Inmarsat C EGC SafetyNET Status

IHO Commission on Promulgation of Radio Navigational Warnings (CPRNW), 10th meeting
25-29 August 2008
Rio de Janeiro
Brazil

Vladimir Maksimov

Manager, Maritime Safety Operations

Inmarsat Maritime Safety Services

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

178 mm
Antenna

0.9 Kg, 122 mm

Above deck equipment

Below deck equipment

Printer (required for SOLAS compliant vessels)

Transceiver (with GPS) 1.3 Kg

Messaging unit

Distress Button and signalling box

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

1.1 Kg, 163 mm

Junction box

Messaging unit (laptop)

Distress button (if service is supported by the model)

Some mini-C models are approved for GMDSS

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Inmarsat C and Inmarsat Mini-C characteristics and services

Antenna Messaging unit Transceiver (with GPS) Distress button Printer

- Global coverage (between 76° North and 76° South)
- 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 80,000 Maritime Inmarsat C and 33,000 Inmarsat mini-C SESs
- Main part of the GMDSS satellite equipment (supports 5 communication functions out of 9 defined by SOLAS) – required by SOLAS Convention, Chapter IV
  - Distress Calling - distress alerting and distress priority messaging – ship-to-shore and shore-to-ship
  - Enhanced Group Calling (EGC) EGC SafetyNET and EGC FleetNET
  - SAR Coordination
  - General communications
  - Ship Security Alerting service (SSAS)
  - Data reporting and polling service (position monitoring, tracking, LRIT)

Can be used for MSI monitoring, BUT…

Number of EGC SafetyNET messages & size per ocean region

(Aug'07-Jul'08)

	AOR-E		AOR-W		IOR		POR		Total	
Month	Number	Size	Number	Size	Number	Size	Number	Size	Number	Size
Aug'07	4621	169428	3996	197221	9578	155406	10249	303915	28444	825970
Sep'07	4559	165129	3325	177282	9144	147362	10031	303255	27059	793028
Oct'07	3426	129458	3532	160446	10291	154668	9683	283846	26932	728418
Nov'07	3426	123918	2761	127123	9266	138790	8081	216169	23534	606000
Dec'07	4607	135903	3012	156745	10871	158846	9753	262487	28243	713981
Jan'08	4025	127564	2876	155966	9990	154730	9031	252685	25922	690945
Feb'08	5025	121649	2431	137985	10625	162343	9457	241717	27538	663694
Mar'08	4551	131607	2821	160630	10525	162017	8929	231534	26826	685788
Apr'08	4458	122592	3617	180799	8239	129907	8475	221596	24789	654894
May'08	4151	128008	3520	176160	8009	125539	7514	213071	23194	642778
Jun'08	4377	121502	3971	173223	8688	135871	7973	233197	25009	663793
Jul'08	4902	171250 – 41%	4869 - 23%	278376 – 62%	9939	153447	8497	258188	28207	861261

On average **760-930** EGC SafetyNET messages of all service types are broadcast in all ocean regions per day, including repeated messages, of which:

AOR-E: 112 - 165 messages per day;
AOR-W: 79 – 160 messages per day;
IOR: 262 – 356 messages per day; and
POR: 246 – 336 messages per day.

(Size is given in number of units of 32 bytes/characters)

July's increase is caused by more messages of C2=31 (MET NAVAREA wngs or MET f/cast) and its size.

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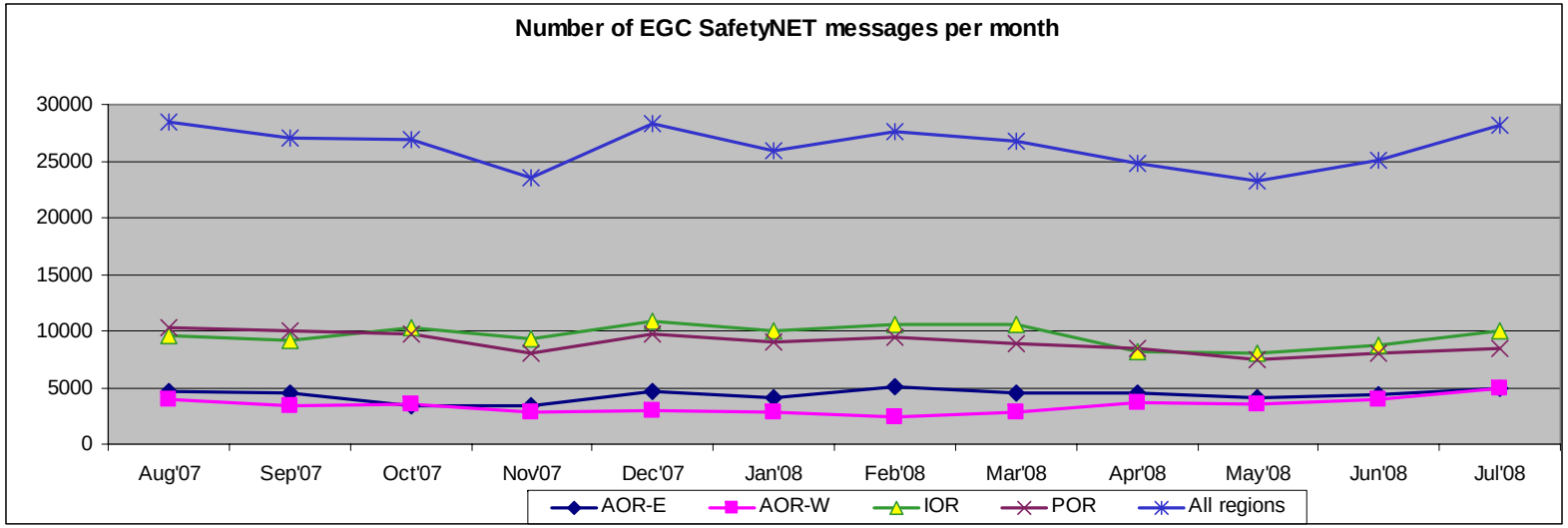
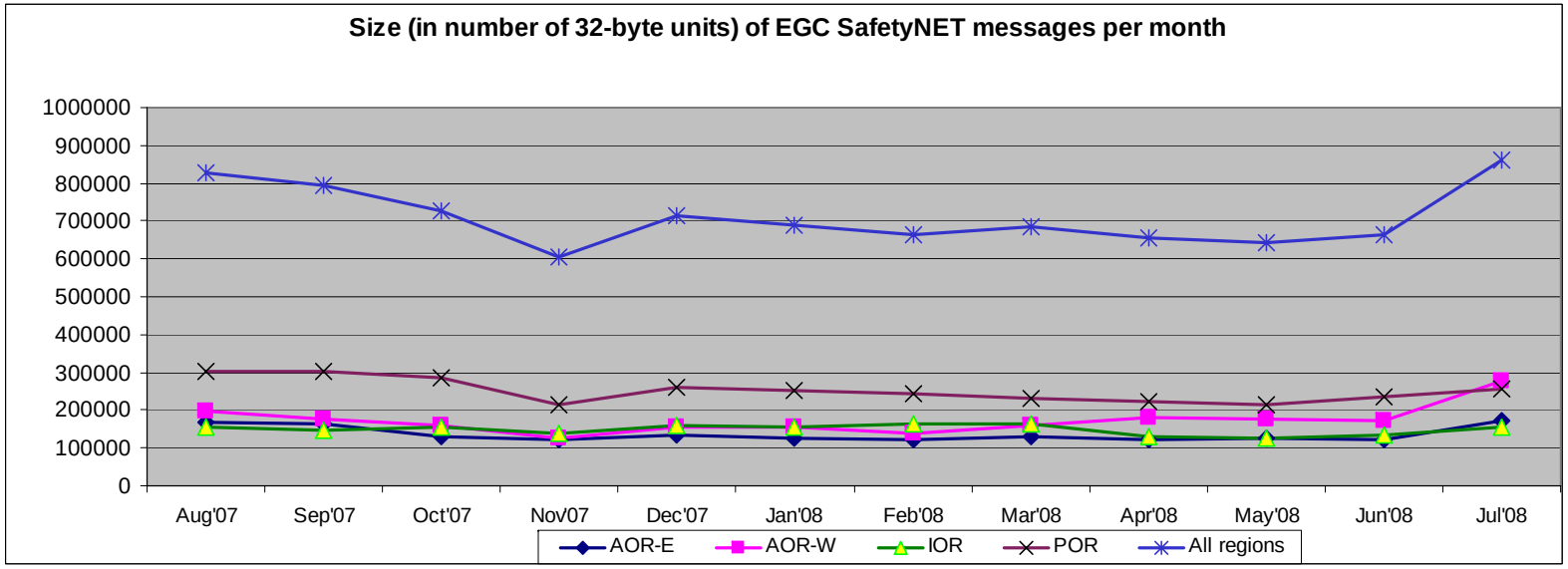
Number and size of EGC SafetyNET messages per ocean region





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Definition of EGC SafetyNET Service Codes

(as in the SafetyNET Manual)

SafetyNET Code	Navigaional information (2 codes are defined)	Meteorological information (3 codes are defined)	Search and Rescue (4 codes are defined)	Piracy countermeasures broadcast (1 code is defined)
00			All ships call	
04	Nav warnings to rectangular area*	Met warnings or forecasts to rectangular area*		Nav warnings to rectangular area
13	Coastal warnings	Met warnings or forecasts to coastal area		
14			Shore-to-ship distress alerts to circular area	
24	???	Met warnings to circular area		
31	NAVAREA warnings	Met warnings or forecasts to METAREA		
34			SAR coordination to rectangular area	
44			SAR coordination to circular area	
73**	Chart correction service to fixed areas			
21***		Weather graphical service (charts)		

* proposed (temporary) solution for Arctic areas for Navigational and Meteorological information

** service code is defined in the Inmarsat C SDM but not used

*** service code is reserved for future use

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QoS

- All 16 areas are covered with MSI plus western part of Russian Arctic waters with Met information
- No major complaints to Inmarsat from mariners about quality of information
- Some questions to Inmarsat are about either “lack” of some MSI or “unwanted” MSI and investigation shows that mariners:
  - use a wrong satellite (login) to receive MSI for the area concerned (if navigate in overlap areas) or
  - do not update position information on their terminals and it is mainly educating and training issue
- More countries provide Coastal warning service but some ships’ crews (and Administrations) may not be aware about it and how to set up MESs using B1 and B2 codes
  - Circular letter to remind how to set up the service (reception on ships is not available if the MES is not set up correctly) and Inmarsat can draft it for the next COMSAR if the meeting so decides

Action items from previous CPRNW meetings

- CPRNW 8, 3.4.1.3 – “Inmarsat is requested to provide an information as to the percentage of Inmarsat MESs in use that can only access Navareas 1 – 16 as opposed to 0 – 99”
  - more than 80,000 Inm-C maritime MESs (all with EGC SafetyNET function)
    - only 30-35% have access to up to 99 IDs
    - many of existing MESs can not be modified, only to be replaced
  - more than 33,000 Inm Mini-C maritime MESs (~70% with EGC SafetyNET function)
    - all have access to 99 IDs
    - If MSI provides decides to use mini-C for monitoring, it shall be the model supporting EGC SafetyNET function

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Action items from previous CPRNW meetings

- CPRNW 9, 3.2.1 – “Advice required as to whether Inmarsat primary satellite contingency tests are required at regular intervals e.g. annually?”
  - Inmarsat performs quarterly satellite contingency tests, last was on 16 July’08 with POR satellite, next will be in Q2 2009 due real life scenario of satellite moves
  - It involves primary satellite “failure”, moving services to a contingency satellite(s) and restoration of all services
  - First restored service is Inmarsat C – EGC SafetyNET services and distress calls, usually done within one hour
  - Each exercise has its own OP, which gives detailed procedure and timing of all actions to follow to restore services.
  - Major LESs, of not all participate in the exercise
  - Exercises are always attended by IMSO staff, Inmarsat top managers and maritime safety services staff
  - Follow-up meeting after each exercise to analyse it and learn lessons
  - IMSO regularly reports of contingency satellite exercises to IMO

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EGC SafetyNET for MSI for ECDIS???

- Already done for NAVTEX by Transas – “Navtex Manager”
- Also possible/feasible for EGC SafetyNET
  - do we need it???
  - if so, need an action item from the meeting
  - Inmarsat can check with Transas, as software deleloper, what and how it can be done, probably in the same or similar way as for Navtex ….

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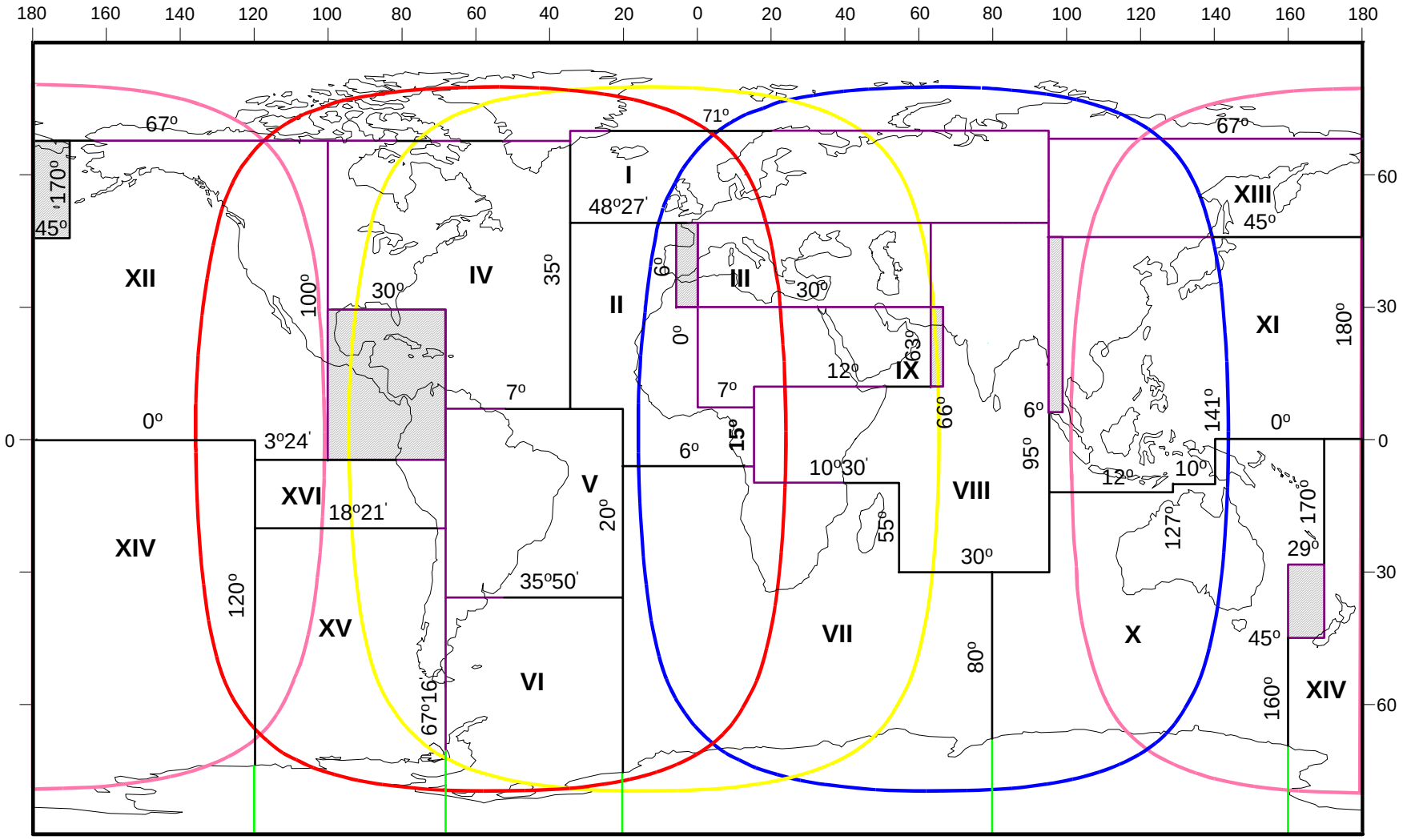
Existing NAV/METAREA boundaries

as in the Inmarsat-C System Definition Manual (without Arctic areas)



Shaded areas are with overlap reception from the adjacent NAV/METAREAs

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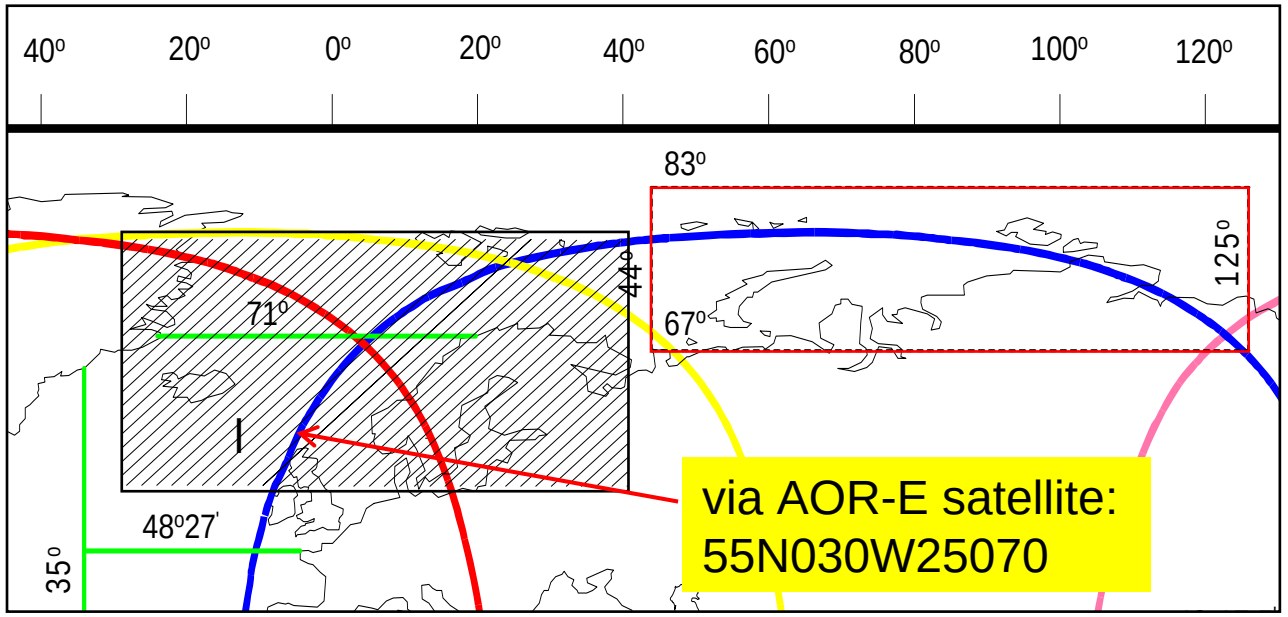
EGC message addressing and coverage area

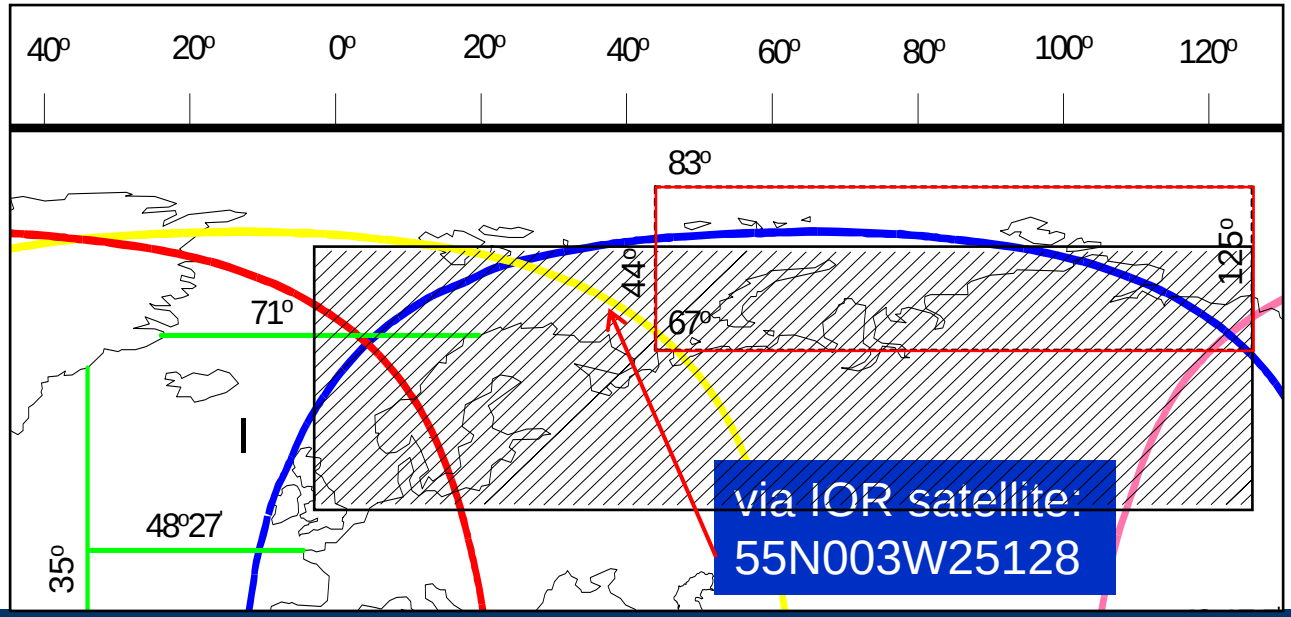
To: All ships in the Arctic area to the North of 71 deg.

The IMO International SafetyNET Panel is planning to enhance EGC services via the Inmarsat C system and include new Arctic areas to broadcast navigational and meteorological information. To define possible new Arctic areas, 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, to report to Inmarsat Maritime Safety Services the following information:

1. ship's name
2. position (lat and long) above 71 deg North
3. date/time 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.





Purpose of the trial:
To check service availability for new areas using existing MESs and software and geographical boundaries

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egc 1, 1, 04, 71n035w09066, 11, 00 - Message (HTML)

File Edit View Insert Format Tools Actions Help

Reply | Reply to All | Forward

From: Vladimir Maksimov
To: egc@inmc.eik.com
Cc:
Subject: egc 1, 1, 04, 71n035w09066, 11, 00

Sent: Mon 25/02/2008 11:12

NAVAREA XIX (Arctic)

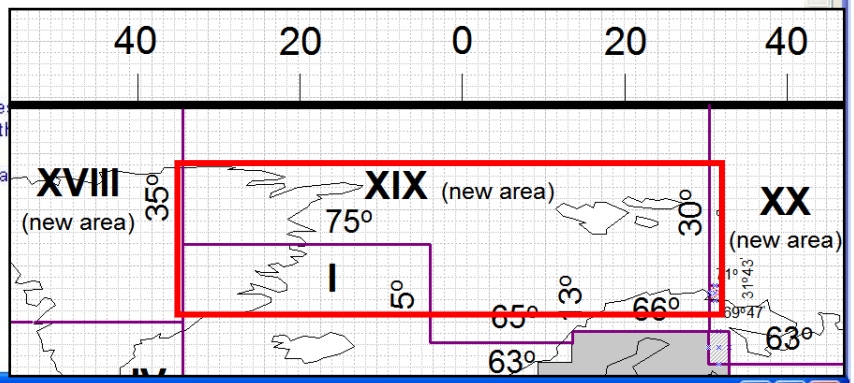
Test message nr 1.

This is a test message from Inmarsat to all ships in NAVAREA XIX (above 71 degrees North and between 35 degrees We
recently defined and approved by International Maritime Organisation and purpose of the test is to check performance of t

Please reply back to e-mail: vladimir_maksimov@inmarsat.com to confirm reception. Information on your position would a

Kind Regards and have a good voyage,

Vladimir Maksimov
Inmarsat Maritime Safety Services Department



egc 3, 1, 04, 63n030e17095, 11, 00 - Message (HTML)

File Edit View Insert Format Tools Actions Help

Reply | Reply to All | Forward

From: Vladimir Maksimov
To: egc@inmc.eik.com
Cc:
Subject: egc 3, 1, 04, 63n030e17095, 11, 00

Sent: Mon 25/02/2008 12:07

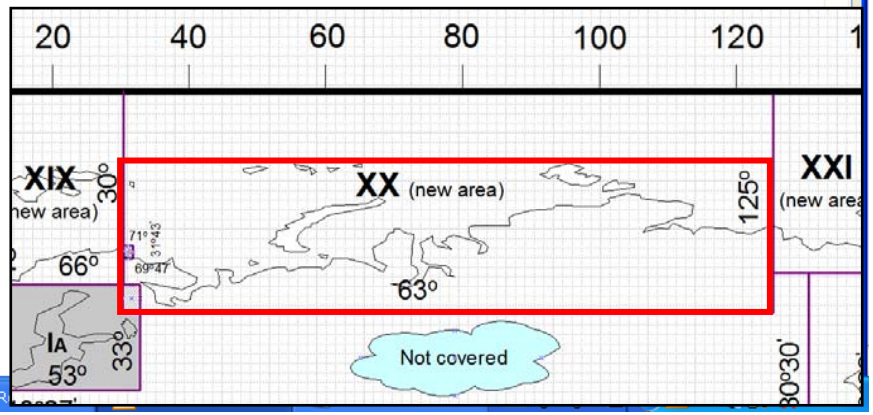
NAVAREA XX (Arctic)

Test message nr 1.

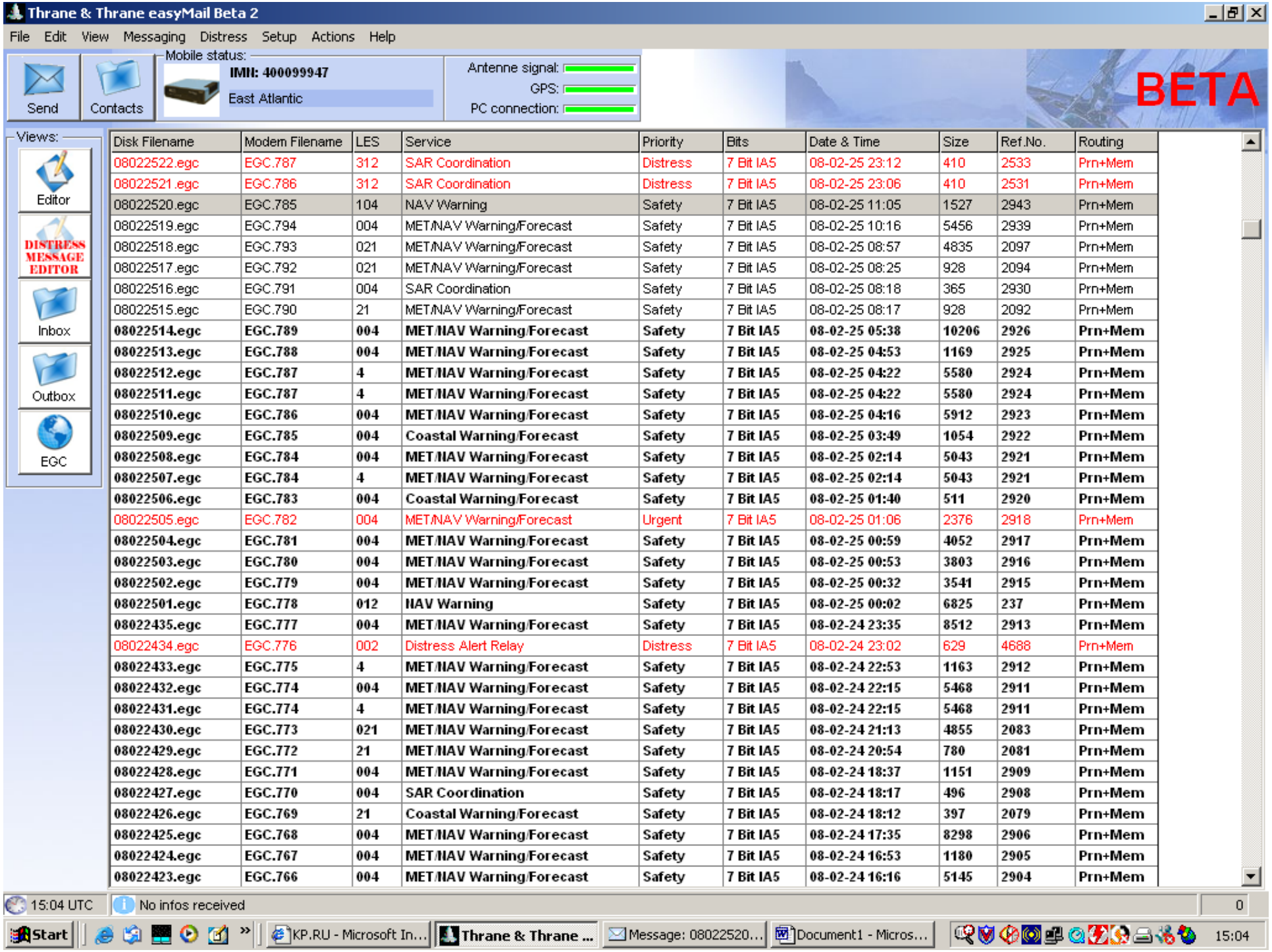
This is a test message from Inmarsat to all ships in NAVAREA XX (Arctic area between 30 degrees and 125 degrees East). NAVAREA XX was recently defined and approved by International Maritime Organisation, as well as NAVAREA XVII, XVIII, XIX and XXI, and purpose of the test is to check performance of the system. Please reply back to e-mail: vladimir_maksimov@inmarsat.com to confirm reception. Information on your position would also be appreciated and treated as confidential.

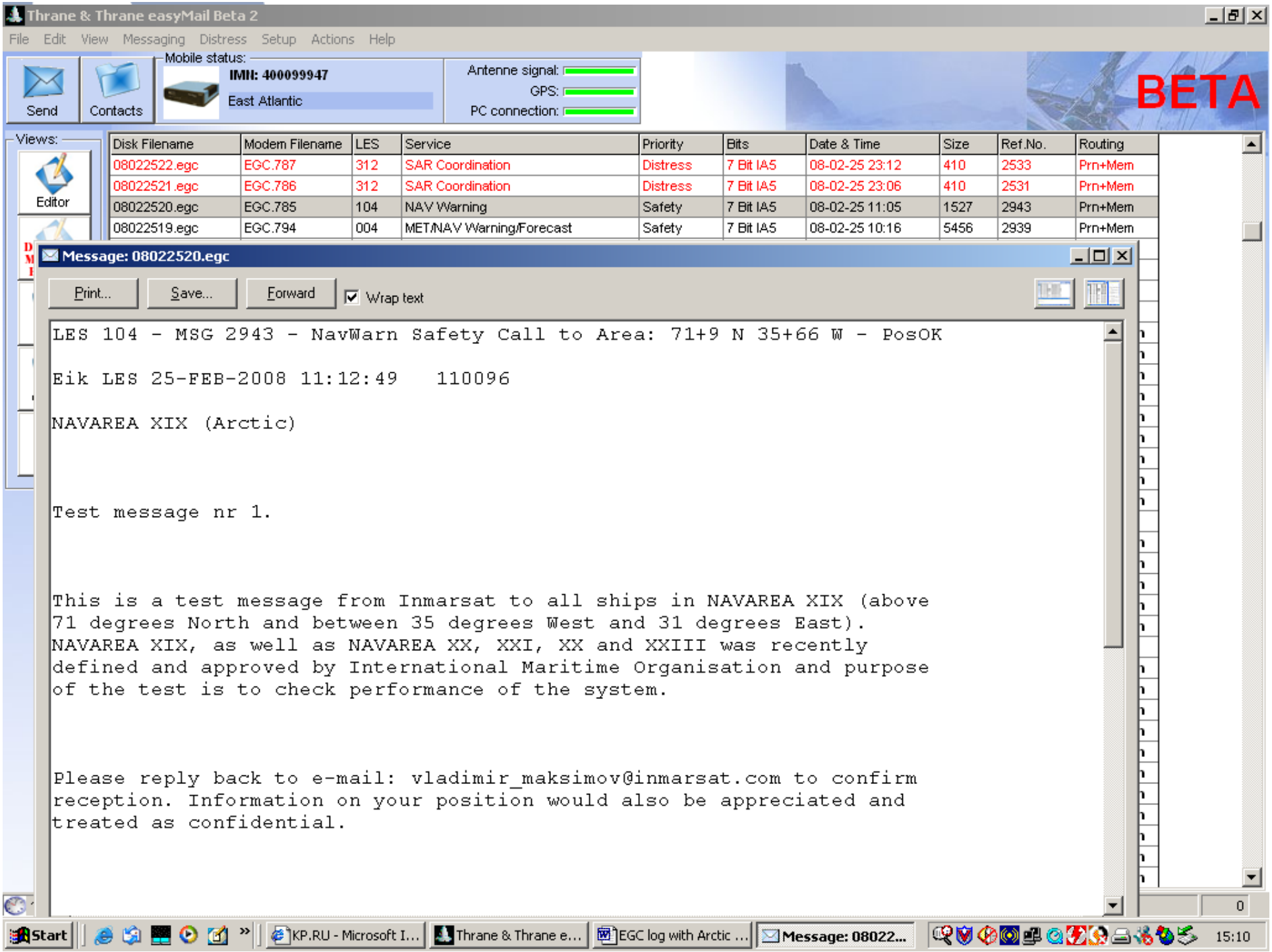
Kind Regards and have a good voyage,

Vladimir Maksimov
Inmarsat Maritime Safety Services Department



start | 2 Internet Ex... | 3 Microsoft O... | Calculator | Search


Thrane & Thrane easyMail Beta 2
File Edit View Messaging Distress Setup Actions Help
Send
Contacts
Mobile status:
IMN: 400099947
East Atlantic
Antenne signal:
GPS:
PC connection:
BETA
Views:
Editor
DISTRESS MESSAGE EDITOR
Inbox
Outbox
EGC
Disk Filename | Modem Filename | LES | Service | Priority | Bits | Date & Time | Size | Ref.No. | Routing
08022522.egc | EGC.787 | 312 | SAR Coordination | Distress | 7 Bit IA5 | 08-02-25 23:12 | 410 | 2533 | Prn+Mem
08022521.egc | EGC.786 | 312 | SAR Coordination | Distress | 7 Bit IA5 | 08-02-25 23:06 | 410 | 2531 | Prn+Mem
08022520.egc | EGC.785 | 104 | NAV Warning | Safety | 7 Bit IA5 | 08-02-25 11:05 | 1527 | 2943 | Prn+Mem
08022519.egc | EGC.794 | 004 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 10:16 | 5456 | 2939 | Prn+Mem
08022518.egc | EGC.793 | 021 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 08:57 | 4835 | 2097 | Prn+Mem
08022517.egc | EGC.792 | 021 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 08:25 | 928 | 2094 | Prn+Mem
08022516.egc | EGC.791 | 004 | SAR Coordination | Safety | 7 Bit IA5 | 08-02-25 08:18 | 365 | 2930 | Prn+Mem
08022515.egc | EGC.790 | 21 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 08:17 | 928 | 2092 | Prn+Mem
08022514.egc | EGC.789 | 004 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 05:38 | 10206 | 2926 | Prn+Mem
08022513.egc | EGC.788 | 004 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 04:53 | 1169 | 2925 | Prn+Mem
08022512.egc | EGC.787 | 4 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 04:22 | 5580 | 2924 | Prn+Mem
08022511.egc | EGC.787 | 4 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 04:22 | 5580 | 2924 | Prn+Mem
08022510.egc | EGC.786 | 004 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 04:16 | 5912 | 2923 | Prn+Mem
08022509.egc | EGC.785 | 004 | Coastal Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 03:49 | 1054 | 2922 | Prn+Mem
08022508.egc | EGC.784 | 004 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 02:14 | 5043 | 2921 | Prn+Mem
08022507.egc | EGC.784 | 4 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 02:14 | 5043 | 2921 | Prn+Mem
08022506.egc | EGC.783 | 004 | Coastal Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 01:40 | 511 | 2920 | Prn+Mem
08022505.egc | EGC.782 | 004 | MET/NAV Warning/Forecast | Urgent | 7 Bit IA5 | 08-02-25 01:06 | 2376 | 2918 | Prn+Mem
08022504.egc | EGC.781 | 004 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 00:59 | 4052 | 2917 | Prn+Mem
08022503.egc | EGC.780 | 004 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 00:53 | 3803 | 2916 | Prn+Mem
08022502.egc | EGC.779 | 004 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 00:32 | 3541 | 2915 | Prn+Mem
08022501.egc | EGC.778 | 012 | NAV Warning | Safety | 7 Bit IA5 | 08-02-25 00:02 | 6825 | 237 | Prn+Mem
08022435.egc | EGC.777 | 004 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-24 23:35 | 8512 | 2913 | Prn+Mem
08022434.egc | EGC.776 | 002 | Distress Alert Relay | Distress | 7 Bit IA5 | 08-02-24 23:02 | 629 | 4688 | Prn+Mem
08022433.egc | EGC.775 | 4 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-24 22:53 | 1163 | 2912 | Prn+Mem
08022432.egc | EGC.774 | 004 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-24 22:15 | 5468 | 2911 | Prn+Mem
08022431.egc | EGC.774 | 4 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-24 22:15 | 5468 | 2911 | Prn+Mem
08022430.egc | EGC.773 | 021 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-24 21:13 | 4855 | 2083 | Prn+Mem
08022429.egc | EGC.772 | 21 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-24 20:54 | 780 | 2081 | Prn+Mem
08022428.egc | EGC.771 | 004 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-24 18:37 | 1151 | 2909 | Prn+Mem
08022427.egc | EGC.770 | 004 | SAR Coordination | Safety | 7 Bit IA5 | 08-02-24 18:17 | 496 | 2908 | Prn+Mem
08022426.egc | EGC.769 | 21 | Coastal Warning/Forecast | Safety | 7 Bit IA5 | 08-02-24 18:12 | 397 | 2079 | Prn+Mem
08022425.egc | EGC.768 | 004 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-24 17:35 | 8298 | 2906 | Prn+Mem
08022424.egc | EGC.767 | 004 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-24 16:53 | 1180 | 2905 | Prn+Mem
08022423.egc | EGC.766 | 004 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-24 16:16 | 5145 | 2904 | Prn+Mem
15:04 UTC
No infos received
0
Start
KP.RU - Microsoft In...
Thrane & Thrane ...
Message: 08022520...
Document1 - Micros...
15:04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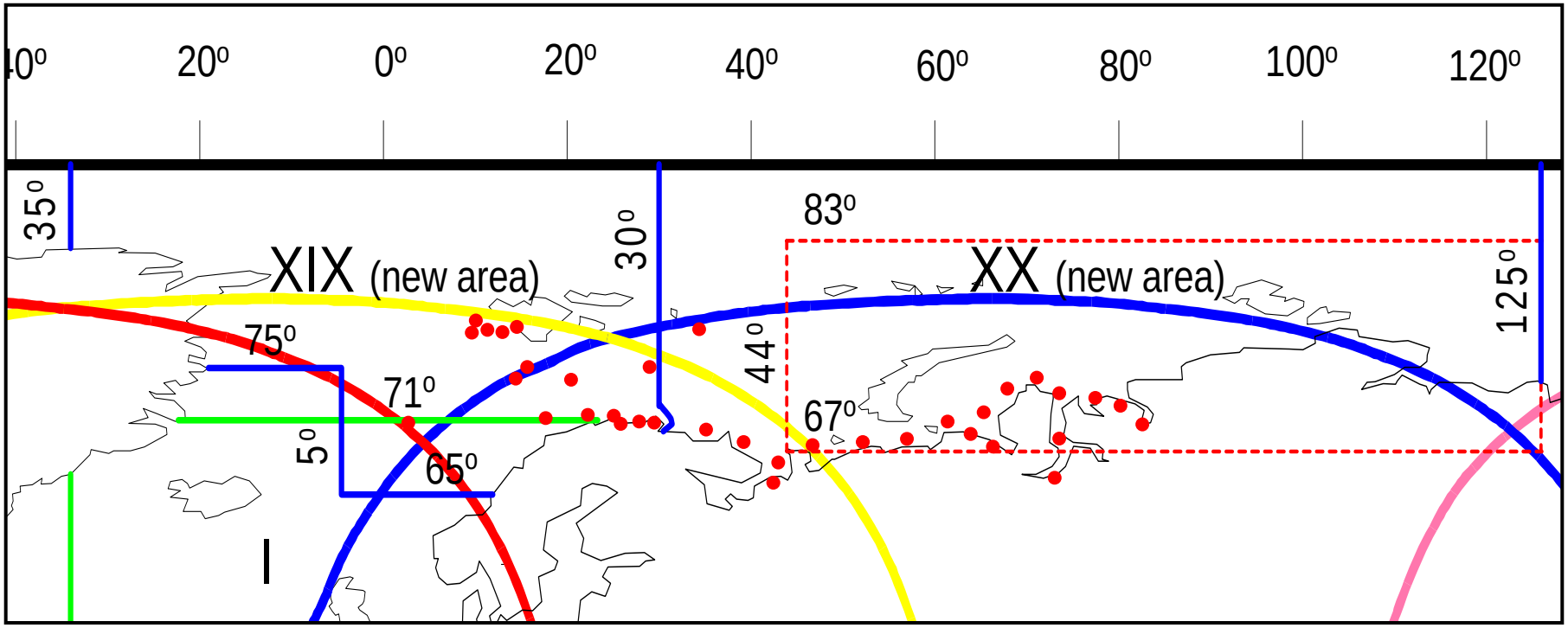
Send
Contacts
Mobile status:
IMN: 400099947
East Atlantic
Antenne signal:
GPS:
PC connection:
BETA
Views:
Editor
Disk Filename | Modem Filename | LES | Service | Priority | Bits | Date & Time | Size | Ref.No. | Routing
08022522.egc | EGC.787 | 312 | SAR Coordination | Distress | 7 Bit IA5 | 08-02-25 23:12 | 410 | 2533 | Prn+Mem
08022521.egc | EGC.786 | 312 | SAR Coordination | Distress | 7 Bit IA5 | 08-02-25 23:06 | 410 | 2531 | Prn+Mem
08022520.egc | EGC.785 | 104 | NAV Warning | Safety | 7 Bit IA5 | 08-02-25 11:05 | 1527 | 2943 | Prn+Mem
08022519.egc | EGC.794 | 004 | MET/NAV Warning/Forecast | Safety | 7 Bit IA5 | 08-02-25 10:16 | 5456 | 2939 | Prn+Mem
Message: 08022520.egc
Print...
Save...
Forward
Wrap text
LES 104 - MSG 2943 - NavWarn Safety Call to Area: 71+9 N 35+66 W - PosOK
Eik LES 25-FEB-2008 11:12:49 110096
NAVAREA XIX (Arctic)
Test message nr 1.
This is a test message from Inmarsat to all ships in NAVAREA XIX (above 71 degrees North and between 35 degrees West and 31 degrees East). NAVAREA XIX, as well as NAVAREA XX, XXI, XX and XXIII was recently defined and approved by International Maritime Organisation and purpose of the test is to check performance of the system.
Please reply back to e-mail: vladimir_maksimov@inmarsat.com to confirm reception. Information on your position would also be appreciated and treated as confidential.
Start
KP.RU - Microsoft I...
Thrane & Thrane e...
EGC log with Arctic ...
Message: 08022...
15:10

Position of reporting vessels



Position info from vessels:
71.15N 24.40E (AOR-E)
71.20N 02.61E (AOR-E)
……
74.30N 20.34E (IOR)
74.36N 16.24E (AOR-E)
75.18N 15.48E (AOR-E)
……
77.50N 14.00E (AOR-E)
78.00N 13.00E (AOR-E)
78.00N 35.00E (IOR)
78.15N 15.32E (AOR-E)
79.30N 09.15E (AOR-E)

General overview:
Inmarsat service is available up to 79º North (not 24 hrs)

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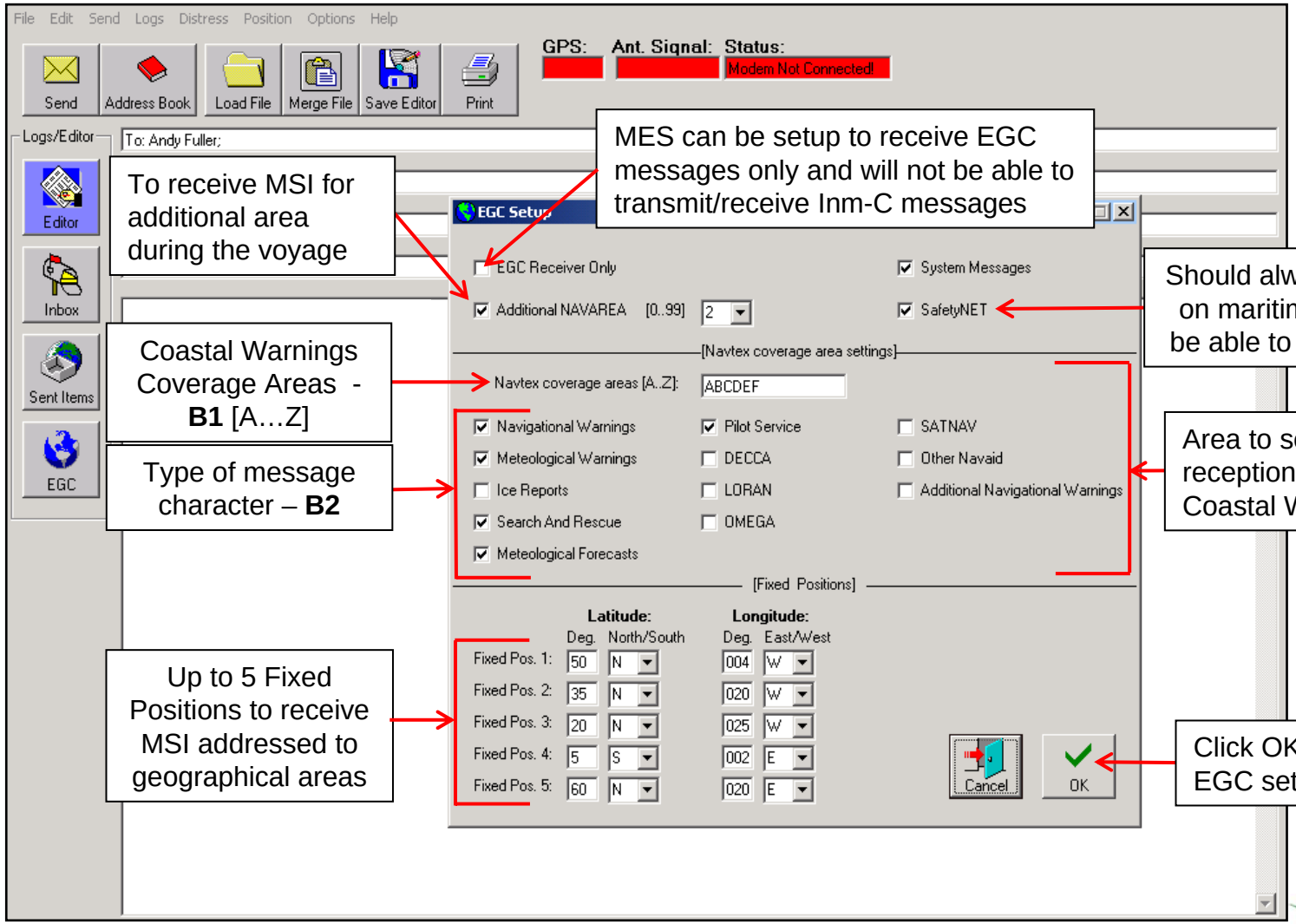
EGC SafetyNET setup



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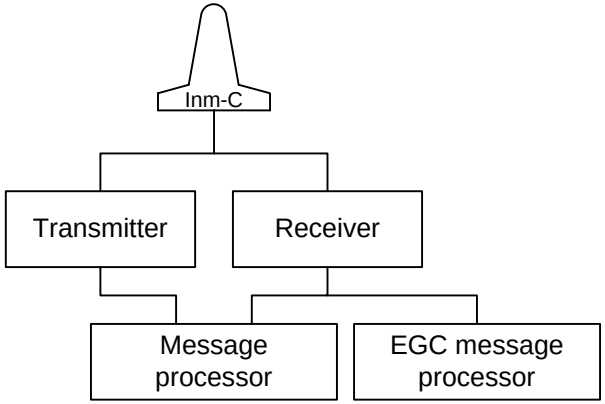
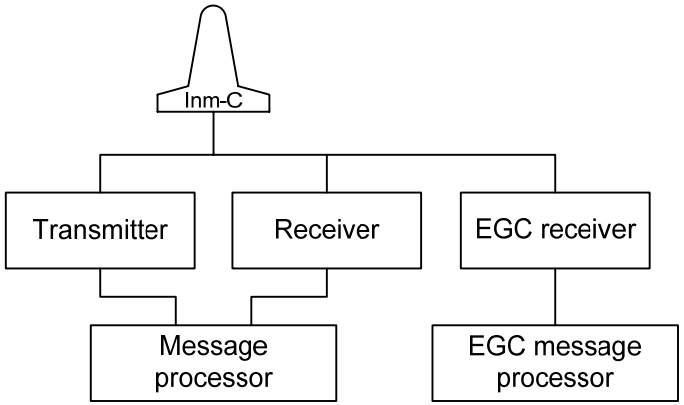
Annex 7 of the Manual

IMO "requirements" for the availability of the EGC receive facility



Class 2 Inmarsat C/mini-C SES with EGC capability – common receiver for S&F and EGC messages

(majority of existing SESs are Class 2)



Class 3 Inmarsat C/mini-C SES with EGC capability – dedicated receiver for EGC messages

(Class 3 SESs are not available on the market)

- IMO "requirement" – *"the EGC receiver should normally be available for reception of MSI for at least 98% of time…"*
  - the MES is available for other communication for 20 minutes a day
- "Requirement" is of 1988 or 1989 – before Inmarsat C services started
- Is it possible to control this "requirement"?
- It may be possible to control ship-to-shore traffic and avoid sending messages during MSI broadcast peak hours, if they are known to the crew.
  - Is anyone doing it?
- It is not possible in shore-to-ship traffic since shore customers are not aware of this "requirement" and are (may be) sending messages to ships at ANY time.
  - No control is possible.
- Class 2 SESs – if the mobile is "busy" in receiving or transmitting messages, some MSI may be lost if broadcast (and MSI repetition) is done at the same time as S&F messages.
- To be sure that MSI reaches addressed ships, it is retransmitted or broadcast using repetition codes.
- Usually Inmarsat C S&F messages are small in size and require short time for TX/RX – less than 6 mins as "echo" and no visible affect on MSI availability.
- My recommendation is to delete Annex or modify.

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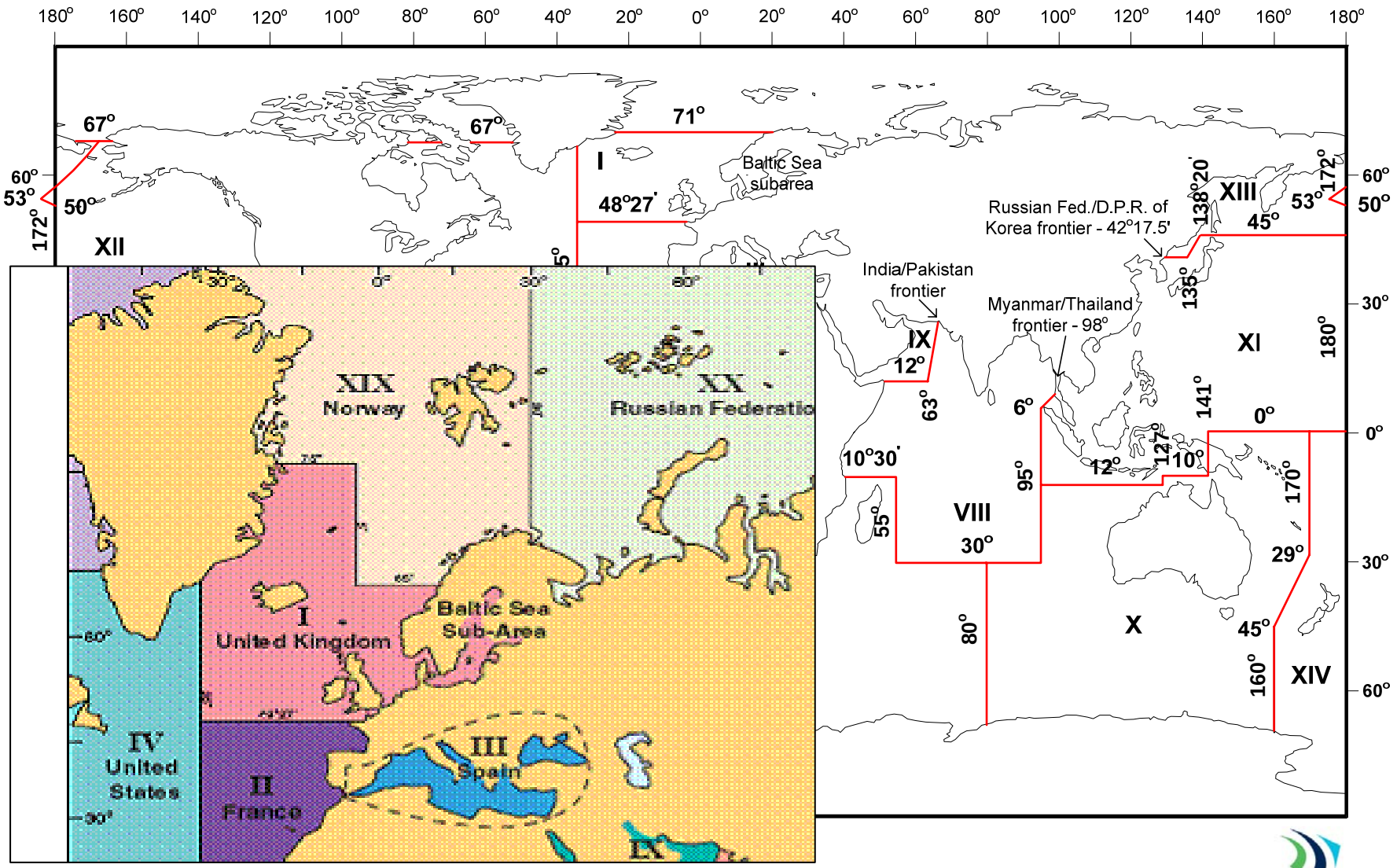
NAV/METAREA I new boundary and “possible new addressing arrangement”



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I1

Thank you for your attention

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