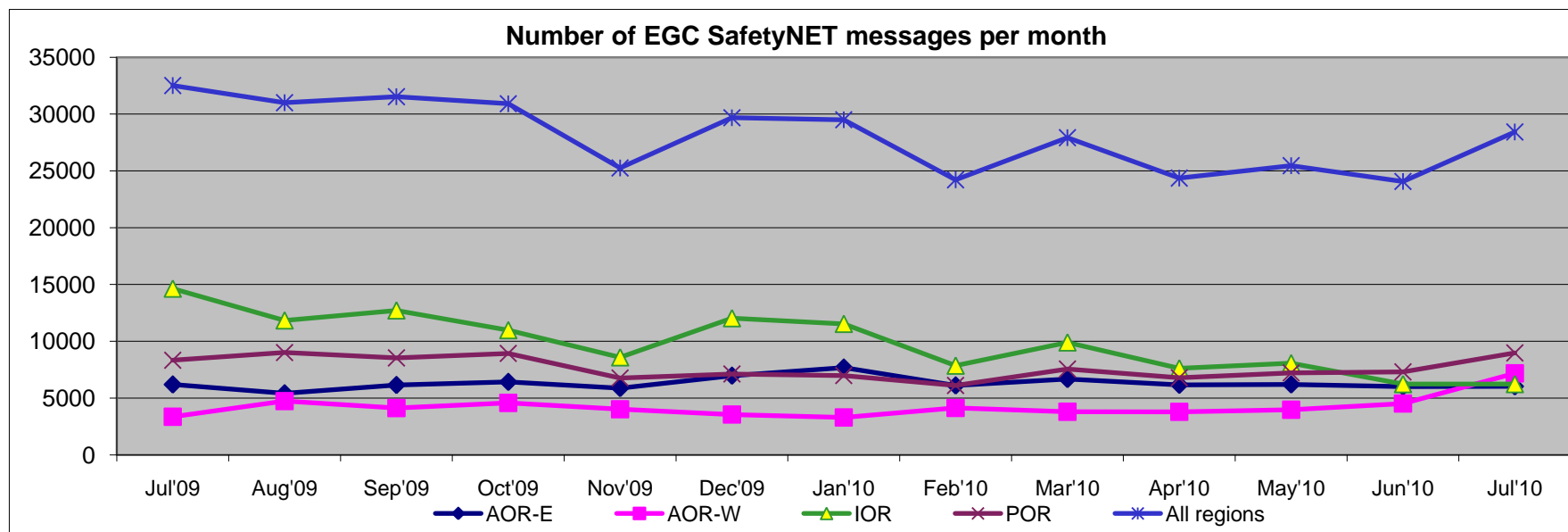# Inmarsat's Satellite Constellation
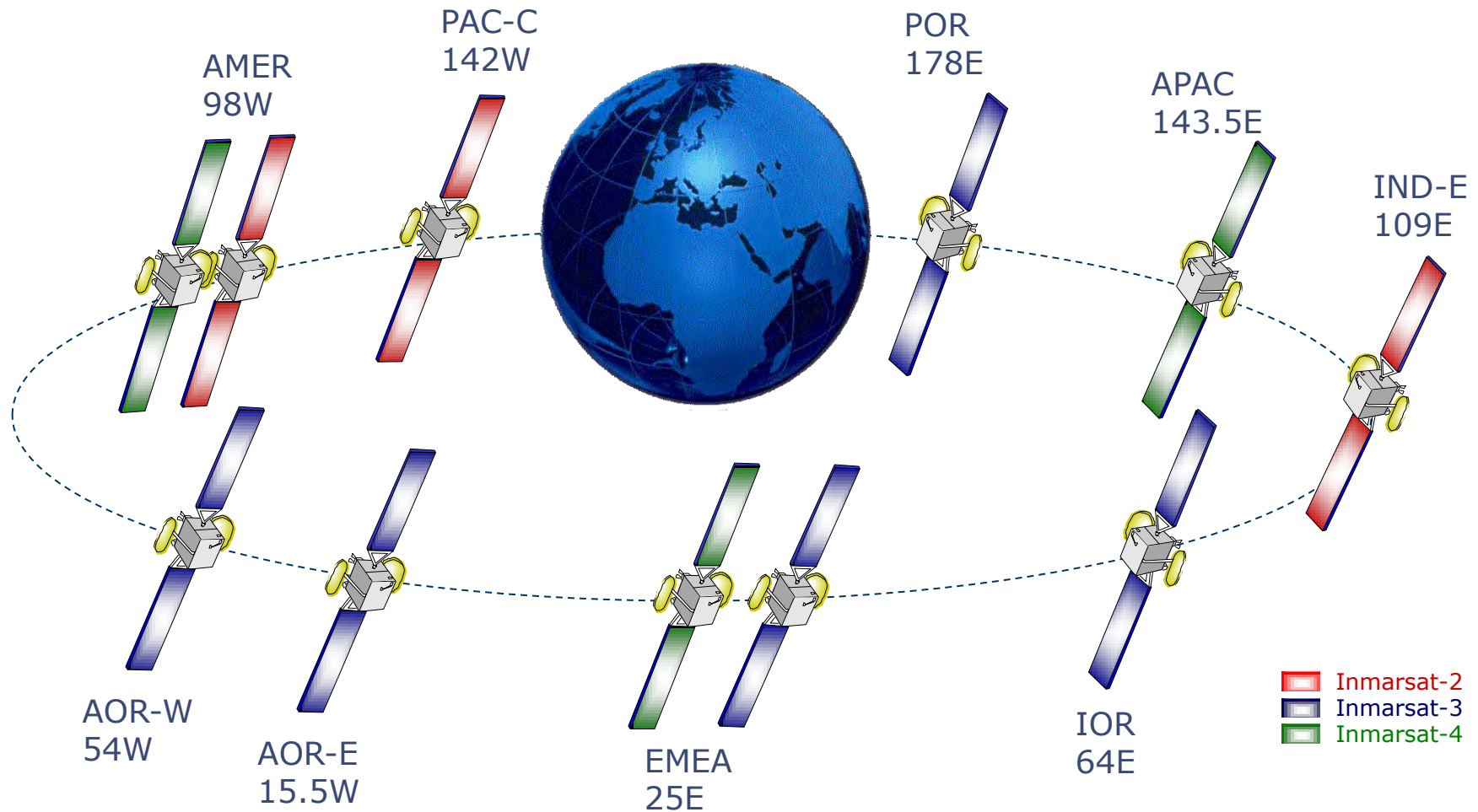
Inmarsat's Primary Satellite Constellation
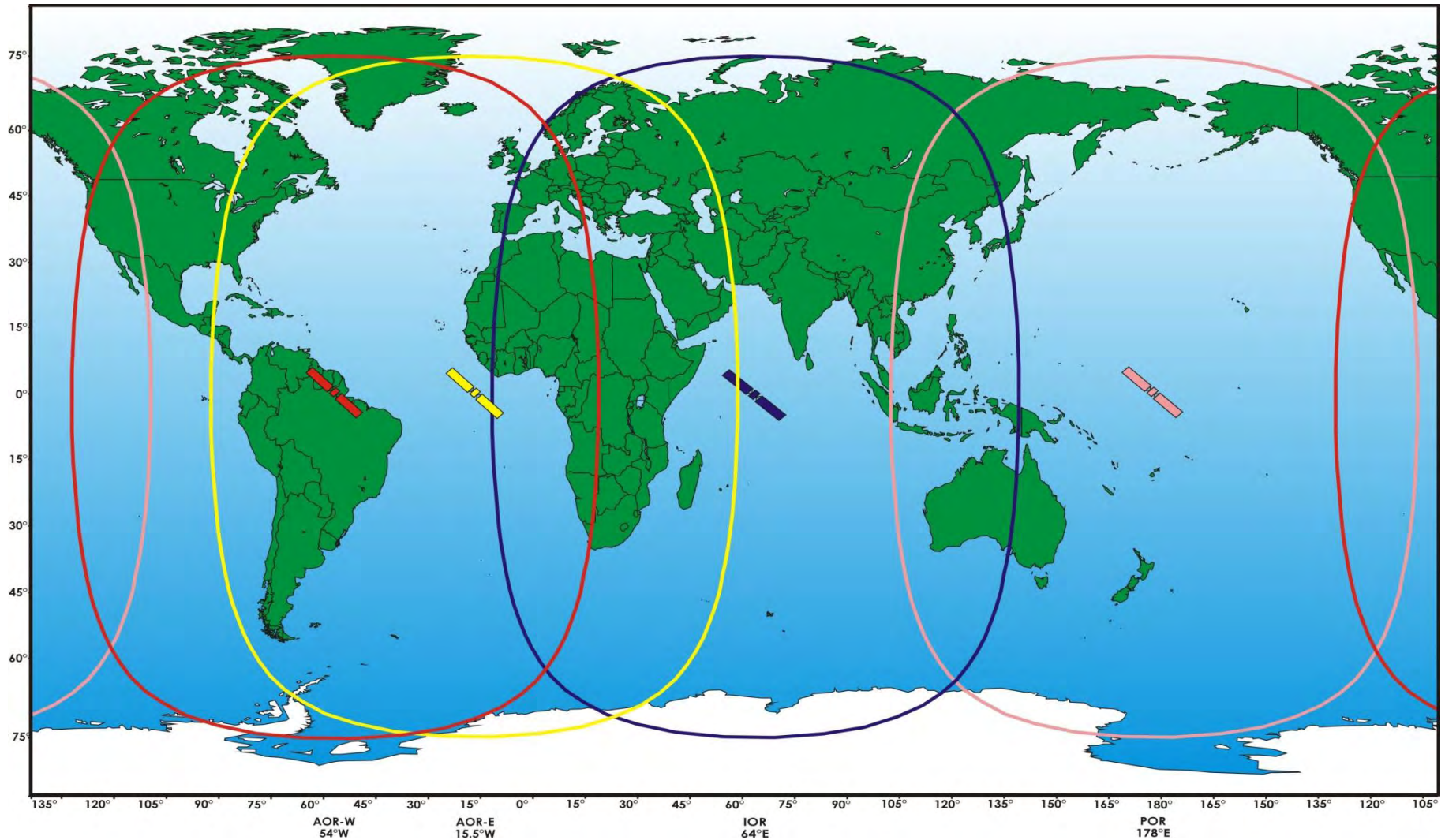
For Existing and Evolved Services

# Number and size of EGC SafetyNET messages per ocean region

Number of EGC SafetyNET messages per month

Legend: AOR-E, AOR-W, IOR, POR, All regions

Size of EGC SafetyNET messages per month (in number of 32-byte units)

Legend: AOR-E, AOR-W, IOR, POR, All regions

Definition of EGC SafetyNET Service Codes (as in the IMO Manual)

Service Code	Navigational information	Meteorological information	Search and Rescue	Piracy countermeasures broadcast
00			All ships call	
04	Navigational, Meteorological or Piracy warning to a rectangular area	Navigational, Meteorological or Piracy warning to a rectangular area		Navigational, Meteorological or Piracy warning to a rectangular area
13	Navigational, Meteorological or Piracy coastal warning	Navigational, Meteorological or Piracy coastal warning		Navigational, Meteorological or Piracy coastal warning
14			Shore-to-ship distress alerts to a circular area	
24	Navigational, Meteorological or Piracy warning to a circular area	Navigational, Meteorological or Piracy warning to a circular area		Navigational, Meteorological or Piracy warning to a circular area
31	NAVAREA/METAREA warning, MET forecast or Piracy warning to NAVAREA/METAREA	NAVAREA/METAREA warning, MET forecast or Piracy warning to NAVAREA/METAREA		NAVAREA/METAREA warning, MET forecast or Piracy warning to NAVAREA/METAREA
34			SAR coordination to rectangular area	
44			SAR coordination to circular area	
73	Chart correction service to fixed areas – Not available			
21		Weather graphical service - Not available		

C2 = 04, 13, 24 and 31 are identical services for NAV, MET and Piracy MSI

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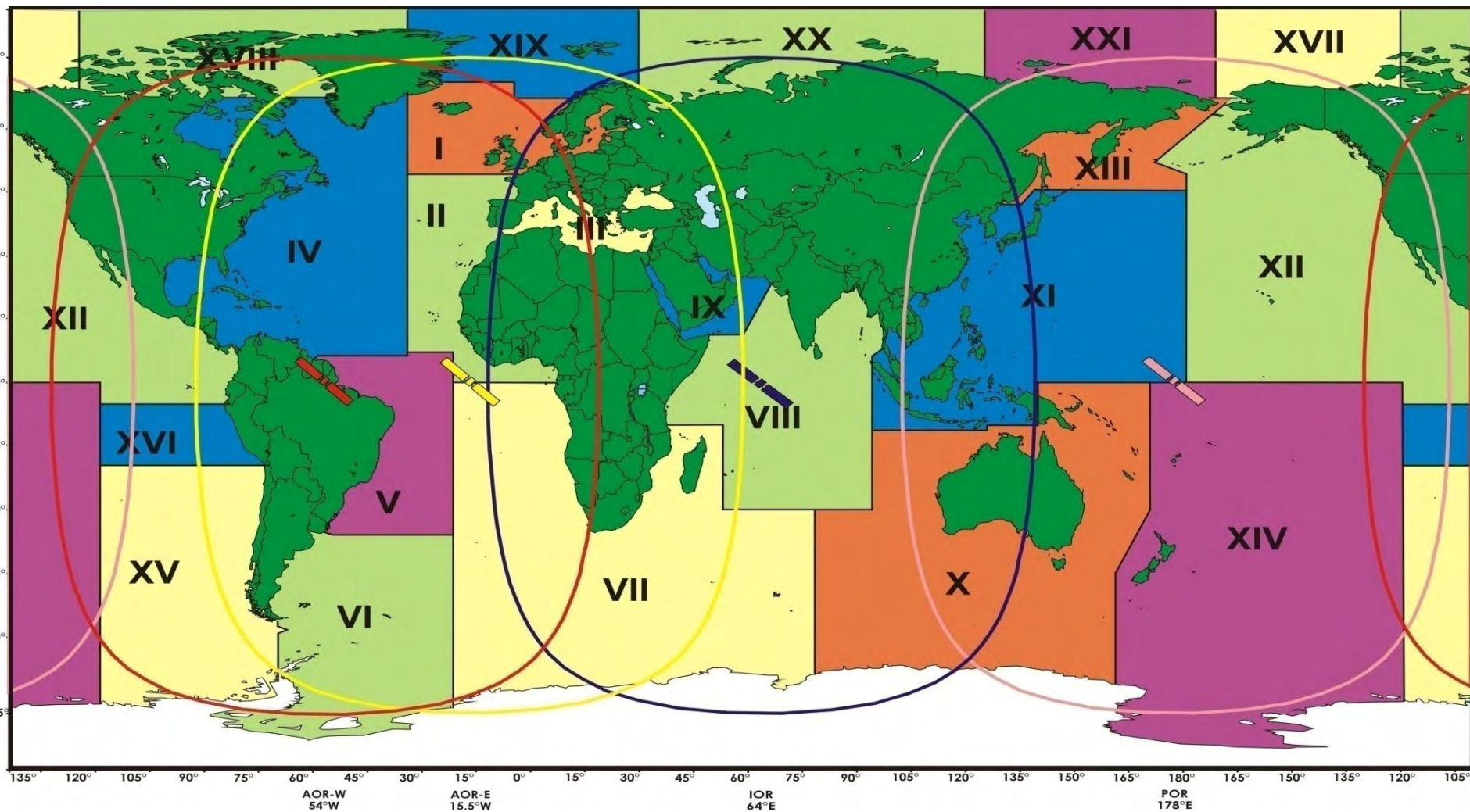
NAVAREAs/METAREAs

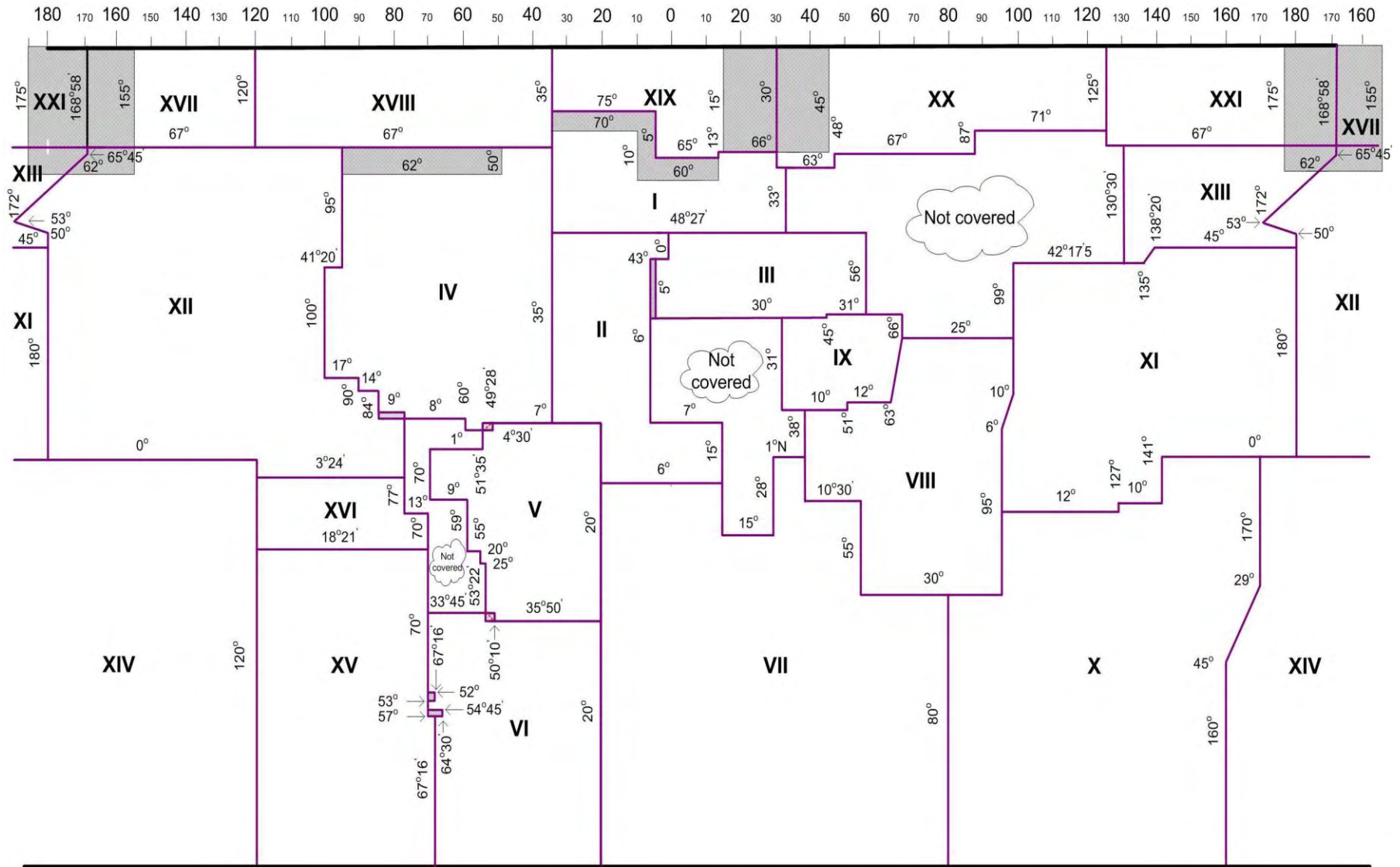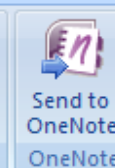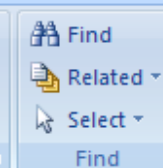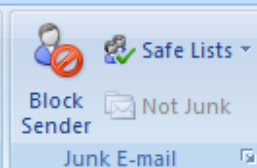# Updated SafetyNET Matrix for the Inmarsat-C SDM

Figure 2. EGC SafetyNET Matrix with NAVAREAs/METAREAs

Message

Reply | Reply to All | Forward | Delete | Move to Folder | Create Rule | Other Actions | Block Sender | Not Junk | Safe Lists | Categorize | Follow Up | Mark as Unread | Find | Related | Select | Send to OneNote

Respond | Actions | Junk E-mail | Options | Find | OneNote
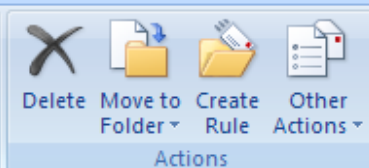
From: Vladimir Maksimov
To: 'egc@inmc.eik.com'
Cc:
Subject: egc 2, 1, 04, 62N175E23125, 11, 00

Sent: Fri 02/07/2010 15:03

Test message 2

To: All ships in the Arctic area to the North of 67 deg

International Maritime Organisation (IMO) along with International Hydrographic Organisation (IHO) and World Meteorological Organisation (WMO) is enhancing Inmarsat-C EGC SafetyNET services and has added five new Arctic areas, XVII-XXI to broadcast navigational, meteorological and other safety related information to ships at sea. The new Arctic areas are already defined and it is important to know the practical limits of Inmarsat coverage where future maritime safety information may be made available. This message is to ask all ships navigating in high latitudes, close to the Inmarsat satellite coverage limit of 76 degrees North (IMO Sea area A3) and above, to report (preferably by return e-mail) to Inmarsat Maritime Safety Services the following information:

1. ship's name
2. position (lat and long) above 67 deg North
3. date of position
4. maximum known latitude from your current or previous voyages where Inmarsat reception is constantly available

Inmarsat will treat your position information as confidential and will not disclose it to third parties.

Have a good voyage,

Vladimir Maksimov
Manager, Maritime Safety Operations
Inmarsat, 99 City Road, London EC1Y 1AX, UK
Tel: +44 20 77281095
E-mail: vladimir_maksimov@inmarsat.com

Positions of reporting vessels
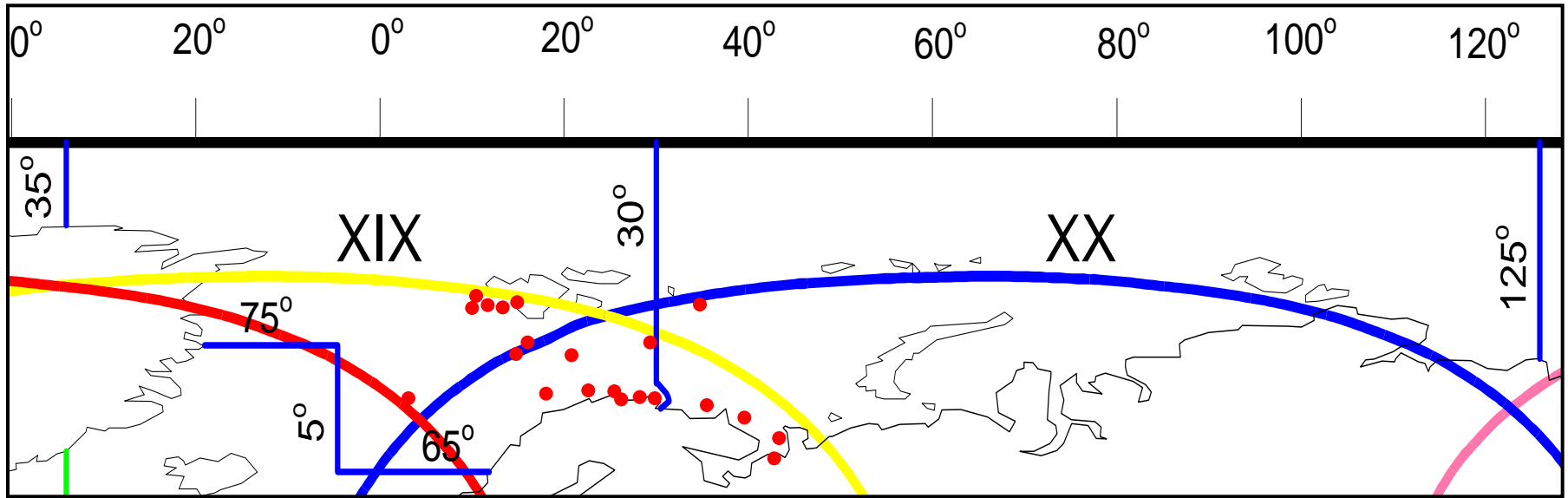
Some positions from vessels:
69.03N 058.08E
69.07N 041.43E
69.36N 053.40E
70.50N 045.54E
70.30N 057.56E
71.40N 019.32E
71.45N 025.50E
74.00N 035.00E
75.05N 042.00E
76.00N 017.20E
76.31N 006.55E
76.50N 015.10E
77.23N 012.00E (100% availability)
79.23N 008.42E (90% availability)

Total 22 position reports were received

General overview:
MSI reception is available up to 79^0 N (not 24 hrs)

NE-passage is about 3900 miles from North Cape to Bering Strait
- **about 390 miles or 10% is not covered**
- **about 1100 miles or 28% is under 0 - 5 degree elevation**

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List of Inmarsat-C LESs

LESO	Country	AOR-E (9)	AOR-W (6)	IOR (13)	POR (9)
KDDI	Japan	103/YME	003/YMW	303/JMI	203/YMP
MCN	China			311/BJI	211/BJP
Morsviazsputnik	Russia	117/NDE		317/NDI	217/NDP
OTESAT	Greece	120/TME		305/TMI	
Singapore Telecom	Singapore			328/STI	210/STP
Stratos Mobile		102/BSE 112/BRE	002/BSW 012/BRW	302/BSI 312/BRI	202/AKP 212/BRP
Telecom Italia	Italia	105/FCE		335/FCI	
Visada	France Norway USA	121/ASE 104/EHE 101/SBE	021/ASW 004/EKW 001/SBW	321/ASI 304/EKI 301/SBI	221/ASP 204/EKP 201/SBP
VISHIPEL	Vietnam			330/HPI	
VSNL	India			306/PNI	

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C2 Short Access Codes in the AOR-E

(to the best of Inmarsat knowledge)

LESO Country, ID/Name	SAC 32	SAC 38	SAC 39	SAC 41	SAC 42	SAC 43
	Medical Advice	Medical Assistance	Maritime Assistance	Meteorological Reports	Navigational Hazards and Warnings	Ship Position Reports
KDDI (Japan) LES 103/YME	Local hospital	Local hospital - RCC	N/A	National Met office	N/A	N/A
MSV (Russia) LES 117/NDE	N/A	N/A	N/A	N/A	N/A	N/A
OTESAT (Greece) LES 120/TME	Red Cross Hospital (Voice/Telex)	Red Cross Hospital (Voice/Telex)	RCC	National Met Office	N/A	N/A
Stratos LES 102/BSE	Telex 5145126 UKCG	Telex 5145126 UKCG	Telex 5145126 UKCG	Telex 5194040190 UKMET	navwarnings@btconnect.com (NAV I)	Telex 230127594 (AMVER)
Stratos LES 112/BRE	32@rmd.knrm.nl Dutch CG	38@rmd.knrm.nl Dutch CG	Telex 5145126 UKCG	obsvos@knmi.nl Dutch Met	navwarnings@btconnect.com (NAV I)	amvermsg@amver.org (AMVER)
Telecom Italia LES 105/FCE	?	?	?	N/A	?	?
Visada LES 101/SBE	Rogaland Radio, Norway	US CG Norfolk Commander	US CG Norfolk Commander	NOAA - USA	US CG Norfolk Commander	NOAA - USA
Visada LES 104/EHE	Rogaland Radio, Norway	US CG Norfolk Commander	US CG Norfolk Commander	NOAA - USA	US CG Norfolk Commander	NOAA - USA
Visada LES 121/ASE	Telex	Telex	Telex	Meteo France, e-mail	Telex	Telex

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C2 Short Access Codes in the AOR-W

(to the best of Inmarsat knowledge)

LESO Country, ID/Name	SAC 32	SAC 38	SAC 39	SAC 41	SAC 42	SAC 43
	Medical Advice	Medical Assistance	Maritime Assistance	Meteorological Reports	Navigational Hazards and Warnings	Ship Position Reports
KDDI (Japan) LES 003/YMW	Local hospital	Local hospital - RCC	N/A	National Met office	N/A	N/A
Stratos LES 002/BSW	Telex 5145126 UKCG	Telex 5145126 UKCG	Telex 5145126 UKCG	Telex 5194040190 UKMET	navwarnings@btconnect.com (NAV I)	Telex 230127594 (AMVER)
Stratos LES 012/BRW	32@rmd.knrm.nl Dutch CG	38@rmd.knrm.nl Dutch CG	Telex 5145126 UKCG	obsvos@knmi.nl Dutch Met	navwarnings@btconnect.com (NAV I)	amvermsg@amver.org (AMVER)
Visada LES 001/SBW	Rogaland Radio, Norway	US CG Norfolk Commander	US CG Norfolk Commander	NOAA - USA	US CG Norfolk Commander	NOAA - USA
Visada LES 04/EHW	Rogaland Radio, Norway	US CG Norfolk Commander	US CG Norfolk Commander	NOAA - USA	US CG Norfolk Commander	NOAA - USA
Visada LES 021/ASW	Telex	Telex	Telex	Meteo France, e-mail	Telex	Telex

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C2 Short Access Codes in the IOR

(to the best of Inmarsat knowledge)

LESO Country, ID/Name	SAC 32	SAC 38	SAC 39	SAC 41	SAC 42	SAC 43
	Medical Advice	Medical Assistance	Maritime Assistance	Meteorological Reports	Navigational Hazards and Warnings	Ship Position Reports
KDDI (Japan) LES 303/YME	Local hospital	Local hospital - RCC	N/A	National Met office	N/A	N/A
MCN (China) LES 311/BJI	N/A	N/A	N/A	N/A	N/A	N/A
MSV (Russia) LES 317/NDE	N/A	N/A	N/A	N/A	N/A	N/A
OTESAT (Greece) LES 305/TMI	Red Cross Hospital (Voice/Telex)	Red Cross Hospital (Voice/Telex)	RCC	National Met Office	N/A	N/A
Singapore Telcom LES 328/STI	PSTN Fax 6563265678	PSTN Fax 6563265678	N/A	PSTN Fax 6565422915	Telex 8720021	N/A
Stratos LES 302/BSI	32@rmd.knrm.nl Dutch CG	38@rmd.knrm.nl Dutch CG	Telex 095511600 maritimeradio@ixmail.co.za (Cape Town Radio)	Telex 5194040190 UKMET	Telex 095511600 maritimeradio@ixmail.co.za (Cape Town Radio)	Telex 230127594 AMVER
Stratos LES 312/BRI	32@rmd.knrm.nl Dutch CG	38@rmd.knrm.nl Dutch CG	203.19.106.101: 24205 RCC Aus	obsvos@knmi.nl Dutch Met	203.19.106.101: 24202 RCCAus (Nav X)	amvermsg@amver.org (AMVER)
Telecom Italia LES 335/FCI	?	?	?	N/A	?	?
Visada LES 301/SBI	Rogaland Radio, Norway	US CG Norfolk Commander	US CG Norfolk Commander	NOAA - USA	US CG Norfolk Commander	NOAA - USA
Visada LES 304/EHI	Rogaland Radio, Norway	US CG Norfolk Commander	US CG Norfolk Commander	NOAA - USA	US CG Norfolk Commander	NOAA - USA
Visada LES 321/ASI	Telex	Telex	Telex	Meteo France, e-mail	Telex	Telex
Vishipel LES 330/HPI	?	?	?	N/A	?	?
VSNL LES 306/PNI	N/A	N/A	N/A	N/A	N/A	indsar@vsnl.net

C2 Short Access Codes in the POR
(to the best of Inmarsat knowledge)

LESO Country, ID/Name	SAC 32	SAC 38	SAC 39	SAC 41	SAC 42	SAC 43
	Medical Advice	Medical Assistance	Maritime Assistance	Meteorological Reports	Navigational Hazards and Warnings	Ship Position Reports
KDDI (Japan) LES 203/YMP	Local hospital	Local hospital - RCC	N/A	National Met office	N/A	N/A
MCN 211/BJP	N/A	N/A	N/A	N/A	N/A	N/A
MSV (Russia) LES 217/NDP	N/A	N/A	N/A	N/A	N/A	N/A
Singapore Telcom LES 210/STP	PSTN Fax 6563265678	PSTN Fax 6563265678	N/A	PSTN Fax 6565422915	Telex 8720021	N/A
Stratos LES 202/AKP	rccnz@maritimenz.govt.nz maritime@kordia.nz Fax: +64 4 5778038 RCC NZ	rccnz@maritimenz.govt.nz maritime@kordia.nz Fax: +64 4 5778038 RCC NZ	rccnz@maritimenz.govt.nz maritime@kordia.nz Fax: +64 4 5778038 RCC NZ	Telex 5194040190 UKMET	?	Telex 230127594 (AMVER)
Stratos LES 212/BRE	32@rmd.knrm.nl Dutch CG	38@rmd.knrm.nl Dutch CG	203.19.106.101: 24205 RCC Aus	obsvos@knmi.nl Dutch Met	203.19.106.101: 24204 RCC Aus/NAV X	amvermsg@amver.org (AMVER)
Visada LES 201/SBP	Rogaland Radio, Norway	US CG Norfolk Commander	US CG Norfolk Commander	NOAA - USA	US CG Norfolk Commander	NOAA - USA
Visada LES 204/EHP	Rogaland Radio, Norway	US CG Norfolk Commander	US CG Norfolk Commander	NOAA - USA	US CG Norfolk Commander	NOAA - USA
Visada LES 221/ASP	Telex	Telex	Telex	Meteo France, e-mail	Telex	Telex

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FleetBroadband – New generation of maritime services from Inmarsat

FleetBroadband is part of broadband (BGAN) family of services based on 3G network technology and operated over Inmarsat I4 (4th generation) satellites since Nov 2007.

The traffic is grounded at Inmarsat Satellite Access Stations (SASs) – 3 ocean regions

Maritime portfolio – FB500, FB250, FB150

Standard IP data (up to 432kbps)

Voice (accessible simultaneously with data via a single terminal) and fax

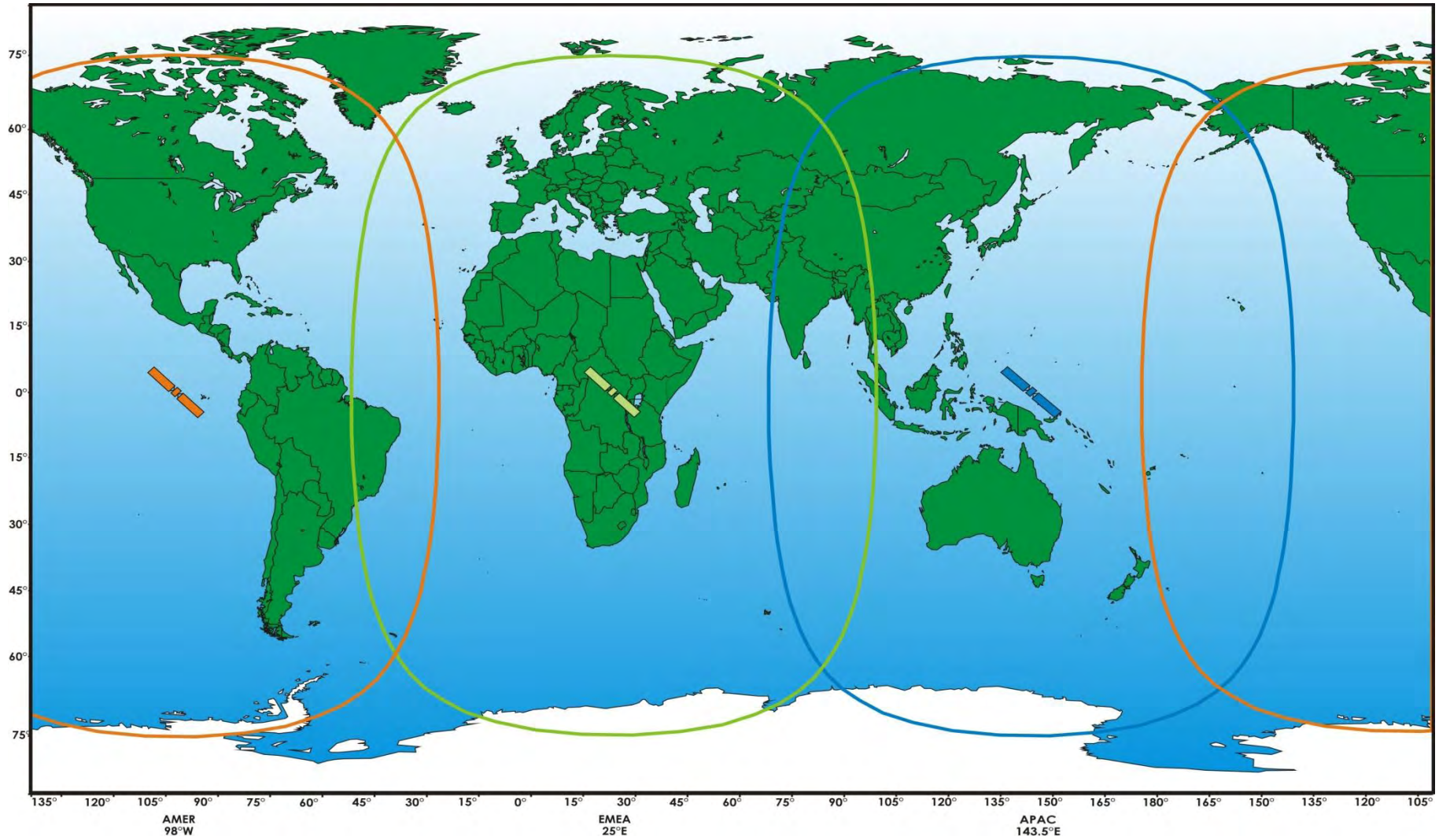Streaming IP with guaranteed data rates on-demand
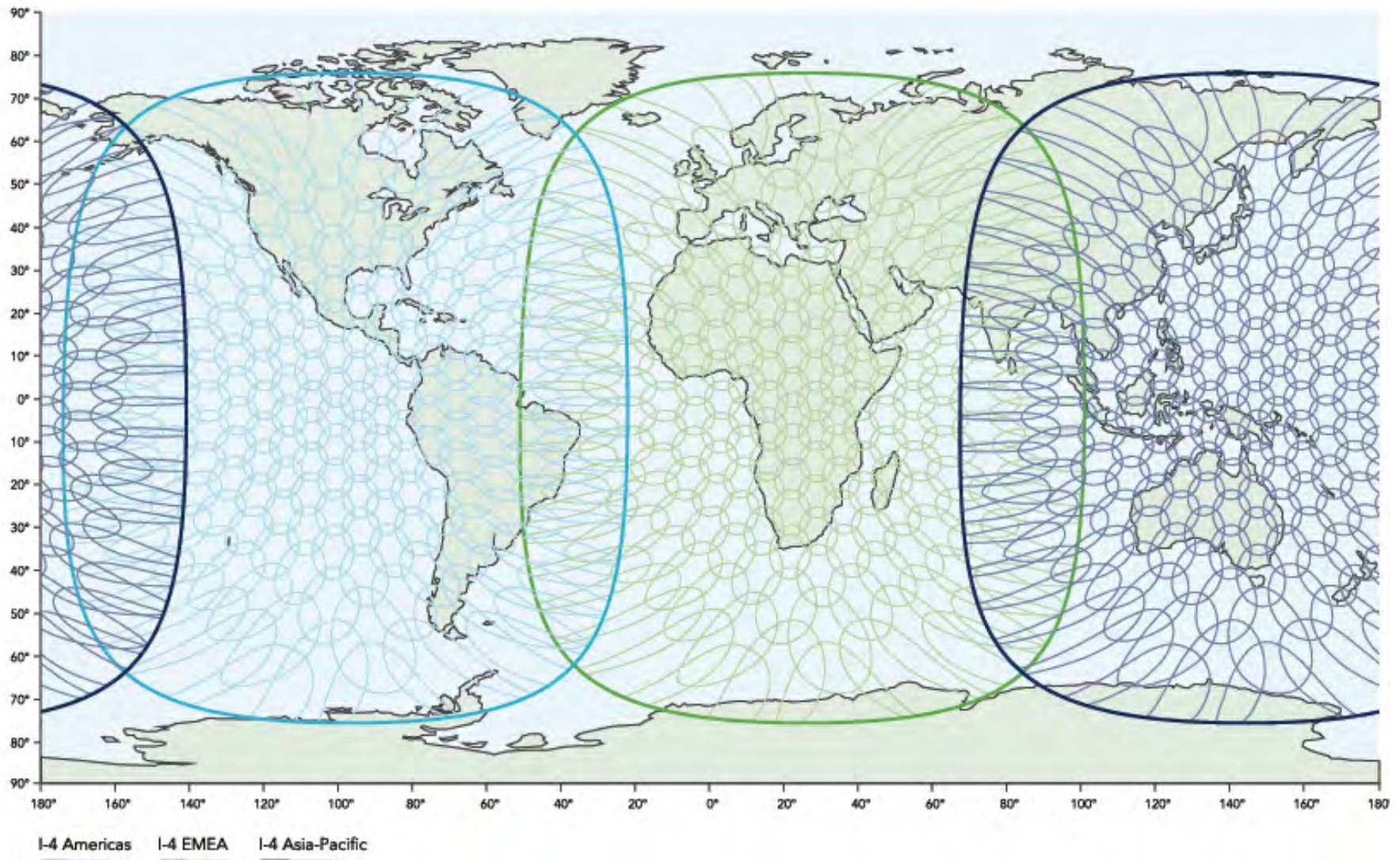
ISDN for Voice & Data

No safety services yet

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Inmarsat's I4 Satellite Constellation

For all Broadband Services

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Inmarsat FleetBroadband coverage

I-4 Americas   I-4 EMEA   I-4 Asia-Pacific

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FleetBroadband Family

	FleetBroadband 500	FleetBroadband 250	FleetBroadband 150
Antenna Diameter	~60-67cm	~33-35cm	~27-30cm
Antenna Weight	~15-20KG	~4-7.5KG	~2.5-4KG
Antenna G/T (at 5° elvn)	-7 dB/K	-15 dB/K	-15 dB/K
Antenna EIRP	22 dBW	15.1 dBW	15.1 dBW
HPA Type	Linear	Linear	Linear
Antenna Type	Directional / Stabilised	Directional / Stabilised	Directional / Stabilised
Voice (Simultaneous with data)	4kbps	4kbps	4kbps
Standard IP	Up to 432kbps	Up to 284kbps	Up to 150kbps
ISDN Data	Yes	No ; 3.1Khz audio only	No
IP Streaming	32,64,128 & 256kbps	32,64 & 128kbps	No

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Exclusive to FleetBroadband

Current Safety Services Provision via FB

- 505 Emergency Calling developed for FleetBroadband family of equipments in advance of GMDSS

- Three satellite regions give global coverage:
  - Americas @ 98ºW
  - Europe/Middle East/Africa @ 25ºE
  - Asia Pacific @ 143.5ºE

- Dial 505
  - Short-code dialling to one of three strategically located RCCs – USA, the Netherlands and Australia
  - 505 Emergency Calling will bring increased safety for all mariners

- Available on all FB terminals

- No Priority or pre-emption – **Not** a substitute for the GMDSS

- **No Charge**

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Current Safety Services Provision

505 **Emergency Calling for FleetBroadband** inmarsat

In an emergency, call **505** and press either the 📞 or # key on the handset. You will be connected to a Maritime Rescue Coordination Centre.

Speak slowly and clearly and provide the following information:

Who you are: vessel name, telephone number and callsign

Where you are: your position in latitude and longitude or a bearing and distance from a known geographical point

What is wrong: nature of emergency or difficulty

Type of assistance required

Number of persons on board

Please do not abuse this service. Only use 505 if you need urgent assistance.
Please note that 505 Emergency Calling is **not** GMDSS compliant.

505 for FleetBroadband
In an emergency call 505. You will be connected to a Maritime Rescue Coordination Centre

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Into The Future

- **GMDSS continues on Inmarsat B, Inmarsat C/mini-C and Inmarsat Fleet F77**

- **Inmarsat B**
  - Ageing equipment – no longer manufactured
  - Modern equipment requires better spectrum efficiency
  - Service retirement 31st December 2014 – COMSAR 14/INF.6

- **GMDSS planning for FleetBroadband (FB)**
  - Aim initially to provide similar service as Fleet 77 – studies are well underway
  - Two phases approach
    - 1 - Maritime Safety Voice Services with 4 priorities and prioritisation in ship-to-shore and shore-to-ship direction
    - 2 - Maritime Safety Data Services

- **IsatPhone Pro launched in July**

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Into The Future

- ▸ Planning for GMDSS on FB Maritime Safety Data Services
  - In first stages of development
  - Expected to accommodate all current GMDSS data requirements
    - All current Inmarsat C type functions
      - Distress alerting/messaging
      - "EGC SafetyNET" functions based on a new idea (and technology) of promulgating MSI
    - future innovative maritime safety and security services/applications, e.g. weather charts, MSI to e-nav, etc.
  - Need feedback from IMO/WMO/IHO/IMSO, etc.

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Existing System

Routeing:

- MSI provider

    - Inmarsat-C LES or service provider

        - NCS of the addressed ocean area

            - all ships in the addressed area

"Drawback" (???):

1. No ACK from ships on receiving MSI – do we need???

2. Ships may be required to log in to a different satellite to receive MSI for adjacent area (s) if scheduled MSI is broadcast via a different nominated satellite, e.g. sailing from Area I (AOR-E) to area IV (AOR-W).
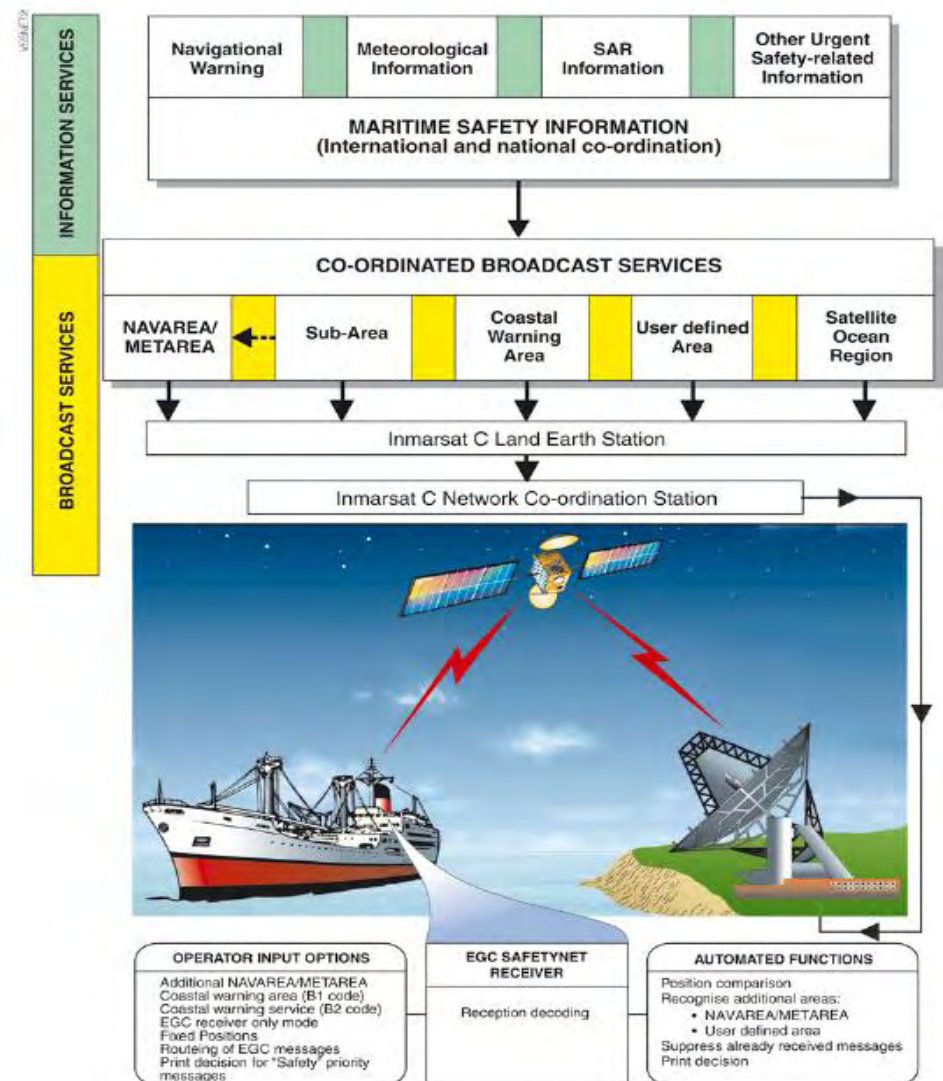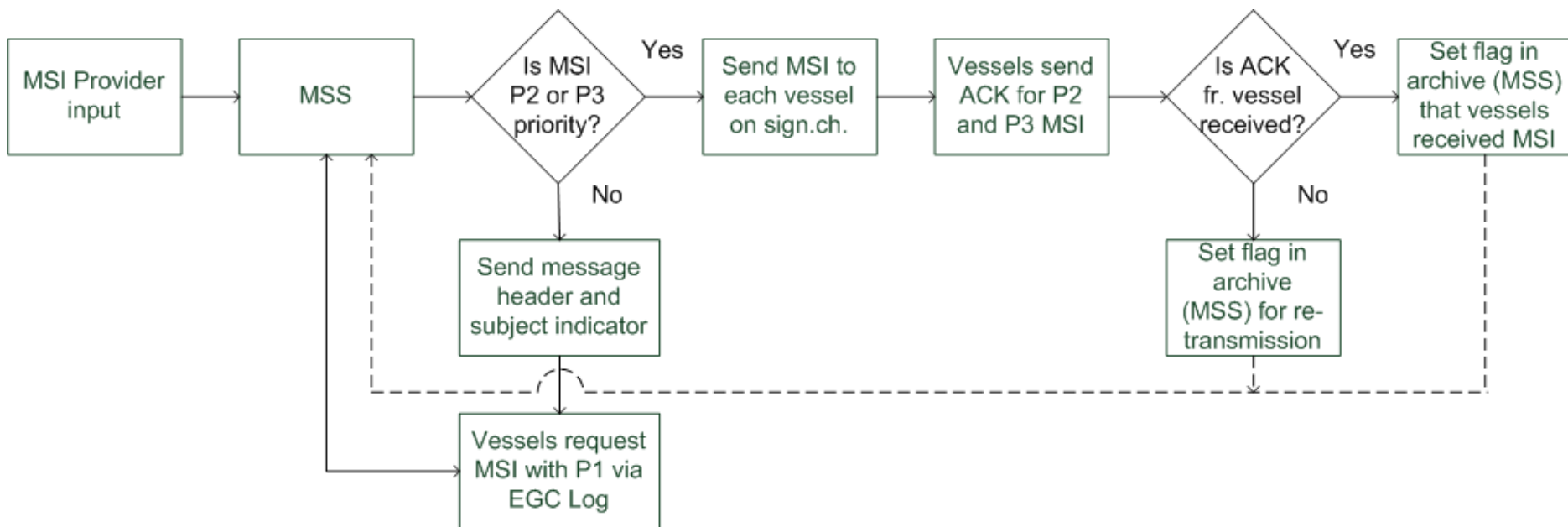

Figure 1 – The International SafetyNET Service system

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New planned concept of MSI dissemination via FleebBroadband
(high level only)

(Some) role of Maritime Safety Server (MSS) on provision of MSI:

1. MSS stores MSI in archive with unique ID, message header, validity/expiry data and "subject" (TBD) indicator
2. MSS interprets "C-codes" for priority, service type (category) and addressed area(s)
3. MSS interrogates ships position database, stores list of ships within MSI addressed area(s) and address MSI accordingly
4. MSS removes ships from list which have already received this MSI
5. MSS interrogates ships data base and stores list of ships within MSI addressed area(s) for MSI re-transmission (???)

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Planned EGC Log for MESs (to request P1 MSI)

MSG Nr	Service	Priority	Date & Time	Size	Seq. Nr	Subject (header) indicator	Rx
001	Navarea Warning	Safety	10/02/2012 21:25	378	2256	Navarea III, nr 011	Yes
002	Coastal warning	Safety	10/02/2012 20:34	1200	956	Nav warning 10AC, nr 122	**No**
003	SAR coordination	Distress	10/02/2012 16:54	456	2288	SAR coordination to a circle 45S120E060	Yes
004	Met forecast	Safety	09/02/2012 18:54	689	2298	Metarea XIV nr 12456 of 09/02/2012 19:00 UTC	**No**
005	Met warning	Urgency	09/02/2012 17:14	7503	983	Met warning to a circle 30S172E150, nr 32	Yes

MSG Nr – number given by the mobile terminal
Service – according to the IMO Safety Manual or future definitions
Priority – Safety, Urgency or Distress
Date and time - when the message was received
Size – message size in number of characters (bytes)
Seq. nr – unique number given by the SAS (Satellite Access Station – analogue to LES)
Subject (header) indicator – short (1 line) and unique description of the message – TBD/TBD
Rx – indicator if the MES was received or not. In case the message was not received, the user should click "**No**" and the message will be received and indicator will change to "Yes". By default only "Subject indicator" is received for P1 messages.
P2 and P3 messages are received automatically

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Questions to be asked & answered on future MSI services

➡ 1. Do we need to define new SafetyNET services, e.g. el chart corrections, weather charts, etc.? (there are now 8 services – C2 = 00, 04, 13, 14, 24, 31, 34 and 44)

➡ 2. Do we need to distinguish between NAV, MET and other services, e.g. to define a single code for a particular service?

➡ 3. Do we need repetition codes?

➡ 4. Do we need to define new (additional) addressing mechanism(s) – smaller areas, e.g. sub-areas, fixed areas, specific seas, lakes, rivers, etc?

➡ 5. Can we accept an idea about transmitting "header and subject line" only for P1 (Safety) MSI only? If yes, we need to define "requirements/format" to the header/subject indicator"

➡ 6. Do we need to revise IMO performance standards for future services (system)?
  ◦ automatic printing, alarms, etc.

➡ 7. Do we need a standard ship's user interface from all manufacturers?

➡ 8. Do we need to publish all (valid) MSI on a separate "SafetyNET" website for retrieval by ships who may missed any message.

➡ 9. "Pull" approach from vessels to receive MSI, e.g.
  ◦ ships would be able to request MSI for adjacent areas
  ◦ ships would be able to check if they have all valid MSI
  ◦ ships would be able to request MSI that was missed
  ◦ etc.

➡ 8. Any other questions?

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Thank you

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