

• •

-

**GMDSS**

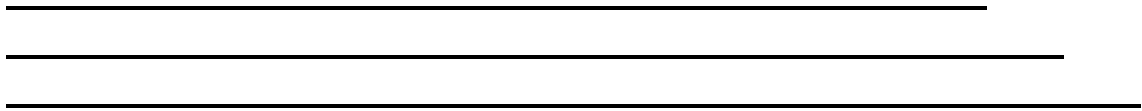
**2012**

Copyright :

μ μ μ ,  
 μ ,  
 , μ  
 μ , ( , μ , μ  
 ), μ μ  
 μ μ ( μ μ  
 . 2387/1920, 4301/1929, 100/1975, μ . .  
 3565/1956, 4264/1962 2121/1993), μ  
 .

**ALL rights reserved**

Α μ. / ( ISBN)  
 978-960-92905-6-2



, , μ  
 , , .  
 1975, μ μ  
 , μ  
 μ , .  
 , μ  
 μ .  
 μ ,  
 μ “ .  
 1979 μ μ μ ,  
 μ .  
 μ μ μ  
 , :

NGEL, DIAMLEMOS, INTERNATIONAL OPERATIONS,  
 GLAFKI, COMMON PROGRESS, AVIN, GOULANDRIS, . .

μ ,  
 1999  
 μ .  
 μ 2000 – 2009 μ μ  
 μ ,  
 μ .  
 2009, μ .  
 /

, μ  
 μ μ  
 .  
 μ 2000 – 2010,  
 μ μ μ ( 22 )  
 , μ μ μ μ μ μ





1]

---

[ ]

|       |
|-------|
| _____ |
| _____ |
| _____ |

)  $\mu$  \_\_\_\_\_ :  $\mu$   
 $\mu$  .

)  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu\mu$  \_\_\_\_\_ :  
 $\mu$   $\mu$  ,  $\mu$  .

)  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_ :  
 $\mu$   $\mu$

(  $\mu$  ).

)  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_ :  
 $\mu$   $\mu$

(  $\mu$  ).

)  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_ : \_\_\_\_\_  $\mu$   
 .  $\mu$  ,



\_\_\_\_\_  $\mu$   $\mu$   $\mu$   
3MHz, 4MHz, . . . ) (1MHz, 2MHz,





6] - -

, :

] [ , μ ]

] [ . . μ ]

] [ . . μ traffic communication

, μ μ

, , ‘ μ

μ , . . .]

] [ . . μ μ

,

. . .]

] [ . . μ μ

, ,

,

μ μ μ μ

μ μ , μ

].

**3]**

---

---

|          |
|----------|
| <i>1</i> |
|          |
|          |
|          |
|          |

1]       $\mu$                        $\mu$                       :

- $\mu$
- 
- 
- 

$\mu$  [                      ,  $\mu$                       ,                      ]                      .

2]     $\mu$      $\mu$  :

- - $\mu$  ,
  - $\mu$
  - ,
- $\mu$  .

3]    ,  $\mu$  :

- $\mu$
- 
- ,

-  
 - ,  
 - [ μ μ ], μ

4] μ  
 μ , :  
 •  
 •  
 • ,  
 μ μ , μ μ  
 .

5] -  
 -  
 - ,  
 μ μ .

6] μ  
 μ , μ  
 :  
 •  
 •  
 • [ ],  
 μ .

7] -

-

-  $\mu$  ,

$\mu$   $\mu$   $\mu$  :

] -

] -

] -

] - ,

$\mu$

.

8]

$\mu$

, :

-

-

-  $\mu$  .

9]

,

$\mu$

$\mu$

,

,

:

•

•

,

,

,

$\mu$

$\mu$

,

$\mu$

[

]

$\mu$

$\mu$

.

10]

$\mu$

[

$\mu$

9]

$\mu$

,

[

$\mu$

:

- 
- 
- 
- $\mu$  ],  
 $\mu$   $\mu$

11] :

- $\mu$
- 
- 
- 
- $\mu$
- 

,  $\mu$   $\mu\mu$  , [ ,  
 $\mu$  ,  $\mu$  ] .

|     |
|-----|
| $I$ |
| $,$ |
|     |

1]  $\mu$  :

1)  $\mu$   $\mu$

1)  $\mu$

( / )

1)  $\mu$

1)  $\mu$

( /  $\mu$   $\mu$  ),  $\mu$   $\mu$

.( ) ,

( ..  $\mu$  , , .. )

1)  $\mu$   $\mu$  ,

).

2]  $\mu$   $\mu$  ,

$\mu$   $\mu$

:

) \_\_\_\_\_ :

( 1)

( 2)

( 3) /  $\mu$

,

) \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  .

3] \_\_\_\_\_  $\mu$  \_\_\_\_\_ , \_\_\_\_\_  $\mu$

\_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  .  
( . . . \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  / , \_\_\_\_\_  $\mu$  STAND  
BY, . . . )

4] \_\_\_\_\_ /

$\mu$  , \_\_\_\_\_  $\mu$  \_\_\_\_\_ :

)  $\mu$

)  $\mu$  \_\_\_\_\_ ,

$\mu$

\_\_\_\_\_  $\mu$   
)  $\mu$  \_\_\_\_\_  $\mu$  ,

\_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_ .

5] \_\_\_\_\_  $\mu$  , \_\_\_\_\_ ομ

$\mu$   $\mu$   $\mu$  \_\_\_\_\_ , \_\_\_\_\_ ,

$\mu$  \_\_\_\_\_ (

\_\_\_\_\_  $\mu$  )  $\mu$

$\mu$  , \_\_\_\_\_ :

- \_\_\_\_\_  $\mu$



-

-

-

- μ
- μ μ
- μ
- μ (ALARMS) :
- 
- μ ( . . . )
- μ
- μ , . . .

6]

μ , μ μ

μ μ

μ ,

(ACKNOWLEDGEMENTS / CONFIRMATIONS),

μ

μ , .

7]

μ

μ , μ , μ

/ μ (TEST) ,

.

8]

$\mu$  ,  $\mu$   $\mu$   
 $/$  ,  $\mu$  :  
 ( ) o  $\mu$   $\mu$   $\mu$   
 ( )  $\mu$   
 ( )  $\mu$  ,  
 ,  
 ( )  $\mu$  (  $\mu$  ) , .

9]

$\mu$  ,  $\mu$   $\mu$   
 $\mu$   $\mu$   
 $\mu$  /  $\mu$  /  $\mu$  /  $\mu$  /  
 (  $\mu$  ) ,  $\mu$   
 , ..  $\mu$   
 , . . . .

10]

$\mu$   $\mu$   
 :  
 ) \_\_\_\_\_ :  
 ( 1)  $\mu$   $\mu$  ,  
 .

) \_\_\_\_\_  $\mu$  :  
 ( 1)  $\mu$   $\mu$  [  $\mu$   
 ] ,  $\mu$  ( . .  $\mu$   $\mu$  ,  
 . . . ) (  $\mu$  1).



( 1)  $\mu$

/

( 2)  $\mu$  .

) / / ,

---

., /  $\mu$  ,

$\mu$  , :

( 1)  $\mu$  ,

,

( 2)  $\mu$   $\mu$

$\mu$   $\mu$

/ ( $\mu$  )  $\mu$

, (  $\mu$  )

).

1 \_\_\_\_\_  
 \_\_\_\_\_, ( \_\_\_\_\_ ),  
 \_\_\_\_\_  
 \_\_\_\_\_

1] \_\_\_\_\_  $\mu$  \_\_\_\_\_

\_\_\_\_\_  $\mu$ , \_\_\_\_\_  $\mu$   
 \_\_\_\_\_,  
 $\mu$  \_\_\_\_\_  
 \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  
 \_\_\_\_\_  $\mu$  \_\_\_\_\_,  
 \_\_\_\_\_ / \_\_\_\_\_

2] \_\_\_\_\_ / \_\_\_\_\_ /  
 \_\_\_\_\_

( ..  $\mu$  \_\_\_\_\_, / \_\_\_\_\_  $\mu$  \_\_\_\_\_  
 \_\_\_\_\_  $\mu$  ... )

3] \_\_\_\_\_  $\mu$  \_\_\_\_\_  
 \_\_\_\_\_

( .. \_\_\_\_\_ DSC SES \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  
 \_\_\_\_\_  $\mu$  ... )

4] \_\_\_\_\_ , \_\_\_\_\_ μ \_\_\_\_\_ μ / \_\_\_\_\_ μ  
\_\_\_\_\_ μ / \_\_\_\_\_

5] \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ /  
\_\_\_\_\_

6] \_\_\_\_\_ μ \_\_\_\_\_ / ( ) μ /  
\_\_\_\_\_ μ / \_\_\_\_\_ μ , \_\_\_\_\_

7] \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ /  
\_\_\_\_\_ / ( ) μ / \_\_\_\_\_ μ μ /  
\_\_\_\_\_ μ / \_\_\_\_\_

8] \_\_\_\_\_ [ \_\_\_\_\_ μ \_\_\_\_\_ μ  
\_\_\_\_\_ μ \_\_\_\_\_ μ (§ 1 μ 7), \_\_\_\_\_ μ  
\_\_\_\_\_ l \_\_\_\_\_ , \_\_\_\_\_

9] \_\_\_\_\_ /  
/ \_\_\_\_\_ , \_\_\_\_\_ .

\_\_\_\_\_ μ \_\_\_\_\_ 2  
\_\_\_\_\_, \_\_\_\_\_ , \_\_\_\_\_ ,  
\_\_\_\_\_ μ , \_\_\_\_\_ μ \_\_\_\_\_ μ  
\_\_\_\_\_, \_\_\_\_\_ μ \_\_\_\_\_ μ ( 1] μ 9] )  
( \_\_\_\_\_ ) .

μ μ , μ  
/ .

4]

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ μ \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ μ \_\_\_\_\_

\_\_\_\_\_ μ \_\_\_\_\_,

\_\_\_\_\_ μ \_\_\_\_\_ :

“ \_\_\_\_\_ μ \_\_\_\_\_ ( DATA ) \_\_\_\_\_ .

\_\_\_\_\_ ,

\_\_\_\_\_ μ μ \_\_\_\_\_ μ \_\_\_\_\_ ,

\_\_\_\_\_ .

\_\_\_\_\_ , μ \_\_\_\_\_ « \_\_\_\_\_ μ \_\_\_\_\_ / \_\_\_\_\_ μ \_\_\_\_\_

\_\_\_\_\_ μ \_\_\_\_\_ » , \_\_\_\_\_ μ \_\_\_\_\_

\_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ μ \_\_\_\_\_

\_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

( . . . \_\_\_\_\_ , \_\_\_\_\_ ) , \_\_\_\_\_ μ \_\_\_\_\_ ( . . .

\_\_\_\_\_ μ \_\_\_\_\_ ) , \_\_\_\_\_ μ \_\_\_\_\_ ( \_\_\_\_\_ ) , . . . ) .



,  $\mu$   $\mu$   
 ( ) - ,  
 ( ) - ,  $\mu$   
 ( )  $\mu$   
 $\mu$  .

$\mu$   $\mu$   
 .  
 :  
 \_\_\_\_\_ : O  $\mu$   $\mu$   
 , ,  
 \_\_\_\_\_ : K (o  $\mu$   $\mu$  )  
 .

\_\_\_\_\_  
 ,  
 $\mu$  \_\_\_\_\_  
 \_\_\_\_\_  $\mu$  ,  
 \_\_\_\_\_  $\mu$  ,  $\mu$

$\mu$  .  
 $\mu$   $\mu$  -  $\mu$   
 $\mu$   $\mu$  .  
 (  $\mu$  ) ,  $\mu$   $\mu$   
 $\mu$   $\mu$   $\mu$   
 .

, μ  
 μ .  
 , - μ  
 , - , :  
  
 μ ,  
 \_\_\_\_\_ μ , μ  
 - ( ) , μ μ  
 , μ μ  
 , μ -μ -  
 ( μ ) , (TELEMETRY AND TELECONTROL),

( ) μ ,  
 - μ \_\_\_\_\_  
 \_\_\_\_\_ μ .  
 μ , μ μ  
 μ GMDSS μ INMARSAT, μ

μ 1

,

μ

\_\_\_\_\_

μ μ

,

\_\_\_\_\_ ( ) , \_\_\_\_\_

\_\_\_\_\_ ( ) \_\_\_\_\_ .

μ 2

μ

,

\_\_\_\_\_ μ , \_\_\_\_\_ | μ

| μ , ' μ

\_\_\_\_\_ μ

\_\_\_\_\_ μ μ .

( . . μ (SES),

:

-

- μ

- μ , . . .)

]

[ ] μ , , , , ,

μ :

1) - GMDSS:

- NAVTEX

- EGC

- μ

INMARSAT (SES)

DSC (VHF, MF, HF)

2) -  $\mu$   $\mu$  \_\_\_\_\_  
 \_\_\_\_\_  $\mu$  /  
 ( . . .  $\mu$   $\mu$  ,  
 , . . . )

3) -  $\mu$

**E** -

\_\_\_\_\_.

( . . ALARMS PANELS

$\mu$  (BRIDGE CONTROL, ENGINE CONTROL, CARGO CONTROL . . . )

4) -  $\mu$  \_\_\_\_\_ -  
 \_\_\_\_\_.  
 ( . . ALARMS  $\mu$  telemetry, tracking, . . .  
 $\mu$   $\mu$   
 INMARSAT,  $\mu$   
 )

5) -  $\mu$  ,  
 \_\_\_\_\_ ,  
 \_\_\_\_\_ ,  
 . . .  
 ( . .  $\mu$



μ μ , . .

**BNWAS - BRIDGE**

**NAVIGATIONAL ALARM SYSTEM**

**K**



**E**

8) INMARSAT- B, -C, FLEET 77, . .

9) DSC (MF, HF, VHF)

10) μ ( μ VHF)

11) VHF EMERGENCY ( GMDSS)

12) μ μ

13) SITOR

14) (INTERNET) μ

INMARSAT

15) ( )

## F-HF DSC



1

16) GPS

17) EPIRB

18) AIS

19)  $\mu$   $\mu$  RADAR SART AIS/SART

20)  $\mu$

( . . INMARSAT D+ (tracking and tracing) )

21)  $\mu$

( LRIT = LONG RANGE IDENTIFICATION AND TRACKING )

22)  $\mu$  ( )

(SSAS = SHIP SECURITY ALARMING SYSTEM)

23) LORAN  $\mu$  /  $\mu$

24) ECHO – SOUNDER

## AIS



1

25) RADAR, ARPA,

26) AIS

27) VISION (NIGHT) OBSERVER SYSTEMS

## MARINE RADAR ARPA



1 ( )

$\mu$  , ,  
:

$\mu$  , ,



)  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  
\_\_\_\_\_.

)  $\mu$  \_\_\_\_\_,  $\mu$  \_\_\_\_\_  
\_\_\_\_\_.

)  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  
\_\_\_\_\_,  
\_\_\_\_\_.

)  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_.

)  $\mu$  \_\_\_\_\_  $Q$

)  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  
\_\_\_\_\_  $\mu$  \_\_\_\_\_.

$\mu$  (  $\mu$  )  $\mu$  :

**(1)** \_\_\_\_\_  $\mu$  \_\_\_\_\_

$\mu$  :

28)

29)

30) (  $\mu$  )

31)  $\mu$

32)  $\mu$   $\mu$  /  $\mu$





44) μ μ ( )  
μ

45) μ μ

46) μ μ ( . . )

**ΚΑ**



1

47) NAVTEX

48) EGC

49) F MSI

50) μ , μ

51) μ , μ

**μ β**

, μ μ  
, μ  
μ 47), 48), 49), 50),

].

μ μ , (



μ :

- 52) NAVTEX
- 53) μ (INMARSAT) EGC
- 54) F MSI
- 55) METEO-ROUTEING
- 56) / μ
- 57) μ / FACSIMILE
- 58) μ FAX
- 59) μ μ
- 60) SITOR
- 61) RADAR ( μ ), . .
- 62)
- 63)

**W R BROADCAST**  
**MAPS SATELLITE**



**weather FAX**



**H]**

( μ \_\_\_\_\_ )

μ :

64) PRESS (NEWS)μ

65) TELE-PRESS μ μ

( . . μ FLEET-NET INMARSAT . . )

TELE-PRESS μ SITOR

66)

67) ( μ )

68)

**V**



E μ ( ) μ,

μ :

69) μ ( μ )

, , , μμ ,

...

:

1 \_\_\_\_\_,

\_\_\_\_\_μ\_\_\_\_\_.

( \_\_\_\_\_ ( FIRE CONTROL PLAN),

\_\_\_\_\_ ( SAFETY EQUIPMENT PLAN),

\_\_\_\_\_ ( LOADING AND DISCHARGING

PLAN ), ...

1 \_\_\_\_\_μ\_\_\_\_\_μ\_\_\_\_\_μ\_\_\_\_\_

\_\_\_\_\_μ\_\_\_\_\_.

\_\_\_\_\_μ , ... ( \_\_\_\_\_ . .

\_\_\_\_\_μ ( LAUNCHING

LIFE BOATS OPERATION PLAN ), . .

\_\_\_\_\_

\_\_\_\_\_



1

μ 7:

O μ , μ μ

μ μ ,

μ μ .

70) μ

: BRIDGE CONTROL, CARGO CONTROL, G  
CONTROL, . .

71) μ -

μ μ

, .

:

- FIRE CONTROL

- ,

-

μ / μ μ

- (SOPEP)

-

- μ

- μ

μ

μ μ , -



( Telemetry, Tracking , Security - Alarming, . . . .

LRIT, SSAS, . . ).

- μ μ μ μ (μ  
) / -  
( ele-video-conference, . . . )

μ μ

μ , μ  
, μ μ  
,

**VOYAGE DATA RECORDER ( VDR ) =**

( ) μ .  
μ VDR, ( μ  
) , μ  
.  
( )  
μ μ ..  
,  
μ ,  
μ .

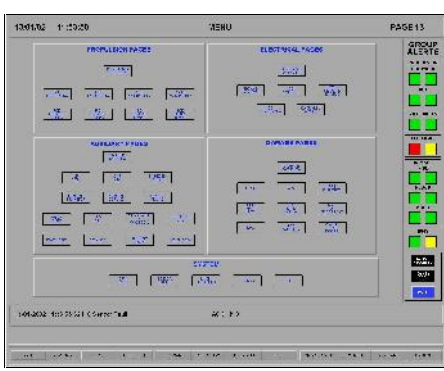
VDR,  
μ  
μ VDR , (μ  
) μ .

μ μ μ  
.....

## VDR – VOYAGE DATA RECORDER



-----  
-----  
-----  
-----



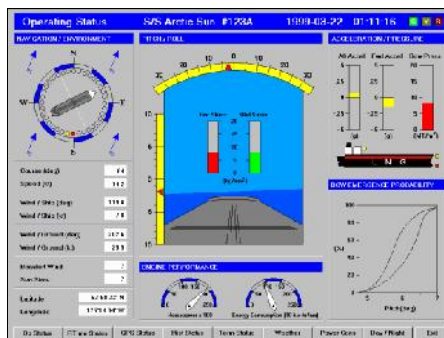
---

## TANKER SHIPs CARGO CONTROL



---

## “HULL MONITORING



(

$\mu$

$\mu$

,

.)

$\mu$

5 ] \_\_\_\_\_  
\_\_\_\_\_, \_\_\_\_\_  
\_\_\_\_\_, \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

1] - VIDEO- TELECONFERENCE

2] - LRIT = LONG RANGE IDENTIFICATION AND TRACKING

3] - SSAS = SHIP SECURITY ALARMING SYSTEM

μ μ

4] - TELE-MEDICINE

5] - RITIME CHARTS ( ECDIS ) AND NAVIGATIONAL UP DATES

μ

6] - BERTHING INFORMATIONS AND BOOKING FOR PORTS

μ i tices of Readiness

7] - UP TO DATE METEOROLOGICAL REPORTS

E μ

**8] - ACCESSING SHIPPING COMPANY INTRANET ON - LINE**

μμ -

**9] - LOGISTICS, DELIVERY AND DISTRIBUTION**

**PLANNING**

- μμ μ ( ) μ ,  
μ ( ).

**10] - REMOTE - DIAGNOSTICS**

- μ

**11] - LE-WATCHING AND TELEMETRY**

-

μ

**12] - e-mail, HSD and all INTERNET provided services mode**

e-mail, μ , packets,

. . .

**13] - PERFORMANCE PLANNED/PERIODIC MAINTENANCE**

**AND REPAIRS MONITORING**

-

**14] - TELE - CHARTERING**

- μ

**15] - e-COMMERCE, TELE - BUY AND ON LINE PROCUREMENT**

**APPLICATIONS**

- μ

**16] - DOCUMENTS AND TRANSACTION STANDARIZATION**

- -

17] - TELE-TRAINING

- μ

18] - MOBILE ( CELLULAR ) COMMUNICATIONS

--

19] - SMS - ( SHORT MESSAGING SERVICE )

μ SMS

20] - WEATHER BROADCAST MAPS

μ

21] - DISTRESS ALERTING

μ

22] - DISTRESS AND SAFETY COMMUNICATIONS

23] - ISDN COMPATIBILITY COMMUNICATIONS

μ μ

μ

24] - METEO ROUTING COVERAGE SERVICES

25] - SHIPREP CONTROL SERVICES

μ -

μ

## SHIP SECURITY ALARMING SYSTEM (SSAS)



## KENT A

## LONG RANGE IDENTIFICATION AND TRACKING (LRIT)



**6** ] \_\_\_\_\_ - \_\_\_\_\_ -

\_\_\_\_\_ .

\_\_\_\_\_

\_\_\_\_\_

|    |   |    |   |
|----|---|----|---|
|    | - |    |   |
| μ  | - | μ  | μ |
| μμ | - | μμ |   |
|    | - | μ  |   |
|    | - | μ  | μ |
|    | - |    |   |
|    | - |    |   |
| (  |   |    |   |
| μ  |   | μ  | μ |
|    | - |    |   |
| μ  | - |    |   |
|    | - |    |   |
|    | - |    |   |
|    | - |    |   |
| A  | - |    | μ |



7 ] \_\_\_\_\_

G.M.D.S.S

l  
ME G.M.D.S.S.

1] \_\_\_\_\_ μ  
μ G.M.D.S.S. :

(1) \_\_\_\_\_ μ μ

E \_\_\_\_\_ ,

(2) \_\_\_\_\_ μ \_\_\_\_\_

μ μ μ μ , μ μ  
( μ ) ,

A) \_\_\_\_\_ , μ μ

\_\_\_\_\_ . [DIGITAL SELECTIVE CALLING  
(SYSTEM)] – D.S.C.

) \_\_\_\_\_ , μ

\_\_\_\_\_ μ \_\_\_\_\_ . [INTERNATIONAL  
MARITIME SATELLITE

( ORGANIZATION ) (SYSTEM)] – INMARSAT.

),  
 μ ( μ  
 ),  
 μ ( μ  
 ).  
 μ μ μ  
 μ , μ ,  
 , . . . , (μ  
 NAVTEX, E.G.C,  
 μ VHF/emergency, EPIRB  
 SART ( AIS/SART),  
 μ μ μ  
 μ , ( μ \_\_\_\_\_  
 \_\_\_\_\_ ),  
(GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM) –  
G.M.D.S.S.

μ , μ  
 μ μ  
 :

**(1) \_\_\_\_\_ :**

- ( ) μ (M.F)
- ( ) μ (H.F),
- ( ) μ (VHF).

( μ μ MF HF) , \_\_\_\_\_  
\_\_\_\_\_):  
- \_\_\_\_\_ -

VHF μ - \_\_\_\_\_.

**(2) \_\_\_\_\_ μ (SHIP EARTH STATION=  
S.E.S)**

**( \_\_\_\_\_ ) μ INMARSAT:**

**μ 1:**

**STANDARD - C**

μ , -

(DATA

μ μ  
**INM RSAT - SES,**



FAX ME

, μ EGC ( μ

**SI TA )**

**STANDARD -**

(FAX)

(DATA)

- FLEET 77 ( INM – B)

(FAX)

(DATA

\_\_\_\_\_!

INMARSAT (STANDARD – , –C FLEET 77),

, μ

HF DSC , μ , ( μ

μ .

μ 2:

, , :  
, :

- , - , –C, FLEET 55, FLEET 33,

..

1  


---

***G.M.D.S.S.***

μ μ μ  
 (GLOBAL MARITIME DISTRESS AND  
 SAFETY SYSTEM), :

**1) SES – SHIP EARTH STATION.**  
 [( ) μ ].

(μ ) μ ,  
 μ :  
 ) μ μ ( μ ).  
 ) μ μ μ (LES)  
 INMARSAT.  
 ) μ μ , μ SES.  
 ( μ INMARSAT )  
 μ μ SES, [  
 ], μ 70 μ 70 .  
 μ  
 μ SES,  
 INMARSAT .

GMDSS



2) D.S.C. – DIGITAL SELECTIVE CALLING (SYSTEM).

[ ]

$\mu$   $\mu$  , (M.F)  
(  $\mu$   $\mu$  200  $\mu$  ), (HF) (  $\mu$   
200  $\mu$  ), (VHF)  $\mu$  (  $\mu$   
 $\mu$  30  $\mu$ )  
 $\mu$  ( P  
 $\mu$  ),  
 $\mu$   $\mu$  (  $\mu$  ,  $\mu$  )  
( ,  $\mu$   
. . ).

*H F -HF DSC*

---

*, ME EN :*

---

*[ ] AYTOMATH*

---

*, E*

---

*[ ]*

---



*VHF TOY DSC (ME THN X*

---



### 3) NAVTEX

[ μ μ NAVTEX ]

( ), μ μ

( ), , ,

, , μ ,

, . . .

μ μ 518

Z, μ μ ,

490 z

μ μ μ NAVTEX, μ

200 - 300 .μ.

E μ μ ( - ) .

μ μ

μ μ

μ [ NBDP – NARROW BAND DIRECT PRINTING ]

( T μ ) .

NAVTEX (

NAVTEX )





**4) MSI Receiver ( F - NBDP ( NARROW BAND DIRECT PRINTING ) )**

[ ( )  
 ( SI) , μ ]

E μ , μ μ

– , μ μ μ μ

( MSI ), μ μ

EGC.

μ MSI μ μ μ .

μ μ

μ

μ μ MSI, μ

μ .

μ \_\_\_\_\_ EGC,

μ NAVTEX, \_\_\_\_\_

μ \_\_\_\_\_

\_\_\_\_\_ μ μ .

\_\_\_\_\_ μ \_\_\_\_\_

\_\_\_\_\_ 4, \_\_\_\_\_ , \_\_\_\_\_

\_\_\_\_\_

RS .

$\mu$  4, 6, 8, 12, 16, 19, 22, 26 MHz  
A  $\mu$  (MHz)  
 $\mu$  ,  $\mu$   $\mu$   
.  
 $\mu\mu$   $\mu$   
 $\mu$   
 $\mu$   $\mu$  ,  
:  
)  
) ,  
,  $\mu$   
 $\mu$   $\mu$   
.

H HF - DP

ME AYTOMATH EKTY

SI



**5) E.G.C. ( ) – ENHANCED GROUP CALLING  
(SYSTEM) [( ) μ μ μ ]]**

μ (μ INMARSAT) :

) μ , METEO, ,

,

.. (MSI - MARITIME SAFETY INFORMATION ( μ  
)).

, μ μ (SAFETY NET),

) μ μ , (FLEET NET)

**μ 1:**

O EGC, μ

( μ INMARSAT -C ), μ μ

MSI.

μ μ μ ,

SES INMARSAT -C.

μ μ INMARSAT -C.

O EGC 1,5 GHz.

μ μ μ

EGC ( μ

INMARSAT)

70B μ 70 .

**INMARSAT MINI-C**



**6) SART- ( SEARCH AND RESCUE -- ( RADAR ) --  
TRANSPONDER).**

( μ ( μ ) RADAR)

μ μ RADAR.

( μ RADAR),

μ μ μ μ ,

μ RADAR , (

μ μ , μ ,

), ( ) μ

...

9 GHz RADAR

μ

μ RADAR 7.6 –

8.09 .μ.

**SART**

**RADAR**



**7) AIS – SART ( AUTOMATIC IDENTIFICATION SYSTEM - SEARCH AND RESCUE TRANSPONDER )**

( μ ( μ ) μ μ  
AIS )

E μ , μ  
,  
μ – AIS.  
AIS μ  
, , :  
1) μμ AIS – SART  
μ ( ID ) :  
-  
- μ ( 3 ) μ  
**970**  
- μ ( 2 ) ,

- μ (4)

μ

2) μ

3) μ μ ( )

4)

5)

AIS SART , μ

.

μ μ ( μ μ )

5-8 .μ.

AIS μ μ ,

μ μ μ , . . . R A, ECDIS . . . ,

, μ μ

.

AIS-SART 96

.

( VHF ) 161.975 162.025 MHz

1 2010, AIS SART - μ

μ - ( RADAR )

SART.

**AIS SART**



**8) EPIRB – (EMERGENCY POSITION INDICATING RADIO BEACON),**

[( )].

μ  
 , μ μ COSPAS-  
 SARSAT.

COSPAS SARSAT GLOBAL  
 COVERAGE ( μ ) μ EPIRBS

μ 2:

To μ COSPAS SARSAT, μ  
 406 MHz EPIRB

μ  
 COSPAS SARSAT ( μ μ  
 INMARSAT μ )

μ

μ

**DOPPLER,** μ μ μ

EPIRB, :

1) \_\_\_\_\_

μ μ ( EPIRB) \_\_\_\_\_,

2) \_\_\_\_\_, μ \_\_\_\_\_

μ EPIRB, \_\_\_\_\_

\_\_\_\_\_.

μ μ μ EPIRB, μ

μ μ

μ , **LUT (= LOCAL USER TERMINAL =**

**)**.

LUT μ ,

μ **RCC (= RESCUE**

**COORDINATING CENTERS =** μ

**)**.

, RCC

μ μ **LES (= LAND EARTH**

**STATIONS =** μ ), μ

.



**PIRB TOY COSPAS SARSAT**

**( OY A**

\_\_\_\_\_ ( \_\_\_\_\_ )  
\_\_\_\_\_, \_\_\_\_\_  
\_\_\_\_\_



**9) VHF (**  
**EMERGENCY),**

μ VHF EMERGENCY,

GMDSS,

μ ( )

,

.

**VHF EMERGENCY (GMDSS)**



|          |                          |
|----------|--------------------------|
| <u>1</u> | <u><b>G.M.D.S.S.</b></u> |
|----------|--------------------------|

, μ μ

μ

:

) **SES-INMARSAT.**

1) μ μ μ , μ μ  
 μ μ , μ ( μ ) ,

2) μ μ ( )

, . . μ , .

μ

μ

μ

μ INMARSAT, μ μ

( = RESCUE COORDINATING CENTERS--RCC ).

) DSC.

(VHF, MF, HF)

μ μ μ , μ μ  
μ μ μ ,  
μ DSC, μ (DSC)  
, μ μ  
μ , .

) NAVTEX

μ NAVTEX, μ ,  
μ ( μ ) μ  
μ ( , o , . . . ),

) (MSI) EGC

μ μ ( MSI ),

μ μ INMARSAT,  
NAVTEX, μ  
GMDSS μ ,  
μ μ ,  
μ μ μ μ NAVTEX .

) RADAR μ

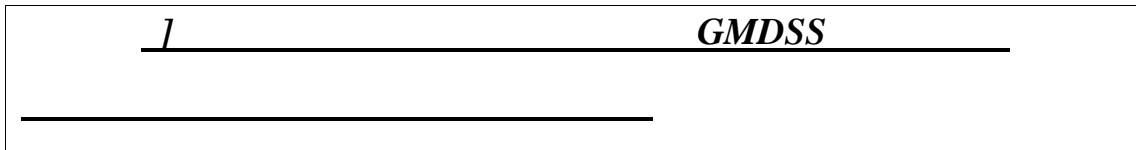
RADAR, (SAR-TRANSPONDER).

μ μ , μ  
μ , [ μ -  
μ -  
μ μ RADAR (SART) ],  
RADAR

**EPIRB.**

EPIRB, μ  
μ ( , μ . . . )  
EPIRB,  
μ μ ,  
μ μ (LUT).  
μ μ AYTOMATA  
, ( )  
RCC )

μ 1  
μ  
μ  
ALARMS, μ ( ) μ )) [ μ μ μ G.M.D.S.S.  
μ ].



μ :

) **EPIRB COSPAS – SARSAT** ( 406 121,5  
MHz )

) **SART** ( 9 GHz )

( 1- -2010

SART o AIS / SART)

) **AIS SART** ( 161.975 162.025 MHz )

] \_\_\_\_\_ *TY* \_\_\_\_\_.  
\_\_\_\_\_  
GMDSS

- 1) - \_\_\_\_\_ DSC  
[ CRS – COAST RADIO STATIONS ]
- 2) - \_\_\_\_\_ INMARSAT  
[ LES – LAND EARTH STATIONS ]
- 3) - \_\_\_\_\_ ( \_\_\_\_\_ NMARSAT )  
NCS - WORK COORDINATING STATIONS
- 4) - \_\_\_\_\_ NAVTEX  
[ NAVTEX COAST STATIONS ]
- 5) - \_\_\_\_\_ ( EITE \_\_\_\_\_  
\_\_\_\_\_ ) \_\_\_\_\_ MSI \_\_\_\_\_ HF -NBDP  
[ MARITIME SAFETY INFORMATIONS ( ON HF –NBDP )  
COAST STATIONS
- 6) - \_\_\_\_\_ ( \_\_\_\_\_  
\_\_\_\_\_ ) \_\_\_\_\_ COSPAS SAR-SAT  
[ LUT – LOCAL USER TERMINAL ]

|                       |           |
|-----------------------|-----------|
| <i>I</i>              | <i>TY</i> |
| <i>SES INMARSAT (</i> |           |
| <i>)</i>              |           |
| <i>, KAI</i>          |           |
|                       |           |

**1] INMARSAT – B :**

- TELEPHONY
- FAX
- DATA

**2] INMARSAT – C :**

- TELEX
- DISTRESS ALERTING
- FAX
- DATA
- STORE AND FORWARD MESSAGING
- EGC

**3] INMARSAT – Mini C :**

- SHIP SECURITY ALERT SYSTEMS
- DISTRESS ALERTING
- STORE AND FORWARD MESSAGING
- EGC
- DATA

**4] INMARSAT - M :**

- DISTRESS ALERTING
- TELEPHONY
- FAX
- DATA

**5] INMARSAT – Mini M :**

- DISTRESS ALERTING
- TELEPHONY
- FAX
- DATA

**6] INMARSAT – FLEET 77:**

- VOICE DISTRESS AND SAFETY SYSTEM
- TELEPHONY
- FAX
- DATA
- HIGH SPEED MOBILE ISDN AND MPDS

-

**7] INMARSAT – FLEET 33:**

- VOICE DISTRESS AND SAFETY SYSTEM
- TELEPHONY
- FAX
- DATA
- HIGH SPEED MOBILE ISDN AND MPDS



**8] INMARSAT – FLEET 55:**

- VOICE DISTRESS AND SAFETY SYSTEM
- TELEPHONY
- FAX
- DATA
- HIGH SPEED MOBILE ISDN AND MPDS

**9] INMARSAT - GAN (GLOBAL AREA NETWORK) :**

- HIGH SPEED DATA

**10] INMARSAT D+ ---TRACKING AND TRACING**

- SHORT DATA MESSAGING
- SCADA (SUPERVISORY CONTROL  
AND DATA ACQUISITION =  
REMOTELY COLLECTING  
ENVIRONMENTAL AND INDUSTRIAL  
DATA)

## 8 ] G.M.D.S.S.

|   |       |
|---|-------|
| 1 | GMDSS |
|---|-------|

- 1:  $\mu$  VHF,  $\mu$  VHF, ( $\mu$   $\mu$  ( ),  $\mu$   $\mu$  ( )).
- 2:  $\mu$ , ( $\mu$ )  $\mu$  M.F.  $\mu$  M.F.
- 3: INMARSAT (70 70 )
- 4:  $\mu$ ,  
1, 2, 3.

$\mu$

1, 2, 3 4,

GMDSS, ANTI TOIXO

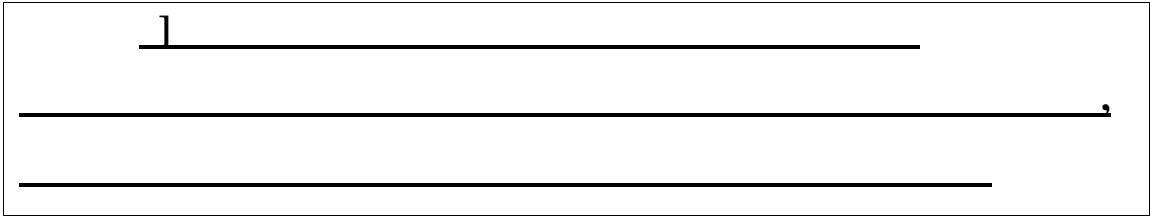
\_\_\_\_\_.  
G.M.D.S.S.

- 1: VHF - DSC
  
- 2: VHF - DSC  
MF- DSC
  
- 3: VHF- DSC,  
MF - DSC HF- DSC  
( ) INMARSAT
  
- 4: VHF- DSC,  
MF-DSC, HF -DSC

**G.M.D.S.S.**

- 1:** ) DSC - VHF  
 ) EPIRB COSPAS - SARSAT  
 ) NAVTEX  $\mu$  E.G.C.  
 ) SART (  $\mu$  RADAR)  
 AIS / SART  
 ) VHF/GMDSS ( )
- 2:** ) DSC - VHF, MF  
 ) EPIRB COSPAS - SARSAT  
 ) NAVTEX  $\mu$  E.G.C.  
 ) SART (  $\mu$  RADAR)  
 AIS / SART  
 ) VHF/GMDSS ( )
- 3:** ) DSC - VHF, MF, HF  
 SES-INMARSAT  
 ) EPIRB COSPAS - SARSAT  
 ) NAVTEX  $\mu$  E.G.C.  
 ) SART (  $\mu$  RADAR)  
 AIS / SART  
 ) VHF/GMDSS ( )

- 4: ) DSC - VHF, MF, HF  
 ) EPIRB COSPAS - SARSAT  
 ) NAVTEX  
 ) SART (  $\mu$  RADAR)  
 ( AIS / SART )  
 ) VHF/GMDSS ( )



$\mu$  ,  
 ( .  
 ),  $\mu$   
 :  
 ) 300 . . . 500 . . . :  
 ) 2 ( ) VHF  
  
 ) 1 ( ) SART,  
 AIS / SART  
 ) 500 . . . :  
 ) 3 ( ) VHF  
  
 ) 2 ( ) SART,  
 AIS / SART

1

**ELF**

EXTREMELY LOW FREQUENCY-

3 Hz - 3 KHz

**VLF**

VERY LOW FREQUENCY-

3 KHz - 30 KHz

**MF**

MEDIUM FREQUENCY-

30 KHz - 3 MHz

**HF**

HIGH FREQUENCY-

3 MHz - 30 MHz

**VHF**

VERY HIGH FREQUENCY-

30 MHz - 300 MHz

} DSC

}

**UHF**

ULTRA HIGH FREQUENCY-  
300 MHz - 3 GHz

INMARSAT

**SHF**

SUPER HIGH FREQUENCY-  
3 GHz - 30 GHz

} SART

**EHF**

EXTREMELY HIGH FREQUENCY-  
30 GHz - 300 GHz





# (1) VHF

|   |   |
|---|---|
| ( )<br><b>(ALERT)</b><br>CH 70<br>(156,525 MHz) | <b>(DISTRESS TRAFFIC)</b><br><br>CH 16<br>(156,800 MHz) |
|---|---|

| (SAFETY /<br>NAVIGATIONAL) | (V S)          | (PORT<br>AUTHORITIES) | (PILOTAGE) | (INTERSHIP)                    |
|----------------------------|----------------|-----------------------|------------|--------------------------------|
| CH 16<br>CH 13             | (CH 13)        | (CH 14)               | (CH 12)    | CH 6<br>CH 8<br>CH 72<br>CH 77 |
|                            | (<br>CHANNELS, |                       | )          |                                |

| ( )<br>-<br>(BRIDGE TO BRIDGE) | (PUBLIC<br>CORRESPONDENCE) |    | (SAR)               |
|--------------------------------|----------------------------|----|---------------------|
|                                | CHANNELS (CH)              |    |                     |
| CH 16                          | 1                          | 66 | CH 16 (156,800 MHz) |
|                                | 2                          | 78 |                     |
|                                | 3                          | 79 | € (123,100          |
|                                | 4                          | 80 | MHz)                |
|                                | 5                          | 81 | ( )                 |
|                                | 7                          | 82 |                     |
|                                | 18                         | 83 |                     |
|                                | 19                         | 84 |                     |
|                                | 20                         | 85 |                     |
|                                | 21                         | 86 |                     |
|                                | 22                         |    |                     |
|                                | 23                         |    |                     |
|                                | 24                         |    |                     |
|                                | 25                         |    |                     |
|                                | 26                         |    |                     |
|                                | 27                         |    |                     |
|                                | 28                         |    |                     |
|                                | 60                         |    |                     |
|                                | 61                         |    |                     |
|                                | 62                         |    |                     |
|                                | 63                         |    |                     |

64  
65

**(2) MF**

|        |   |      |   |        |
|--------|---|------|---|--------|
|        | ( | )    | ( | )      |
| 2187,5 |   | 2182 |   | 2174,5 |

2182  
3023

---



---

| (1)    |       | (2)    |        |
|--------|-------|--------|--------|
|        |       |        |        |
|        |       |        |        |
| 458,5  | 455,5 |        |        |
| 2189,5 | 2177  | 2156,0 | 1621,0 |
|        |       | 2156,5 | 1621,5 |
|        |       | 2157,0 | 1622,0 |
|        |       | 2157,5 | 1622,5 |
|        |       | 2158,0 | 1623,0 |
|        |       | 2158,5 | 1623,5 |
|        |       | 2159,0 | 1624,0 |
|        |       | 2159,5 | 1624,5 |

**INTERSHIP**

2045

2048

2051

2054

2057

**(3) H.F.**

|         | ( )   | ( )    |
|---------|-------|--------|
| 4207,5  | 4125  | 4177,5 |
| 6312    | 6215  | 6268   |
| 8414,5  | 8291  | 8376,5 |
| 12577   | 12290 | 12520  |
| 16804,5 | 16420 | 16695  |

4125

5680 (

**( DSC )**

| (1)     |         | (2)     |         | (2))    |         |
|---------|---------|---------|---------|---------|---------|
| ( )     |         | ( )     |         | ( )     |         |
| 4208    | 4219,5  | 4208,5  | 4220    | 4209    | 4220,5  |
| 6312,5  | 6331    | 6313    | 6331,5  | 6313,5  | 6332    |
| 8415    | 8436,5  | 8415,5  | 8437    | 8416    | 8437,5  |
| 12577,5 | 12657   | 12578   | 12657,5 | 12578,5 | 12658   |
| 16805   | 16903   | 16805,5 | 16903,5 | 16806   | 16904   |
| 18898,5 | 19703,5 | 18899   | 19704   | 18899,5 | 19704,5 |
| 22374,5 | 22444   | 22375   | 22444,5 | 22375,5 | 22445   |
| 25208,5 | 26121   | 25209   | 26121,5 | 25209,5 | 26122   |

|           |       |             |          |             |  |        |
|-----------|-------|-------------|----------|-------------|--|--------|
| 4065      | 401   | 4357        |          | 4210,5      |  | 4172,5 |
| 4068      | 402   | 4360        |          | 4211        |  | 4173   |
| . . . 3 z |       |             |          | . . . 0,5 z |  |        |
|           | $\mu$ |             |          |             |  |        |
| 4143      | 427   | 4435        |          | 4218        |  | 4180,5 |
|           |       | <b>BAND</b> | <b>6</b> | <b>MHz</b>  |  |        |
| 6200      | 601   | 6501        |          | 6314.5      |  | 6263   |
| 6203      | 602   | 6504        |          | 6315        |  | 6263.5 |

|           |       |       |           |             |       |         |
|-----------|-------|-------|-----------|-------------|-------|---------|
| . . . 3 z |       |       |           | . . . 0,5 z |       |         |
|           | $\mu$ |       |           |             | $\mu$ |         |
| 6221      | 608   | 6522  |           | 6328        |       | 6282    |
|           |       | BAND  | <b>8</b>  | MHz         |       |         |
| 8195      | 801   | 8719  |           | 8417        |       | 8377    |
| 8198      | 802   | 8722  |           | 8417,5      |       | 8377,5  |
| . . . 3 z |       |       |           | . . . 0,5 z |       |         |
|           | $\mu$ |       |           |             |       |         |
| 8286      | 832   | 8812  |           | 8433        |       | 8393    |
|           |       | BAND  | <b>12</b> | MHz         |       |         |
| 12230     | 1201  | 13077 |           | 12579.5     |       | 12478   |
| 12233     | 1202  | 13080 |           | 12580       |       | 12478,5 |
| . . . 3 z |       |       |           | . . . 0,5 z |       |         |
|           | $\mu$ |       |           |             |       |         |
| 12350     | 1241  | 13197 |           | 12632       |       | 12530   |
|           |       | BAND  | <b>16</b> | MHz         |       |         |
| 16360     | 1601  | 17242 |           | 16807       |       | 16683,5 |
| 16363     | 1602  | 17245 |           | 16807,5     |       | 16684   |
| . . . 3 z |       |       |           | . . . 0,5 z |       |         |
|           | $\mu$ |       |           |             |       |         |
| 16525     |       | 17407 |           | 16872       |       | 16754   |
|           |       | BAND  | <b>18</b> | MHz         |       |         |
| 18780     | 1801  | 19755 |           | 19681       |       | 18870,5 |
| 18783     | 1802  | 19758 |           | 19681,5     |       | 18871   |
| . . . 3 z |       |       |           | . . . 0,5 z |       |         |
|           | $\mu$ |       |           |             |       |         |
| 18822     | 1815  | 19797 |           | 19691,5     |       | 18881   |
|           |       | BAND  | <b>22</b> | MHz         |       |         |
| 2200      | 2201  | 22696 |           | 22376,5     |       | 22284,5 |



|         |      |             |           |            |  |         |
|---------|------|-------------|-----------|------------|--|---------|
| 2203    | 2202 | 22699       |           | 22377      |  | 22285   |
| . . . 3 |      | z           |           | . . . 0,5  |  | z       |
|         | μ    |             |           |            |  |         |
| 22156   | 2253 | 22852       |           | 22426,5    |  | 22334,5 |
|         |      | <b>BAND</b> | <b>25</b> | <b>MHz</b> |  |         |
| 25070   | 2501 | 26145       |           | 26101      |  | 25173   |
| 25073   | 2502 | 26148       |           | 26101,5    |  | 25173,5 |
| . . . 3 |      | z           |           | . . . 0,5  |  | z       |
|         | μ    |             |           |            |  |         |
| 25097   | 2510 | 26172       |           | 26110,5    |  | 25182,5 |

**INTERSHIP ( )**

| 4 MHz | 6 MHz | 8 MHz | 12 MHz | 16 MHz | 22 MHz |
|-------|-------|-------|--------|--------|--------|
| 4146  | 6224  | 8294  | 12353  | 16528  | 22159  |
| 4149  | 6227  | 8297  | 12356  | 16531  | 22162  |
|       | 6230  |       | 12359  | 16534  | 22165  |
|       |       |       | 12362  | 16537  | 22168  |
|       |       |       | 12365  | 16540  | 22171  |
|       |       |       |        |        | 22174  |
|       |       |       |        |        | 22177  |

**[INTERSHIP ( )]**

| 4 MHz  | 6 MHz  | 8 MHz  | 12 MHz | 16 MHz | 22 MHz |
|--------|--------|--------|--------|--------|--------|
| 4202,5 | 6300,5 | 8396,5 | 12560  | 16785  | 22352  |
| 4209,5 | 6305,5 | 8403   | 12565  | 16790  | 22360  |

|                        |
|------------------------|
| <u><i>J</i></u>        |
| <b>DSC</b>             |
| <b><u>INMARSAT</u></b> |

**VHF/MF/HF, DSC**

:

**VHF:** CHANNEL 70

**MF :** 2187,5 KHz

**HF :** 8414,5 KHz ( )  $\mu$  (1)  $\mu$  [  
(4,6,12,16 MHz BANDS)],

$\mu$  **INMARSAT SES**

1,5 GHz

|                     |
|---------------------|
| <u><i>J</i></u>     |
| <b><u>GMDSS</u></b> |

( )

**SES :** 1,5 1,6 GHz (70  $\mu$  70 )

**VHF- DSC:** 156 - 174 MHz (  $\mu$  30  $\mu$  )

**MF- DSC:** 1600 - 4000 KHz (  $\mu$  200 .  $\mu$  )

**HF- DSC:** 4 – 27,5 MHz ( 200 .  $\mu$  )

**EPIRB – COSPAS SARSAT:** 406 MHz 121,5 MHz --.> 48

(  $\mu$  )

**AIS :** 161,975 MHz      162,025 MHz ( 20 .μ )  
**NAVTEX:** 518 KHz      490 KHz ( 200 -300 .μ )

**SART :** 9 GHz ( 10 .μ )      --.> 96  
**AIS SART :** 161,975 MHz      162,025 MHz ( 5 - 8 .μ.)      --.> 96

**J UHF (INMARSAT)**

           !

μ      INMARSAT,  
μ      μ      :

| <u><b>S.ES.-INMARSAT</b></u> |                      |                 |
|------------------------------|----------------------|-----------------|
| -      _____                 | (1.636,5-1.645,0 MHz | (      )        |
|                              |                      | )               |
| -      _____                 | (1.535,0-1.543,5 MHz |                 |
|                              |                      | )      (      ) |

    μ     **1**  
)      μ      μ ,      (      )      μ  
μ SES.

)

SES,

.

μμ μ ,

μ

μ SES.

\_\_\_\_\_!

) μ

SES, μ

μ (COMMON SIGNALLING CHANNEL),

μ μ SES TDMØ

TDM1.

μ :

SES (4) μ

(I.D.) , μ ,

0,2,4,6 .,

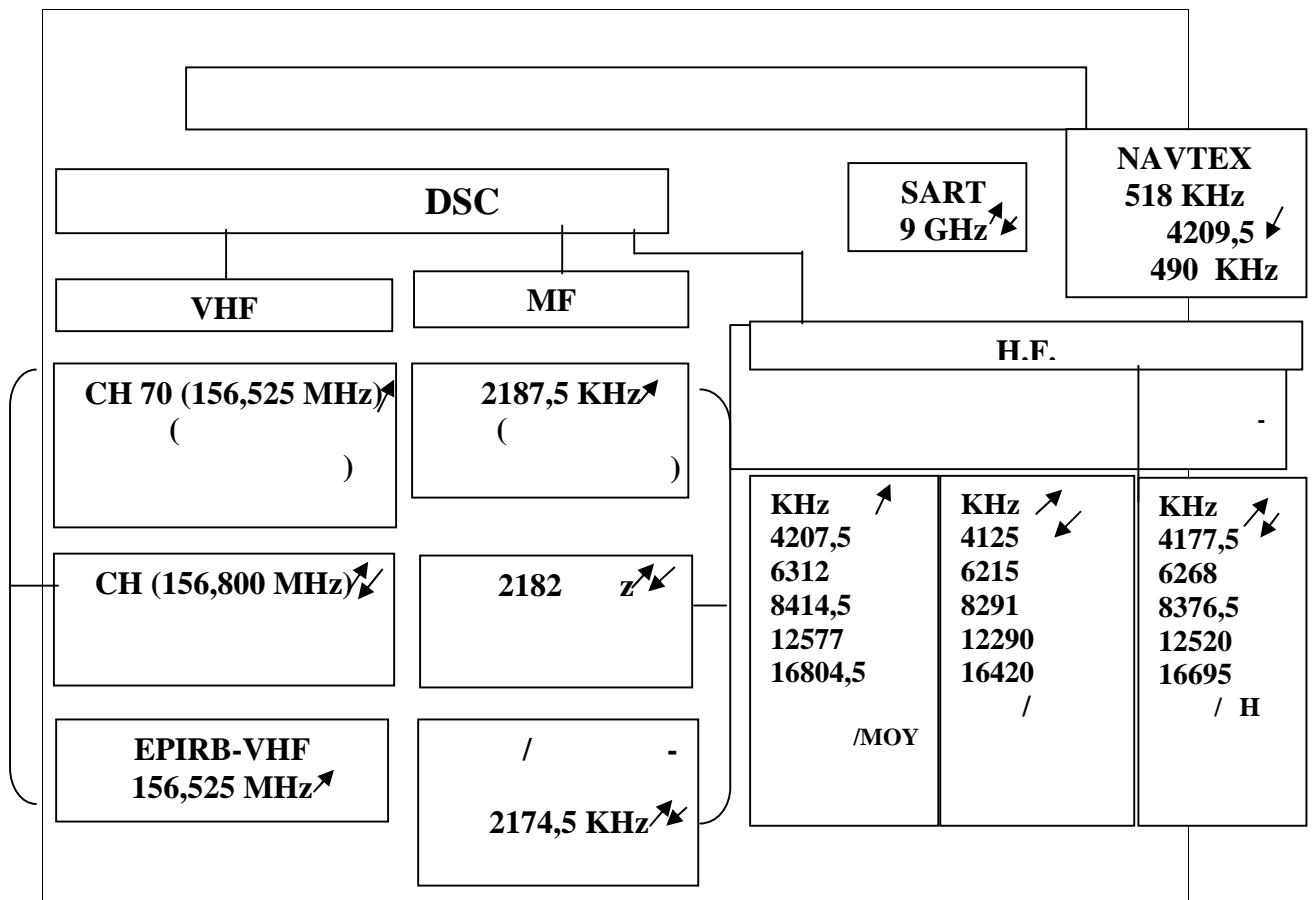
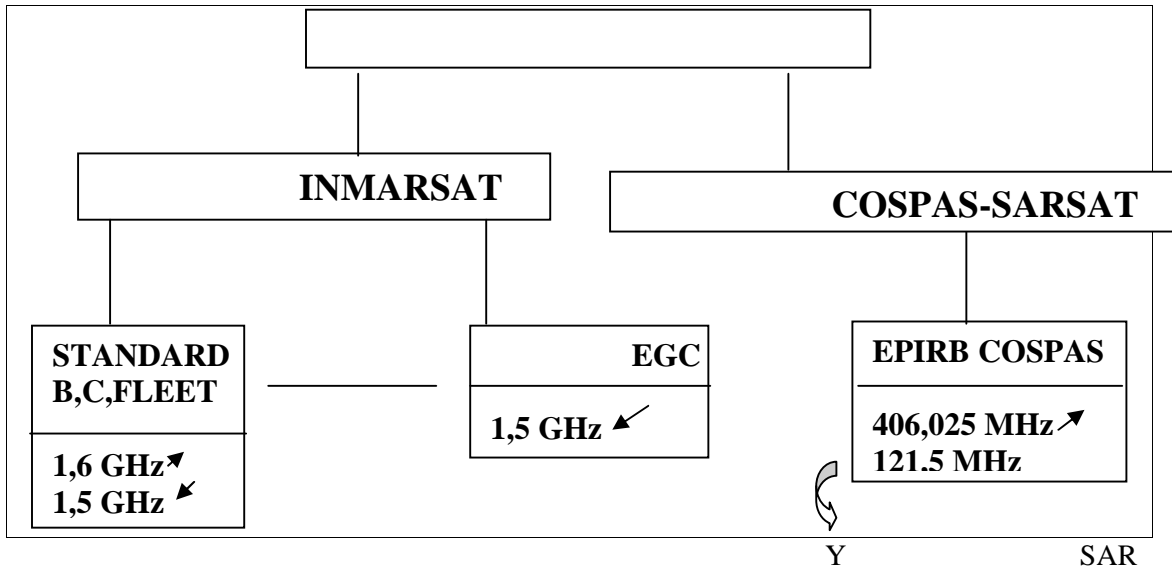
μ TDMØ.

SES (4) I.D.

μ μ 1,3,5, . SES

μ TDM1.

J **G.M.D.S.S.**



1

---

TO GMDSS

|           |                          | <u>ALARM</u> | <u>TRAFFIC</u>       |
|-----------|--------------------------|--------------|----------------------|
|           |                          | <b>VHF</b>   | <b>VHF</b>           |
| <b>1]</b> | ) _____ (ALARM) _____ )  | CH 70        | CH 16                |
|           | ) _____ )                | = 156,525    | = 156,800            |
|           | _____ ( TRAFFIC) _____ ) | MHz          | MHz                  |
|           | ) _____ )                | <b>MF</b>    | <b>MF</b>            |
|           | _____ )                  | 2187,5       | 2182                 |
|           |                          | z            |                      |
|           |                          |              | [TELEX<br>2174,5KHZ] |
|           |                          | <b>HF</b>    | <b>HF</b>            |
|           |                          | 4207,5       | 4125                 |
|           | ( H.F. TELEX )           | 6312         | 6215                 |
|           | <u>TRAFFIC</u>           | z            | z                    |
|           | 4177,5                   | . . .        | . . .                |
|           | 6268                     |              |                      |
|           | KHZ                      |              |                      |
|           | . . .                    |              |                      |

2] \_\_\_\_\_  
 \_\_\_\_\_ (SAR )  
 3] \_\_\_\_\_  
 \_\_\_\_\_  
 ( SCENE )

RCC

**VHF**

CH 16 (156,800 MHz)

123,1 MHz

( )

**M.F.**

2182 KHz

3023 KHz ( )

**H.F.**

4125 KHz

5680 z ( )

5] \_\_\_\_\_  
 ( BRIDGE TO BRIDGE)

**VHF**

CH 16 (156,800 MHz)

**MF**

2182 KHz

|  |
|--|
| $\frac{J}{MSI}$ <hr/> <hr/> <p><b><u>(MSI - MARITIME SAFETY INFORMATION =</u></b></p> <hr/> <p><b><u>)</u></b></p> |
|--|

**1) NAVTEX**

518 KHz ( )  
 ( 4209,5 KHz )

490 z ( )

**2) H.F. ( NBDP) (  $\mu$   $\mu$   $\mu$  )**

- 4210 KHz
- 6314 KHz
- 8416,5 KHz
- 12579 KHz
- 16806,5 KHz
- 19680,5 KHz
- 22376 KHz
- 26100,5 KHz

**3) INMARSAT (EGC-SAFETY NET) (  $\mu$  )**

$\mu$  )

1544 MHz – 1545 MHz ( 1,5 GHz)





1

1 ( )

T

\_\_\_\_\_

1) (DISTRESS)

2) (URGENT)

3) (SAFETY)

4) / [(ROUTINE)

SHIP'S

BUSINESS]

5) / [ ROUTINE

(PUBLIC

CORRESPONDENCE )]

!

\_\_\_\_\_

\_\_\_\_\_.

|   |
|---|
| 1 |
|---|

|   |       | NATURE OF DISTRESS           |
|---|-------|------------------------------|
| / |       | FIRE/EXPLOSION               |
|   |       | FLOODING                     |
|   |       | COLISION                     |
|   |       | GROUNDING                    |
| , |       | LISTING, DANGER OF CAPSIZING |
|   |       | SINKING                      |
|   |       | DISABLED AND ADRIFTING       |
|   |       | UNDESIGNATED DISTRESS        |
|   |       | ABANDONING SHIP              |
| - | EPIRB | EPIRB'S RECEIPT/TRANSMISSION |
|   |       | PIRACY                       |
|   |       | MAN OVER BOARD               |

|                                  |
|----------------------------------|
| <u>1</u><br><hr/> <u>MRS-DSC</u> |
|----------------------------------|

1) CES

.. CRS,  
 μ μ μ  
 .

2) μ (μ μ CRS-DSC)

.. μ  
 , μ  
 μ μ .

3) μ DSC (μ μ CRS-DSC)

.. μ MMSI

1 \_\_\_\_\_ :  
 \_\_\_\_\_ **MRS-DSC**  
**KAI**  
A O \_\_\_\_\_ **CRS-DSC**

1) \_\_\_\_\_  
 ( \_\_\_\_\_ μμ \_\_\_\_\_ μ \_\_\_\_\_ )

2) \_\_\_\_\_  
 ( . . . \_\_\_\_\_ )

3) \_\_\_\_\_ ( \_\_\_\_\_ ) \_\_\_\_\_  
 ( . . . μ μ \_\_\_\_\_ )

4) \_\_\_\_\_  
 ( \_\_\_\_\_ )

\_\_\_\_\_ !  
 \_\_\_\_\_ , \_\_\_\_\_ μ  
 \_\_\_\_\_ , \_\_\_\_\_ μ  
 \_\_\_\_\_ , ( \_\_\_\_\_ , \_\_\_\_\_ )  
 \_\_\_\_\_ , \_\_\_\_\_ , . . . ) ,  
 \_\_\_\_\_ μ \_\_\_\_\_ , \_\_\_\_\_ DSC \_\_\_\_\_  
 INMARSAT \_\_\_\_\_ , \_\_\_\_\_  
 \_\_\_\_\_ μ \_\_\_\_\_ ,

\_\_\_\_\_ μ \_\_\_\_\_ μ \_\_\_\_\_  
\_\_\_\_\_ .

\_\_\_\_\_ 1 \_\_\_\_\_  
\_\_\_\_\_

**SES-INMARSAT**

\_\_\_\_\_ !: SES - INMARSAT μ \_\_\_\_\_  
\_\_\_\_\_ , μ μ μ \_\_\_\_\_ .

1) \_\_\_\_\_ LES

( . . μ  
MEDICO, TECHNICAL ASSISTANCE . )

2) \_\_\_\_\_ μ \_\_\_\_\_ / \_\_\_\_\_

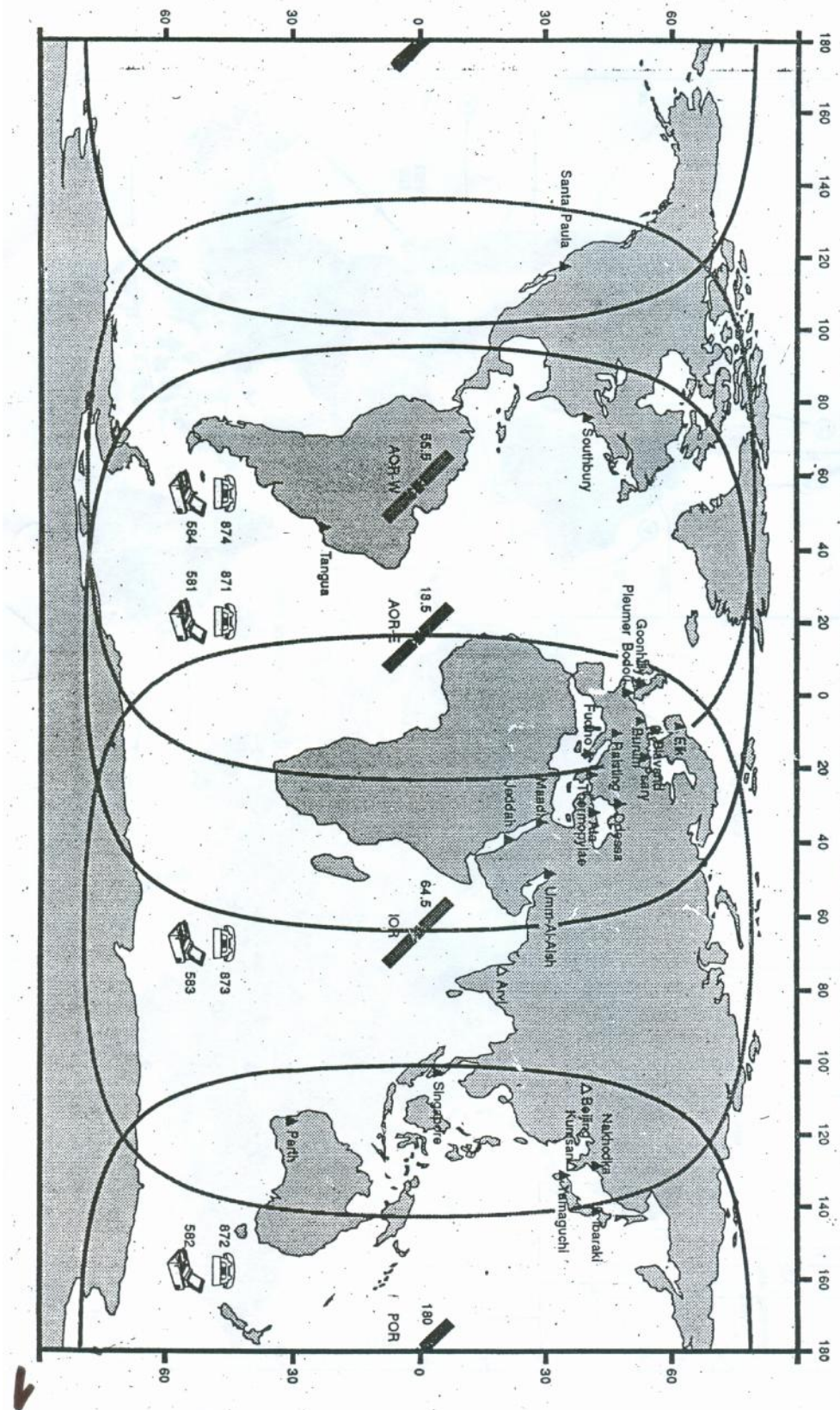
\_\_\_\_\_ (μ LES)

( . . TLX/TLF/FAX , . )

3) \_\_\_\_\_ μ SES - INMARSAT

( . . (μ LES) μ μ SES- INMARSAT )

# INMARSAT GLOBAL COVERAGE SHOWING 0° ELEVATION CONTOURS



1

**LES-INMARSAT**

μ  
μ INMARSAT, (LAND  
EARTH STATIONS).

μ μ LES, μ :

1) \_\_\_\_\_

( . . μ ,

μ μ

μ FLEET NET ( . . PRESS/NEWS,) . .)

2) \_\_\_\_\_

( . . μ )

3) \_\_\_\_\_

( . . ( ) μ ,

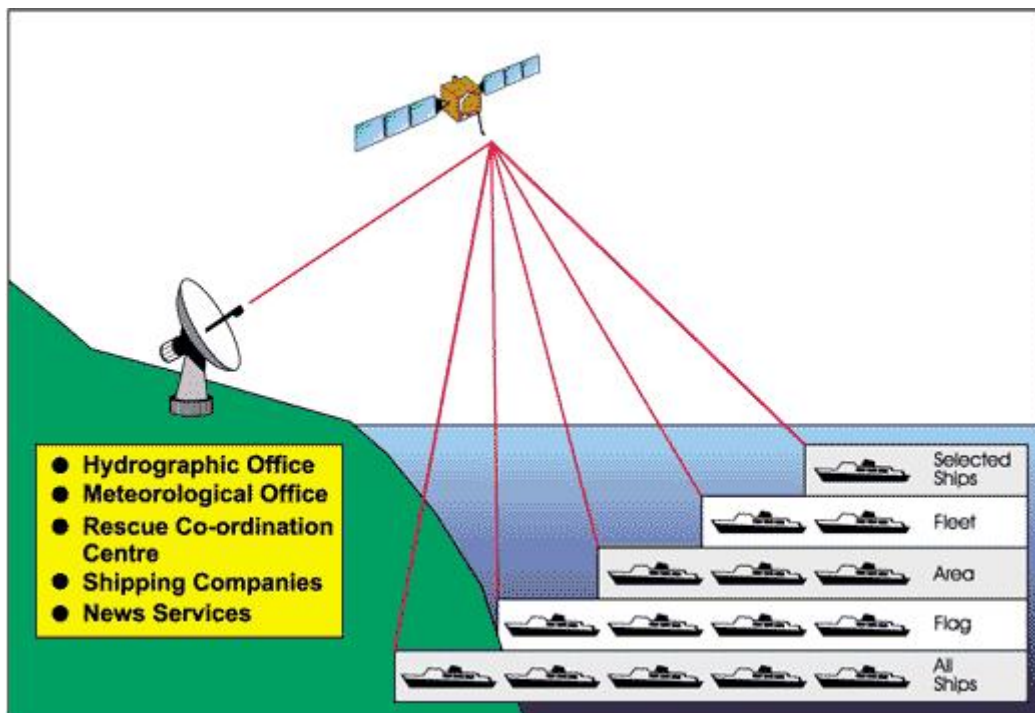
NAVAREAS, ).

4) \_\_\_\_\_

( )



OI SAFETY NET  
FLEET NET EGC INMARSAT TA  
ME  
GMDSS



11 ]

\_\_\_\_\_

\_\_\_\_\_

|                               |
|-------------------------------|
| _____ ]                       |
| _____                         |
| _____ <b>GMDSS, DSC</b> _____ |
| <b><u>INMARSAT</u></b>        |

\_\_\_\_\_ μ \_\_\_\_\_ :

\_\_\_\_\_ μ \_\_\_\_\_ “ \_\_\_\_\_ , \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ μ \_\_\_\_\_ , \_\_\_\_\_ [ \_\_\_\_\_ . . . ]

\_\_\_\_\_ LES, \_\_\_\_\_

\_\_\_\_\_ ] , \_\_\_\_\_

\_\_\_\_\_ μ [ \_\_\_\_\_ . . . \_\_\_\_\_ , \_\_\_\_\_

\_\_\_\_\_ μ DISTRESS, \_\_\_\_\_

\_\_\_\_\_ μ \_\_\_\_\_ , (μ \_\_\_\_\_ GPS), . . . ]

1) \_\_\_\_\_

**[DISTRESS EQUIPMENT]**

... 3 μ μ  
SES-INMARSAT, μ ( MF/HF-DSC), 1, 2 DSC-VHF, MF, HF.

2) \_\_\_\_\_ ( \_\_\_\_\_ )

**[DISTRESS FREQUENCIES AREA/ZONE]**

\_\_\_\_\_ μ \_\_\_\_\_ „ μ  
... \_\_\_\_\_ ,  
VHF MF, 4 6 MHz  
HF, 16, 22, 27 MHz  
\_\_\_\_\_ μ \_\_\_\_\_ .

3) \_\_\_\_\_ H \_\_\_\_\_ H

**[DISTRESS CALL/DISTRESS FREQUENCIES]**

) ( ) μ INMARSAT, § 2), 3) , μ . μ SES, ( , ) μ INMARSAT , μ TDMØ TDM1).

) μ DSC, μ ( μ μ ), μ : ) К ) Н ( μ μ ).

!

1)

μ ,  
Н .

μ 1

« » , μ .

( DSC) :

1) VHF (CH-70)

2) MF (2187,5) μ .

3) μ H.F., μ ,

(BAND)

GMDSS/ DSC, μ

μ μ

GMDSS/DSC,  $\mu$

(  $\mu$  ).

$\mu$  2  
HF/DSC

$\mu$   
8414,5

8 z .

,  $\mu$   
(4, 6, 12, 16 Hz),  $\mu$   
 $\mu$  . . .

$\mu$  3

$\mu$  ,

H ,

,  $\mu$  DSC.

$\mu$

$\mu$

H.F. DSC,

(  
. . . 8414,5 z )

**4)** \_\_\_\_\_

μ , μ μ  
μ μ ,  
μ  
μ ( CLASS OF TRANSMISSION ( or  
KIND  
OF SUBSEQUENT COMMUNICATION )).

μ 4  
( μ μ GMDSS μ ,  
«  
GMDSS»).

**5)** \_\_\_\_\_ [ \_\_\_\_\_ ( \_\_\_\_\_ **H** )  
\_\_\_\_\_ ] **[CATEGORY]**  
**6)** \_\_\_\_\_ **[PRIORITY]**

MENU

- :
- ( . . 1. (DISTRESS),
  - 2. (URGENT), . . . ).

, μ

μ /

μ 5

« H ».

7)

**[FORMAT SPECIFIER]**

( « GMDSS»

!

μ , μ SES INMARSAT,

GMDSS μ

μ , μ

μ .

μ MRS - DSC,

) μ ,

μ , μ , μ  
 μ .  
 ) μ **DISTRESS**  
 « ») μ **DSC,**  
**CRS (COAST RADIO STATIONS)**  
 , μ μ  
 .  
 ) μ **INMARSAT,**  
 μ **LES,**  
 ,  
**LES** μ , μ  
 μ **INMARSAT**  
 .  
 ) μ  
**(DSC INMARSAT), μ CRS (DSC) LES**  
**(INMARSAT),** μ μ μ μ  
\_\_\_\_\_ **RCC (**  
\_\_\_\_\_ μ , \_\_\_\_\_), μ  
 μ **(SAR),**  
 .  
 ) \_\_\_\_\_  
( DSC INMARSAT) , \_\_\_\_\_



\_\_\_\_\_ μ RCC, μ μ  
 μ .  
 \_\_\_\_\_ !: μ  
 μ , DSC INMARSAT, μ  
 :

8) \_\_\_\_\_ / \_\_\_\_\_ (CRS  
LES).

μ CRS (C AST RADIO STATION)  
 LES (LAND EARTH STATION) I.D.  
 μ , .

9) \_\_\_\_\_ [RCC]

μ : INMARSAT, μ  
 μ BUTTON "DISTRESS", μ ( μ  
 μ μ LES ), μ μ LES μ  
 RCC, μμ LES.  
 , [μ  
 μ μ , ..  
 RCC .],

RCC μ .  
 \_\_\_\_\_ !

[ ] ( μ )  
 μ μ BUTTON "DISTRESS", (  
 ), μ μ SES μ ,  
 μ μ LES, (  
 μ ) μ  
 μ .

[ ] , μ μ  
 μ LES,

o NCS ( μ )  
 μ , μ μ LES

, μ μ μ  
 μ RCC .

**A**

---



---

**(RCC)**



\_\_\_\_\_!  
 μ , DSC, μ  
 :

|  |
|--|
| <u>μ</u> <span style="float: right;"><u>DSC</u></span> |
|--|

:

**1) CRS ( COAST RADIO STATIONS ) DSC,**

**2) \_\_\_\_\_ μ**  
DSC,

( μ ) μ  
 ( , μ  
 ).  
 μ μ μ , , μ –  
 μ – CRS DSC,  
 μ .  
 μ , μ μ μ , CRS  
 μ ( μ DISTRESS),  
 μ , μ μ .  
 μ μ ,  
 CRS, (μ )  
 , μ  
 , .  
 , μ DSC,  
 μ μ ( μ ), :

\_\_\_\_\_ =

( « \_\_\_\_\_ », )

\_\_\_\_\_ =

( \_\_\_\_\_ μμ \_\_\_\_\_ μ )

**A** \_\_\_\_\_ :

\_\_\_\_\_ μ LES

\_\_\_\_\_ μ INMARSAT, \_\_\_\_\_, \_\_\_\_\_ :

A) :

)

**μ** \_\_\_\_\_ :

,

**DSC,**

**INMARSAT** ( \_\_\_\_\_ ),

, μ

μ

,

μ

μ

,

,

μ

μ ( \_\_\_\_\_ ), μ

μ μ RCC

.

**10)**

**[DISTRESS POSITION / TIME]**

SES,  
 μ μ GPS, (  
 ).

|   |
|---|
| <p><b>11)</b> _____ <b>[DISTRESS MESSAGE]</b></p> |
|---|

μ μ ,  
 μ ( μ μ  
 μ )  
 :

┌\_\_\_\_\_

)  
 [DISTRESS ( URGENT SAFETY)]

)  
 ) μ  
 ) μ μ

┌\_\_\_\_\_

) o MMSI  
 ) I.D. ( ' SES)  
 ) μ  
 )  
 )  
 )  
 )  
 ) ( μ , μ μ , )

μ) ( ..

μ

μ , , ...)

) μ \_\_\_\_\_

) /

, μ ,

..

l \_\_\_\_\_ μ \_\_\_\_\_

) μ :

1) μ μ

2)

)

1) ,

2)

3) μ / μ

4) ,

μ

μ 6

μ

μ

, μ μ μ μ , ,

μ ( ,  
μ . . . )

**12) \_\_\_\_\_ [DISTRESS CALL]**

, μ  
μ μ μ

.

**13) \_\_\_\_\_ [DISTRESS TRAFFIC]**

DSC, μ

μ .

SES (INMARSAT)

μ μ .

**14) \_\_\_\_\_**

**[DISTRESS FINE]**

μ

μ , ,

( μ

).

|   |
|---|
| <p>1 _____</p> <p>-- _____</p> <p>_____</p> |
|---|

**1. DSC μ :**

- ) MMSI
- ) μ
- ) μ μ
- )
- ) ( μ ) ( .
- μ )
- ) μ ( . .
- μ )
- ) μ ( μ )
- )

[= MMSI μ

μ MRS - DSC (MOBILE RADIO STATION - DIGITAL SELECTIVE CALL) -

- - μ

DSC].

**2) INMARSAT μ :**

- ) I.D. (SES)
- ) μ



) μ /  
)  
)  
)

|          |
|----------|
| <u>1</u> |
|----------|

μ 8

μ μ μ  
μ . ( ..  
DSC, MMSI μ . .),  
μ .

μ MANUALS

μ , ,  
μ , μ μ  
.

μ 9

. μ μ

|                   |
|-------------------|
| <u>1</u>          |
| ( _____ )         |
| <u><b>DSC</b></u> |

DSC  
 μ  
 μ  
 ( 1/ 2/ 3 VHF/VHF-MF/VHF-MF-HF), μ  
 μ  
 μ μ

| VHF: 70    | R/T  | TELEX  |
|------------|------|--------|
|            | 16   |        |
| MF: 2187,5 | 2182 | 2174,5 |
| HF: 4207,5 | 4125 | 4177,5 |
| 6312       | 6215 | 6268   |

|         |       |        |
|---------|-------|--------|
| 8414,5  | 8291  | 8376,5 |
| 12577   | 12290 | 12520  |
| 16804,5 | 16420 | 16695  |

           **10**

HF/DSC

8414,5 KHz

(BANDS) (

μ )

μ

, , .

«ACKNOWLEDGMENT RECEIPT»

(DSC)

μ

DSC

.

           (DSC)

, ,

          ,

,

«

»

μ

.

           !

μ

«

»

MMSI

.

(DSC) «

»

(

),

(

)

μ

DSC

.

           !

‘ . ‘  
·  
«SHIP’S BUSINESS», μ «ROUTINE»  
(PUBLIC  
CORRESPONDENCE).

---

μ MENU

“ ( . . , , ,  
. . .), μ  
(DISTRESS).

12 ]

---

---

---

( . / )

μμ μ  
μ DSC  
INMARSAT, μ  
μ .

1)

μ DSC INMARSAT  
μ ,  
μ ( DSC ) μ ,  
μ . . STANDARD - -C, ,  
μ DSC .

2)

μ μ ,  
μ. : «  
GMDSS» « GMDSS».

3)

H

μ.  
μ μ ,

«

GMDSS».

                  !  
 (CHANNEL 70)                    μ                    VHF,  
 (                    )                    .                    /                    (                    μ  
                   ).                    )

          DSC:                    μ                    μ                    μ                    μ ,  
 μ                    μ                    ,                    .  
 μ                    .

          μ                    1  
                   μ                    .                    μ

          INMARSAT:  
                   μ.                    ,                    SES  
                   ,                    μ                    .

          μ                    2  
                   μ                    μ                    μ                    μ  
 μ TDMØ                    TDM1                    .

                  SES                    μ                    SES                    μ.  
                   ,                    . . .  
 «                    »                    .

4) \_\_\_\_\_

μ , , ,  
μ μ  
μ , μ , μ  
μ , ,

5) \_\_\_\_\_ « \_\_\_\_\_ »

\_\_\_\_\_ !

DSC INMARSAT  
μ. μ (R UTINE)  
(SHIP'S BUSINESS).

6) \_\_\_\_\_

DSC, μ μ μ  
μ. .  
ARSAT SES, μ  
(INDIVIDUAL) LES μ  
INMARSAT,  
μ SES ( : «  
GMDSS».)

7) \_\_\_\_\_

) DSC

μ ID μ CRS μ μ.

CRS.

) INMARSAT

1) μ ( ) LES

          !

, μ INMARSAT, μ

μ LES

, μ μ

LES, GA+ (

) μ μ ( ), :

2) μ μ (

μ [ WO DIGIT ACCESS CODE ]

INMARSAT),

3) μ

.

μ 3

∅∅ = μ ,

( ) μ μ μ .

---

**LAND EARTH STATION (LES) INMARSAT**





8) \_\_\_\_\_

) DSC

,  
 , μ μ DSC, μ DSC,  
 μ CRS-DSC (,  
 ),  
 , (,  
 ) ,  
 DSC,  
 «  
 DSC».

) INMARSAT

) μ TELEX μ  
 INMARSAT ( ) μ :  
 1) ØØ = μ  
 2) μ TELEX  
 3) μ μ TELEX  
 ) μ I.D. SES μ :

1)  $\emptyset\emptyset = \mu$

2)

3) I.D.  $\mu$  SES

$\mu$  **4**

I.D.  $\mu$

$\mu$   $\mu$  SES (SHIP EARTH STATION)-

-  $\mu$  INMARSAT.

131

DSC

|                 |
|-----------------|
| <u>1</u>        |
| -               |
| DSC             |
| <u>INMARSAT</u> |

μ 1

μμ

( , « »), μ μ  
μ ,  
μ ,  
μ μ  
μ μ  
μ , μ  
( μ ) . μ .  
μ ,

μ 2  
!

( )

μ , μ μ

,

μ

, μ

μ 3  
!

μ

μ μ , INMARSAT DSC.

μ , μ ' :

) μ ( ALERTING)

INMARSAT DSC, μ \_\_\_\_\_

\_\_\_\_\_ μ μ \_\_\_\_\_,

μ , μ ,

.

) μ μ ,

, . ,

, μ μ (μ μ μ ) ( )  
,  
μ , μ  
μ .

μ 4

, , ,  
, μ  
, μ  
, DSC

INMARSAT.

μ 5

μ μ ,  
μ  
μ , μ  
, μ μ μ  
, ( μ ) , .

|                 |
|-----------------|
| 1               |
| ,               |
| I               |
| DSC             |
| KAI TO RS GMDSS |

μ μ μ ,

GMDSS, μ :

) MMSI – MARITIME MOBILE SERVICE IDENTIFY

(( ) ), MID

- MARITIME IDENTIFICATION DIGITS ( ) .

(3) μ , MMSI

μ DSC ( )

/ μ DSC .

) ID CRS – DSC ( DSC ), (

MMSI ),

**MID** (2) μ MMSI μ (GROUP CALL)

μ , ( **MID**), (1) μ .

) ( μ μ **MID** ) μ ,

MMSI , [ μ μ μ μ ] ,

μ DSC ,

μ μ , .

) MID ( ), I.D.

/ μ INMARSAT -B, -C, -M., . .

μμ μ :

**DSC :**

**1) -- MMSI :**

MIDXXXXXX (9 ) (239573414)

o :

) MID = ( )

( . . 237561492 )

) XXXXXX = ( )

) Ø MID XXXXX ( μ Ø MMSI, DSC  
μ )

**2) -- ID :**

) ØØ MID XXXX ( ØØ (μ )  
)

\_\_\_\_\_

RCC ( KENT A  
\_\_\_\_\_  
) , μ μ  
\_\_\_\_\_  
( ID )  
\_\_\_\_\_  
DSC, μ ( MMSI ) ,  
\_\_\_\_\_  
MID [ \_\_\_\_\_  
\_\_\_\_\_  
] , \_\_\_\_\_ ( \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ ) .

**INMARSAT,**

**I.D ( \_\_\_\_\_ :**

MID XXXXXX (9 ) ( . . 423759426 )

o :

) X = ( INMARSAT )

:  
INMARSAT-B 3  
INMARSAT-C 4  
I

NMARSAT FLEET F77 76 ( )  
INMARSAT FLEET F77 60  
( DATA ( μ ))

) MID = ( )  
( . . 237 239 )

) XXXXXX = ( )  
μ  
INMARSAT

I.D ( )

INMARSAT -C :  
K X (3 ) ( . . 221 )  
o :  
K = o μ

= K μμ ,

( . . : ,

AOR- E = 121  
AOR-W = 021  
IOR = 321  
POR = 221 )

INMARSAT ,  
INM -C :  
(3 ) ( . . 306 )  
o :



=

( . . AOR- E = 306, AOR-W = 306, IOR = 306, POR = 306 )

|                       |
|-----------------------|
| $\frac{1}{( \quad )}$ |
|-----------------------|

DSC,

,

.

|               |                     |                     |                     |          |                        |
|---------------|---------------------|---------------------|---------------------|----------|------------------------|
| $\mu$         | $\mu$               | $\mu$               | $\mu$               |          |                        |
| POT<br>PATERN | PHASING<br>SEQUENCE | FORMAT<br>SPECIFIER | MMSI<br><br>ADDRESS | CATEGORY | SELF<br>IDENTIFICATION |

|                          |                         |                        |  |      |                        |                             |
|--------------------------|-------------------------|------------------------|--|------|------------------------|-----------------------------|
| $\mu$<br>1               | $\mu$<br>2              | $\mu$<br>3             | $\mu$<br>4                             | .... |                        |                             |
|                          | $\mu$                   |                        |  |      |                        |                             |
| NATURE<br>OF<br>DISTRESS | DISTRESS<br>COORDINATES | TIME<br>OF<br>DISTRESS | KIND OF<br>SUBSEQUENT<br>COMMUNICATION |      | END<br>OF<br>PROCEDURE | ERROR<br>CHECK<br>CHARACTER |

]

1)

μ μ μ ,  
μ μ μ , ,  
μ .

2)

μ μ μ  
μ μ  
.

3)

**(FORMAT SPECIFIER)**

«MENU»:

- 1)
- 2)
- 3)
- 4)
- 5)

6) ( DSC)

4)

**(MMS**

**ADDRESS)**

μ ( MMS μ μ μ  
 , . . μ μ ,  
 μ . . ).

**5) (CATEGORY)**

( ) :

- 1) (DISTRESS)
- 2) (URGENT)
- 3) (SAFETY)
- 4) (SHIP'S BUSINESS)
- 5) (ROUTINE)

**6) (SELF IDENTIFICATION)**

MMSI μ μ .

1

1- 4

**(MESSAGES)**

          !

μ

μ

MESSAGES

)

          1

μ

MENU:

FIRE/EXPLOSION

FLOODING

COLISION

GROUNDING

LISTING, DANGER OF

    CAPSIZING

SINKING

DISABLED AND DRIFTING

UNDESIGNATED DISTRESS

ABANDONING SHIP

EPIRB'S TRANSMITION

PIRACY

EPIRB

2

$\mu$   $\mu$   
10 .

(1)  $\mu$   $\mu$  ( )  
 $\mu$  ,  $\mu$  :

[0 = , 1 = , 2 = , 3 = ]

(4)  
( $\mu$  ) .

(5) ,  $\mu$  ( $\mu$  ) .

3

$\mu$   $\mu$  4 .  $\mu$   
1 2 .  
3 4 .

4

(  $\mu$  )  $\mu$  .

) \_\_\_\_\_

μ (MESSAGES 1 - 4)

μ .  
μ μ MESSAGES 1 2 μ

:

1

μ μ μ  
, μ μ  
( μ ).

2

μ μ  
.

(END OF SEQUENCE)

μ « »

:

1) μ

«ACKNOWLEDGMENT RECEIPT» μ μ .

2) μ μ μ ,

μ .

---

**(ERROR CHECK CHARACTER)**

μ μ ( )

.

|          |
|----------|
| <u>1</u> |
|          |
|          |

μ , μ

μ

μ μ :

( ) ,

.. , μ

.

( ) μ ,

.. ,

.

μ , μ μ :

( ) ..

μ ,



( ) , μ  
μ , μ ,  
μ , μ ,  
- - μ μ μ  
μ .  
. . μ BUTTON  
DISTRESS, μ μ  
« DISTRESS» ( ).  
μ  
μ μ , . .  
μ «  
», μ  
.  
( ) , μ (INTERFACE)  
μ , μ  
. . , . .  
« » ( μ  
), , GPS.  
μ б , μ  
μ , ( ) μ  
, . . . . , μ  
) μ μ μ (INTERFACE) μ  
.  
μ , .





2) μ , μ  
 μ , μ  
 ( ) \_\_\_\_\_ . )  
 3) μ CRS, μ μ  
 μ \_\_\_\_\_ μ ( )  
 CRS.

4) μ μ μ T **TELEX**  
 μ

5) μ , μ μ CRS μ μ μ .

6) (QSW) .

\_\_\_\_\_!

, μ μ , ( . .  
 μ , . . . ) μ μ  
 μ .

4) \_\_\_\_\_ MRS- DSC

μ 11

μ DSC,

μ INTERSHIP.

- 1) μ ID μ CRS
  - 2) μ MMSI μ .
  - 3) μ ( ) ,  
- . (
- « GMDSS»).
- 4) μ INTERSHIP ( μ μ ) μ .
  - 5) μ μ μ ( ) μ ,  
μ μ μ .
  - 6) (QSW) . .

] - -

---

**MRS-DSC**

---

**( GROUP CALL FRO RS-DSC)**

**1) \_\_\_\_\_ ( NATIONALITY CALL )**

=====

μ 12 L CALL ( FLAG CALL),  
 μ ( ) μ

μ 13  
 MRS-DSC μ MMSI DSC μ  
 :  
 ) μ MMSI μ (INDIVIDUAL)

\_\_\_\_\_  
 ) MMSI μ \_\_\_\_\_ .  
 ) MMSI ( ) μ \_\_\_\_\_ .  
 \_\_\_\_\_ .

μ 15 μ  
 NATIONALITY CALL GROUP CALL  
 MMSI ( MMSI ) .

μ :

NATIONALITY CALL ( FLAG CALL )

1) μ MMSI  
Ø = μ DSC

2) μ 2 , 3 4 MID ( \_\_\_\_\_  
\_\_\_\_\_ ) ( MID = MARITIME ( NATIONALITY )  
IDENTIFY )

. . 0237 }  
0239 }

3) μ 5 ( ) , μμ  
μ DSC μ  
μμ .

\_\_\_\_\_!

DSC,  
MID

( . . 0237 0239 ).

μ

( CALL SIGN ),

μ

( . .

μ

SV\_\_ J4\_\_).

**2) (GROUP CALL)**

1) μ Ø, MMSI.

Ø =

2) μ 2, 3 4

..0 237

3) μ 5 ( ) , μμ

μ DSC μ ( . .

0237 x x x x x x x, x μ

μ ).

μ :

O μ μ μ ,

( ) μ

, μ

.

**2) (GEOGRAPHIC AREA CALL)**

=====

          !

( ) - ( ) ,

μ μ :



μ μ , . . . ,  
 , NAVAREA.

( ) - ( ) ,  
 μ ,  
 , μ μ μ μ ,  
 :

1) ( )

2) μ

μ μμ μ .

          μ :

μ 2):

μ μ μ μ μ

μ , μ μ

μ . . .

μ μ μ

.

μ μ ,

μ μ μ

μ , μ

DSC.

1)  $\mu$  (  $\mu$   $\mu$   $\mu$  )

2)  $\mu$   $\mu$  - (  $\mu$  )

$\mu$   $\mu$  ,  $\mu$   $\mu$   $\mu$   $\mu$

3)

=====

1)  $\mu$   $\mu$  «  
»

**O MF-DSC ME TA BA IKA**

**KIN YNOY**

|             |                      |  |
|-------------|----------------------|--|
| <b>EXIT</b> | <b>DISTRESS CALL</b> |  |
|             | DSC: ALL             |  |
| <b>POS</b>  | LAT: N 23° 23.3234   |  |
|             | LON: W 123° 23.3234  |  |
|             | POS: UTC: 12.34      |  |
|             | PUSH DISTRESS        |  |
|             | SSB DIST 2182.0 Rx   |  |
|             | 2182.0 Tx            |  |

2) \_\_\_\_\_ !

( «  $\mu$  » )

$\mu$  , .

μ 19

3) « »  
DSC .

4) μ ( μ “  
(DSC KAI INMARSAT) TO  
GMDSS

μ 20

« »

\_\_\_\_\_ :

\_\_\_\_\_ )

( ) μ ( μ )  
( ) .

( ) μ μ  
μ ( ) μ  
μ .

\_\_\_\_\_ !

μ  
μ , «ACKNOWLEDGMENT RECEIPT»  
μ μ , μ

μ

«ACKNOWLEDGMENT WAITING»

«ACKNOWLEDGMENT RECEIPT».

μ 16

μ

μ

μ

μ

μ

μ

,

μ

μ

(

)

.

( )

.

)

**(URGENCY CALL)**

( )

μ

μ

μ

.

                  !

,

μ

(

)

(URGENCY)).

( )

μ

(μ

)

μ

,

.

μ

μ

,

,

.

                  !

μ ( μ )  
, ( )  
( μ ) :  
) MMSI  
) μ  
) / μ  
) μ

μ ].  
( ) :  
- (PRIORITY) μ  
(URGENT)

μ 17

( § ), ,  
DSC ,  
( μ ) , μ \_\_\_\_\_,  
\_\_\_\_\_ (MF/HF/VHF) \_\_\_\_\_ ( BANDS )  
( ) [ μ ], μ  
\_\_\_\_\_ μ ,  
μ (μ  
μ ), μ μ  
μ , μ μ ,  
μ :  
)  
) μ

) μ DSC,  
μ μ  
( )

\_\_\_\_\_!

μ

[ DSC (MF/HF/VHF):  
)  
)

\_\_\_\_\_ (SAFETY CALL)

:

- 1) ( μ )  
μ
- 2) μ μ ,
- 3) μ μ μ
- 4) μ μ
- 5) μ μ μ / ( DSC  
)
- 6) μ μ μ μ μ « )  
(URGENT)»,  
μ ( μ ) μ μ

) \_\_\_\_\_  
**(PUBLIC CORRESPONDENCE)**

) μ  
( - . / »)

) μ (QSW) - μ

) μ μ μ

, (QSW).

)  
μ 21  
μ ( )

DSC , μ MF  
2177 INTERSHIP.

μ 22  
μ , (μ μ μ  
GMDSS), μ μ  
EGC INMARSAT, μ μ μ **FLEET**  
**NET**, ( μ μ ).

μμ μ  
(GROUP CALL), . . .

14 ]

INMARSAT

|   |
|---|
| <p><u>SES-INMARSAT</u></p> <p><u>(INDIVIDUAL CALLS FROM SHIP WITH SES-INMARSAT)</u></p> |
|---|

!

μ 1:

INMARSAT μ , SES-

μ .

) ( DISTRESS) LES

1) μ LES

2) μ ( μ μ

μ μ ), μ

, μ μ

DISTRESS μ μ

( . . ,



3) μ μ GA+ (TELEX)

μ ( H ),

4) μ , ( μ μ

μ RCC, μ μ

LES.

---

μ GMDSS,

μ μ μ μ

μ μ SES INMARSAT, μ

, μ μ μ μ

μ μ DISTRESS ( DISTRESS ALERT AUTO-CALL  
ACTIVATION BUTTON ).

:

, μ , , . . .

μ 2 :

μ μ μ μ

, ,

.

3) , μ

μ μ LES, μ

.

**2) RCC**

- 1) μ LES
- 2) μ 00 = μ
- 3) μ RCC
- 4) μ TELEX RCC
- 5) μ / .

**!** μ LES ( 1) , μ  
 ( «ACKNOWLEDGMENT  
 RECEIPT» μ DSC) , ) μ  
**GA+** μ μ LES μ μ ,

) μ μ μ ,

μ μ , μ LES,  
 μ μ μ RCC ( 2,3,4).

**μ 3:**

RCC

, μ . . .

**2) LES**

---

**(TWO DIGIT ACCESS CODE SERVICE CALLS)**

μ 4:

1) μ LES

) μ μ μ μ  
LES , μ μ

( LES μ μ .

) ØØ = μ μ

, μ

μ μ μ ,

μ

.

2) μ μ - LES (μ

GA+ μ ), μ ,

μ .

3) μ , μ

μ , ( . . μ μ GA+

15+

( μ « μ μ INMARSAT»),

μ μ QRV μ ,

μ μ μ μ ,

μ LES, . . .

!

μ 5:

(DISTRESS),

DISTRESS

LES

LES,

3)

INMARSAT

1) μ LES

2) μ 00 = μ

μ 6 :

GA+ . LES 00, μ

μ ( μ ) ,

. . 37 μ « » μ

3) μ μ TELEX μ

μ .

!

μ 7 :

37

00, μ μ μ

μ μ μ  
 .  
 μ ..  
 13, μ μ (OPERATOR)  
 μ ,  
 μ ( μ ) μ μ  
 μ μ , TELEX μ  
 ( , μ μ  
 INMARSAT ).

μ 8 :

μ μ μ  
 μ LES μ (G + .),  
 μ μ  
 , μ ,

4) μ .

μ 9 :

μ INMARSAT μ ,  
 .

**4) ME INMARSAT -SES**

- 1) μ LES ( μ GA+ ).
- 2) μ 00 = μ

3)  $\mu$  (  $\mu$   
 $\mu$  ),  
( ).

          !  
   $\mu$   10 :

(OCEAN REGIONS)

4)  $\mu$  (I.D.)  $\mu$  .

5)  $\mu$  (ANSWERBACK)  $\mu$   
 $\mu$  ,  $\mu$   $\mu$  .

1

**INMARSAT-LES**

**(GROUP CALL FROM INMARSAT LES TO SHIPS)**

μ ( μ )  
μ I MARSAT, LES μ SES  
( EGC).

          !  
μ 11:

EGC μ

SES INMARSAT,

μ μ , μ o  
μ μ EGC SES.

μ μ [

, μ MS

( , ) , μ INMARSAT ].

1 \_\_\_\_\_ , \_\_\_\_\_  
 \_\_\_\_\_  
**INMARSAT**  
 \_\_\_\_\_  
**(TWO DIGIT ACCESS CODE INMARSAT**  
**SERVICES)**

,  
 INMARSAT.

( μ μ μ LES) μ

,

.

\_\_\_\_\_ μ \_\_\_\_\_

00

μ

11

μ

12

13

μ

14

15

μ μ

21

22

( )

31

32

μ



33

37

/

38

$\mu$

39

$\mu$

41

42

$\mu$

43

$\mu$

SAR

91

92

$\mu$

$\mu$

MES

|                 |
|-----------------|
| <b>1) - KAI</b> |
|                 |
|                 |
|                 |
|                 |

**1) -** \_\_\_\_\_  
RCC- RESCUE COORDINATING CENTERS

**2) - KENT A** \_\_\_\_\_  
-  
\_\_\_\_\_ MEDICO CENTERS AND TELE-MEDICINE

**3) -** \_\_\_\_\_  
PILOT STATIONS

**4) - A X** \_\_\_\_\_  
PORT AUTHORITIES

**5) - A AKTO** \_\_\_\_\_  
COAST GUARD AUTHORITY

**6) - A** \_\_\_\_\_  
LIGHTHOUSE AUTHORITY

**7) - A** \_\_\_\_\_  
ICE REPORT SERVICE

**8) - E** \_\_\_\_\_  
VESSELS TRAFFIC STATION

**9) - E**  
SEPARATION LANE CONTROL STATION

**10) -**  
METEOROLOGICAL BROADCAST SERVICES

**11) - H**  
METEOROLOGICAL ROUTEING SERVICES

**12) - T**  
TUG STATION

**13) -**  
PORT CONTROL

**14) -**  
FIRE FIGHTING SERVICE

**15) - NAY**  
AVIGATIONAL SIGNALLING SERVICE

**16) - ( )**  
COAST RADIO STATIONS

[METEO – ROUTEING MESSAGES]

μ , μ μ  
, μ μ μ μ  
, μ μ ,  
μ ,  
μ  
( μ ) ,  
. μ  
μ μ  
.  
μ ( ,  
μ μ μ μ  
.  
μ , μ ,  
.  
:

1 μ

1] :  
( μ , , IMO number, , , ,  
 , [ ] , ,  
 . .)

2] μ / μ

3] μ / μ μ

4] μ μ ( μ / ), μ μ μ

5] μ ( μ , 12 , 24 , 36 )

6] ( , μ μ , μ μ μ )

7] ( μ )

8] ( μ )

9]

- μ [ , , ( μ )], [μ ]

- [ ],

- μ μ [ μ ]

-

- μ

-

10] :

] μ

]

] , , [

μ μ

μ . .],

, ..

μ μ [tsunami],

μ μ ,

μ

μ μ , μ

, ..

.

11] μ

( , μ , μ .]

12]

] -

] - [ ],

,

μ μ

,

μ .

l μ

1. /

\_\_\_\_\_

13] /

14]

15]

16]

17]

18]  $\mu$

19]  $\mu$ ,  $\mu$

20]  $\mu$ ,  $\mu$

$\mu$ , ( $\mu$   $\mu$ )

$\mu$ , ( $\mu$   $\mu$ ), ..

10 .

2.

---

---

21] [ $\mu$   $\mu$ ]

22]  $\mu$  /

23]  $\mu$

24] A

25]

26]  $\mu$   $\mu$

27]  $\mu$   $\mu$   $\mu$   $\mu$ ,  
, , , .

**[ RITIME SAFETY INFORMATIONS – MSI]**

MSI  
μ μ ,  
μ μ , μ  
μ .  
μ ,  
μ μ . .  
μ , μ , .

μ MSI, :

] μ  
]  
]

μ :

- 1] μ
- 2]
- 3]
- 4]
- 5]
- 6] μ μ
- 7] μ μ μ



MSI μ , μ  
 μ :

] - NAVTEX [ μ μ , μ μ  
 NAVTEX - ]  
 ] - μ ( μ μ , ) HF  
 (B ) μ ( DP) [ Narrow Band Direct  
 Printing ]

] - SAFETY NET [ μ , μ  
 μ μ μ  
 - GMDSS], [μ μ ,  
 μ μ ].

μμ METAREAS/ NAVAREAS  
 , μμ LES ( μ  
 μ INMARSAT ), ,

- μ MSI, :
- 1] μ
  - 2]
  - 3]
  - 4]
  - 5] μ
  - 6] μ
  - 7]
  - 8] μ

9]

10]

11]

/

12]

$\mu$

$\mu$

$\mu$  ,

, :

1]

$\mu$  [IMO]

2] O

$\mu$  [IHO]

3]

$\mu$

$\mu$

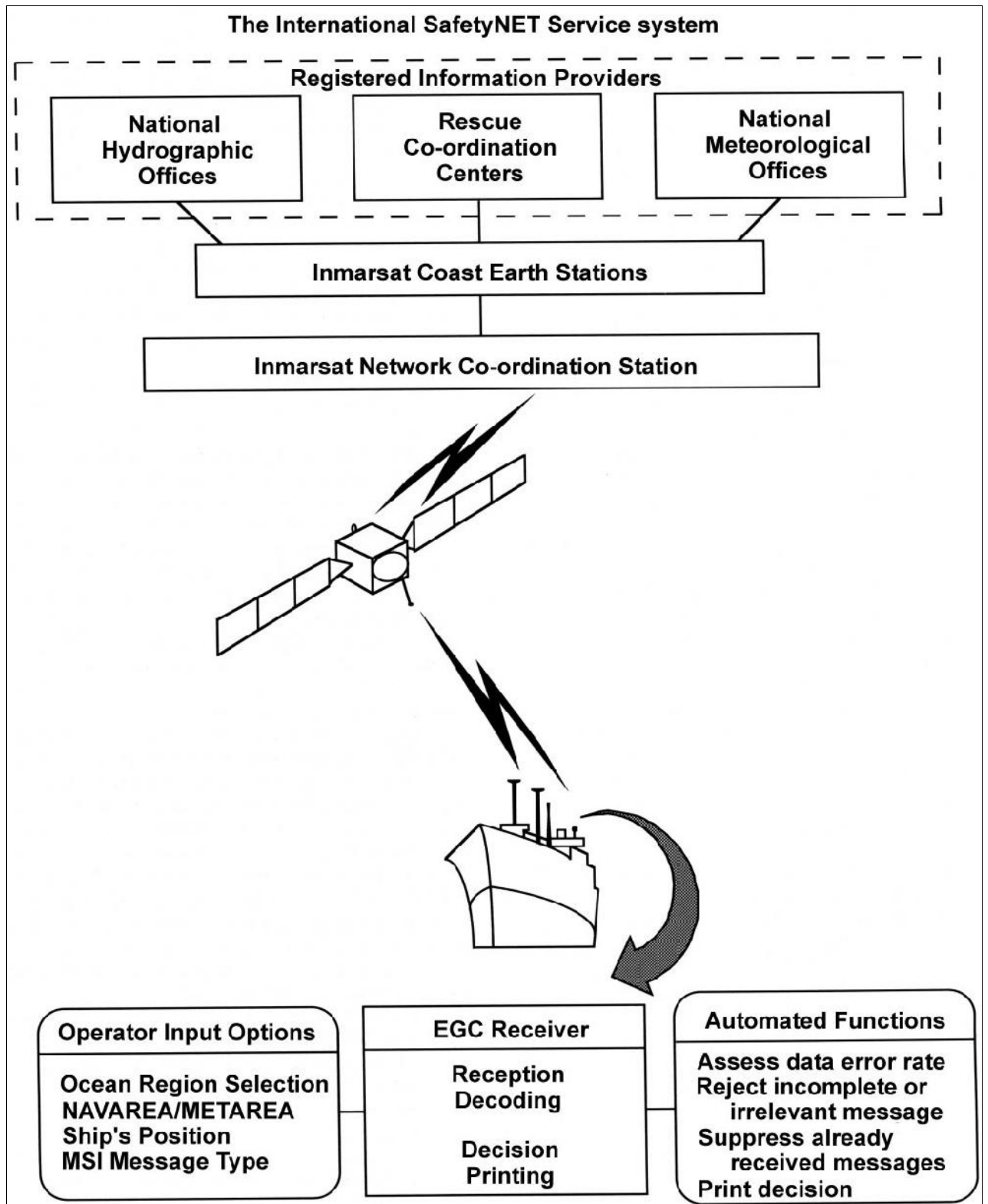
[WMO]

4]

$\mu$

$\mu$

[ L ], . . .



**NAVAREAS / TAREAS**

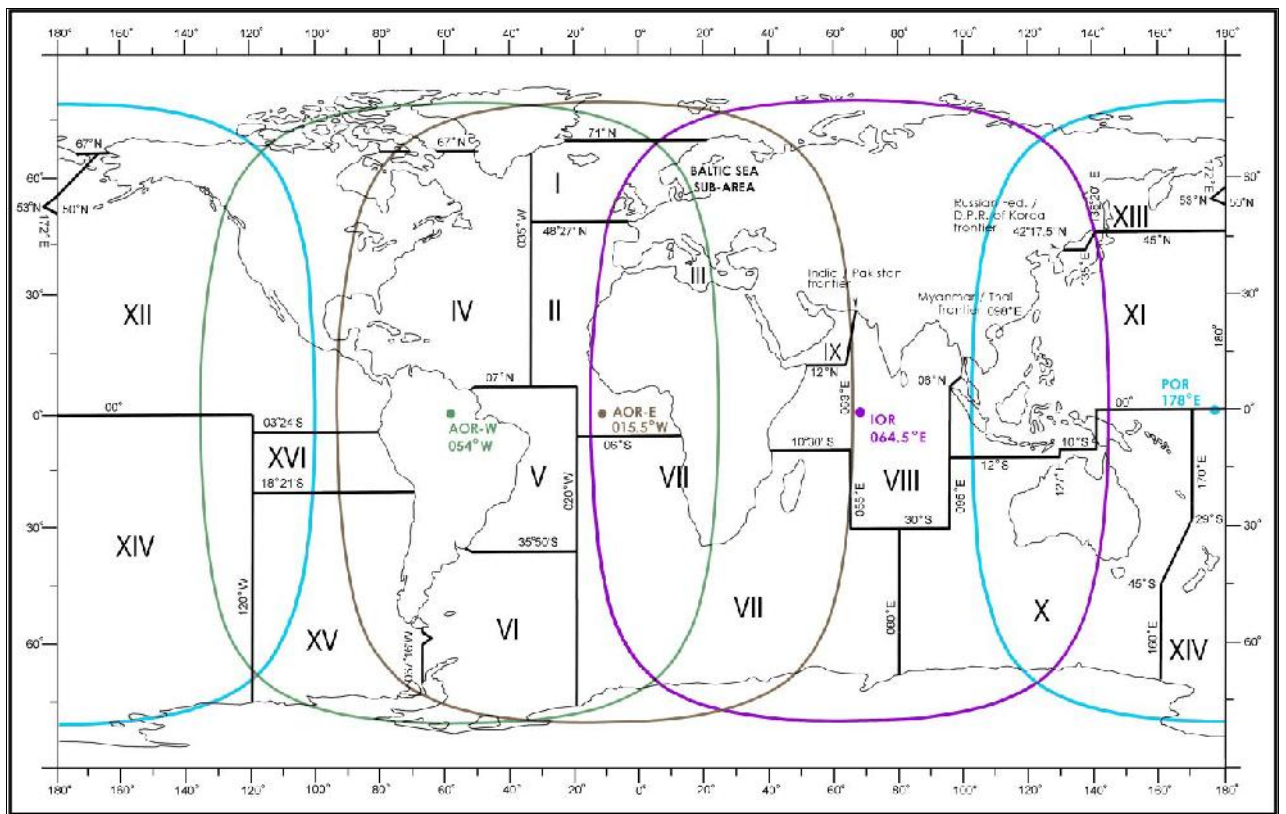
**MSI :**

**1) KA**

**MSI NAVAREAS /**

**TAREAS**

**2) INMARSAT**



| <u>/ NAVAREAS [ KAI</u>  |   |
|--------------------------|---|
| ]                        | , |
|                          |   |
|                          | , |
|                          |   |
|                          | , |
| <b>SafetyNET SERVICE</b> |   |

| <b>NAVAREA<br/>METAREA &amp;<br/>COORDINA-<br/>TORS</b> | <b>NAV<br/>&amp; WARNINGS</b> | <b>MET. FORECASTS &amp;<br/>WARNINGS</b> | <b>SAR<br/>ALERTS</b> | <b>OCEAN REGION<br/>FOR<br/>SCHEDULED<br/>BROADCASTS</b> |
|---|-------------------------------|--|-----------------------|--|
| I (UK)  | X                             | X  | X                     | AOR-E  |
| II (France)   | X                             | X  | X                     | AOR-E + AOR-W  |
| III (Spain/Greece)                                      | X                             | X  | X                     | AOR-E  |
| IV (USA)  | X                             | X  | X                     | AOR-W  |
| V (Brazil)  | X                             | X  | X                     | AOR-E  |
| VI (Argentina)  | X                             | X  | X                     | AOR-W  |
| VII (South Africa)                                      | X                             | X  | X                     | AOR-E + IOR  |
| VIII (India/Mauritius/<br>La Reunion )                  | X                             | X (Note 3 )                              | X                     | IOR  |
| IX (Pakistan)   | X                             | X  | X                     | IOR  |
| X (Australia)   | X                             | X  | X                     | IOR + POR  |
| XI (Japan/China)  | X                             | X  | X                     | IOR + POR  |
| XII (USA)   | X                             | X  | X                     | POR + AOR -W   |
| XIII (Russian<br>Federation)                            | X                             | X  | X                     | POR  |
| XIV (New Zealand)                                       | X                             | X  | X                     | POR  |
| XV (Chile)  | X                             | X  | X                     | AOR-   |
| W   |                               |  |                       |  |
| XVI (Peru/USA)  | X                             | X  | X                     | AOR + W  |

\_\_\_\_\_ μ \_\_\_\_\_ :

**O** \_\_\_\_\_ **MET / NAVAREAS** \_\_\_\_\_ μ \_\_\_\_\_ ,

\_\_\_\_\_ μ \_\_\_\_\_ , \_\_\_\_\_ μ \_\_\_\_\_

\_\_\_\_\_ , ( \_\_\_\_\_ μ \_\_\_\_\_

( \_\_\_\_\_ ( μ **XVI** ) ) \_\_\_\_\_

\_\_\_\_\_ μ \_\_\_\_\_ .

[WORLD - WIDE NAVIGATIONAL WARNINGS SERVICE -  
WWNWS]

WWNWS

μ [IMO] μ  
[IHO].

WWNWS,

, μ .

:

] μ NAVAREAS  
]  
]

WWNWS μ

μ μ :

[ 1 ] NAVAREAS

[ 2 ] NAVTEX

,

:

[ 3 ] - μ

[ 4 ] - , μ μ

( ) μ .

NAVTEX, μ NAVAREAS ,

NAVAREAS.

NAVAREA, μ

μ , [ NAVAREAS [ 1 ] [

2 ] NAVAREA ].

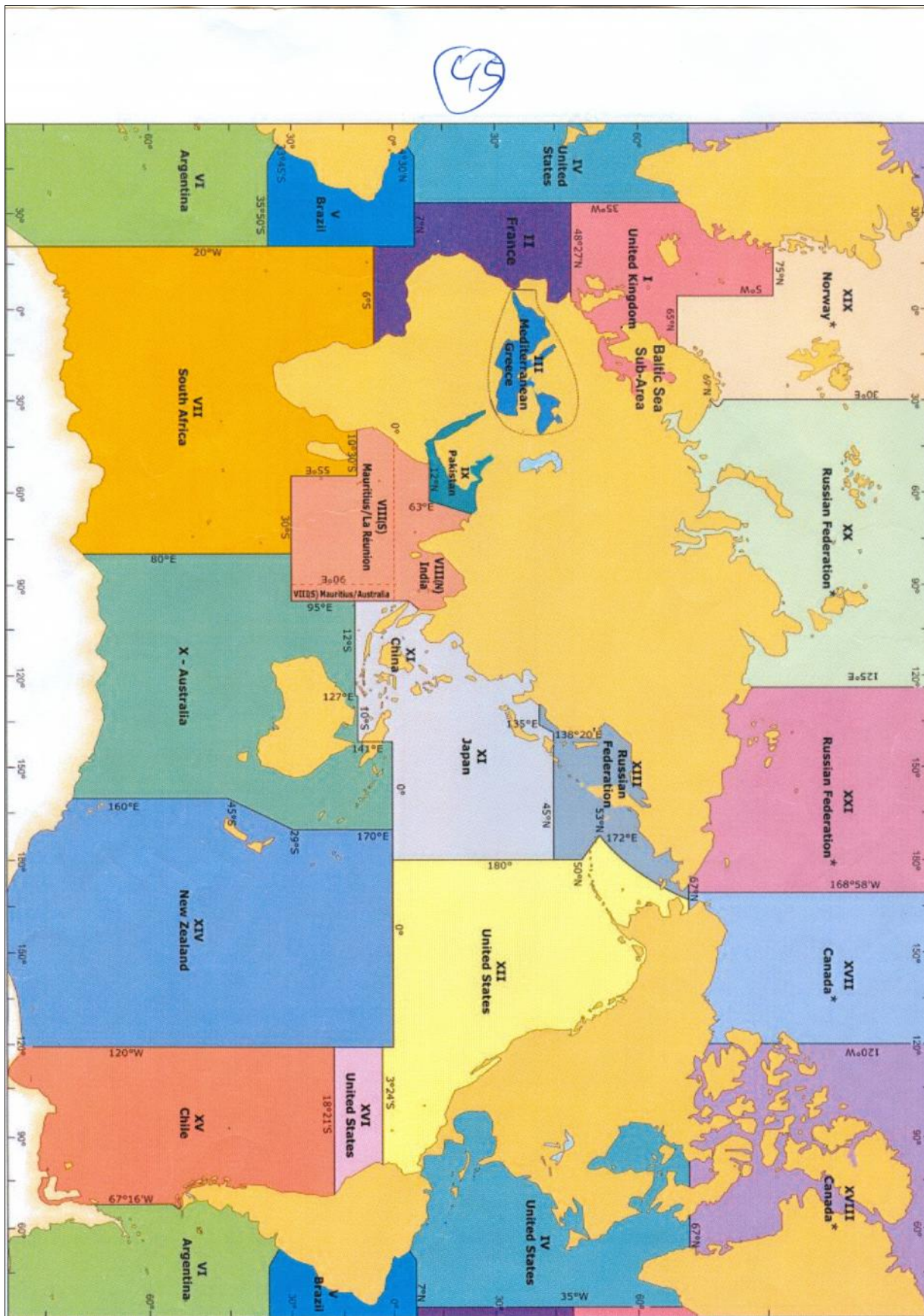
NAVAREAS [μ μ ], μ .

[ 3 ] [ 4 ],

NAVTEX, μ



59



O

:

1. μ , μ

μ μ

2.

3. , μ

μ μ μ

4. μ μ ,

, μ μ

5. μ

6.

, ,

7. μ , ,

8. μ μ ,

μ

9. - ,

10. - μ μ μ μ μ

μ

11. - μ

12. -  $\mu$

13. -  
,  $\mu$

14. -  $\mu$  ,

$\mu$

15. -  $\mu$   $\mu$

,  $\mu$

$\mu$

16. -  $\mu$   $\mu$   $\mu$

, ,

, ,

,  $\mu$  ,  $\mu$

....

17. -

$\mu$

μ / ,  
, μ [NAVAREAS,  
NAVTEX], μ  
.

:

1] μ MSG  
[ μ ] [ . . NAVAREA ONE 045, KERKIRA RADIO  
NAV. WNG 025].

2] μ  
[ . . MEDITERRANEAN EAST].

3] μ [ . . SOUTH  
AEGEAN SEA, SARONIKOS].

4] [ μ ] [ . . CHART INT 124].

5] μ μ MSG [ . . UNLIT,  
ADRIFTING BOAT].

6] μ , μ μ  
MSG [ , μ ].

7]

μ .

8]

μ

μ

μ

MSG [ μ μ =

, , μ , = , ,

].

μ 1

“ADMIRALTY OF RADIO SIGNALS”, Volumes

“GMDSS” “MSI”,

μμ μ :

1) - O NAVAREAS

2) - μ μ μ

3) - μ μμ NAVTEX

4) - μ o INMARSAT (

μ

( E G C ) SAFETY NET ) μμ

5) - μ

6) -

, ( μμ ), μ μ 1 - 6,

μ

μ VOLUMES, μ

,

μ μμ :

) - CES

) - LES

) - RCC

) - NCS

) -  $\mu$

SAR

) -  $\mu$   $\mu$  COSPAS- SARSAT, GMDSS, NAVTEX,  
INMARSAT, EGC, DSC, . .

) -  $\mu$  GMDSS (A1-A4)  $\mu$  DSC

$\mu$

) -  $\mu$  FACSIMILE

) -  $\mu$   $\mu$   $\mu$  ) - )

) -  $\mu$   $\mu$  SHIP REPORTING (SHIP -  
REP) SYSTEMS, . .

MSI μ SAFETY NET, μ μ  
 μ , μ μ -  
 - , GMDSS.  
 μ μ μ INMARSAT – C,  
 μ μ μ EGC  
 [ENHANCED GROUP CALL (SYSTEM)] [ μ μ  
 μ ].

μ EGC,

:

] μ  
 ] [ ]  
 ] μ  
 ] μ  
 ]

μ EGC , [

μ ] , μ .

] **SAFETY NET** [ μ

[MSI]

] To **FLEET** , [ μ

μ ] [ ]

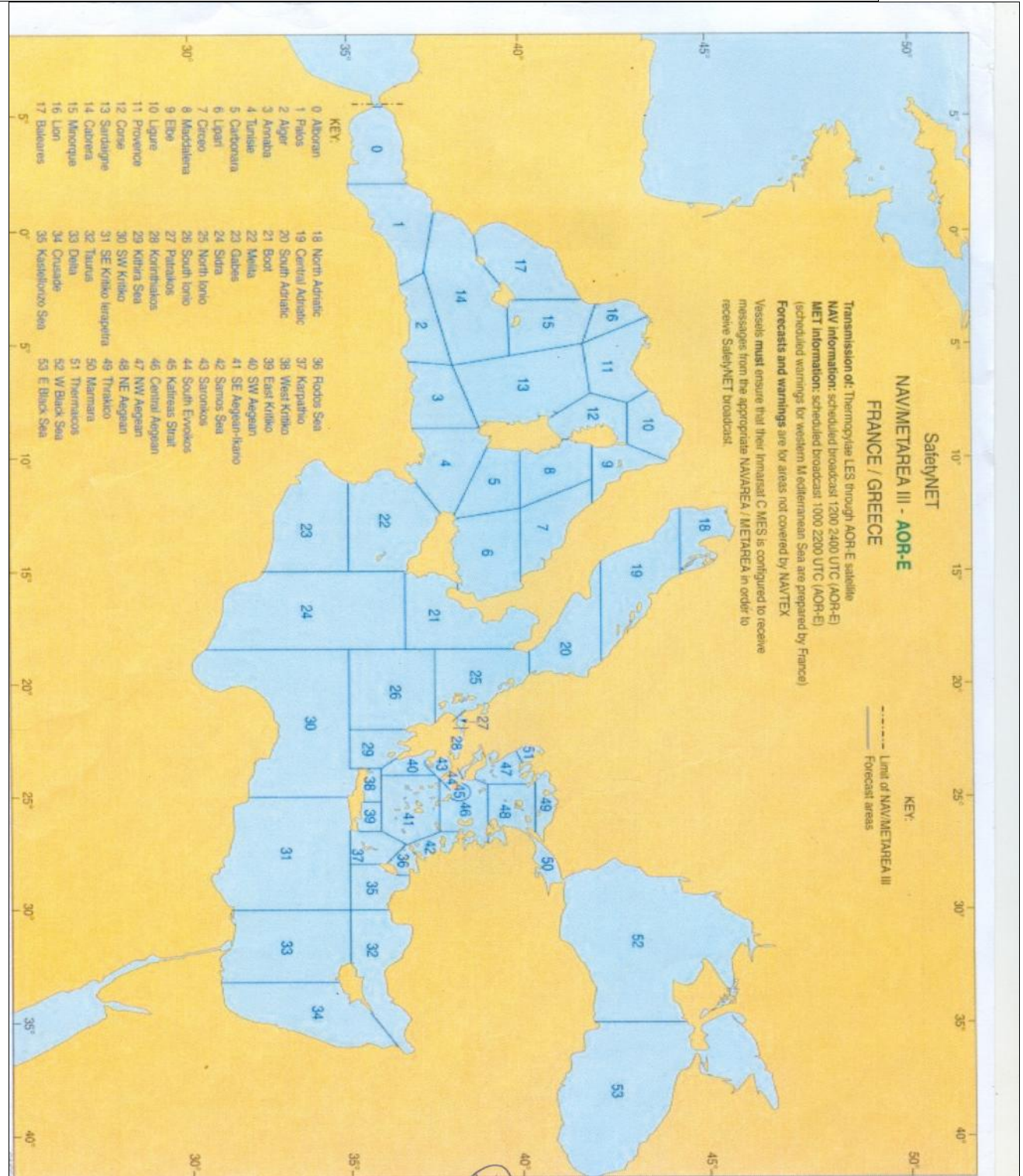
MSI μ SAFETY NET, :

]

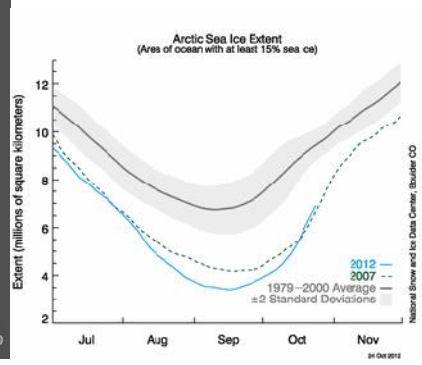
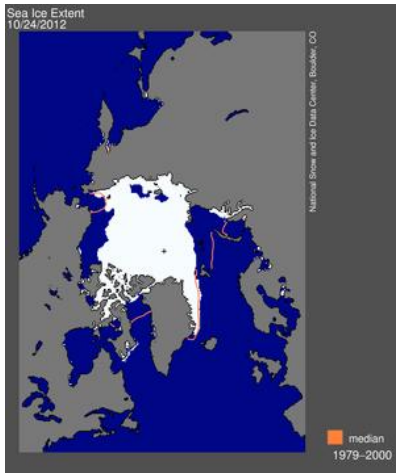
]
]
] μ μ
] [ / ]
] μ μ
] μ LORAN
] μ μ
] μ
]
]



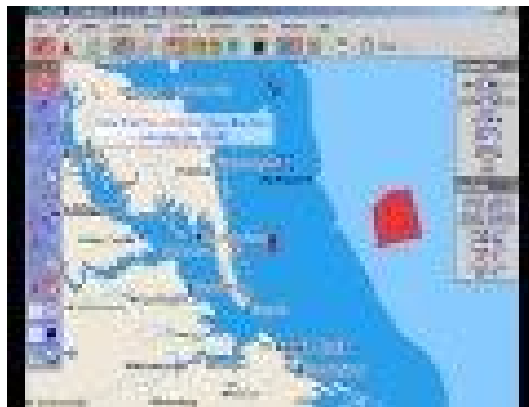
MSI,  
A.L.R.S “GMDSS  
“MSI



24 2021 μ



## ROUTEING SERVICE



# 21 ] VTEX

μ MSI μ NAVTEX,  
, μ  
,  
, :

**A -**

-

**C -**

**D -** μ μ

**E -** /

**F -** μ μ

**G -** μ AIS

**H -** μ LORAN

-

**J -** μ

**K -** μ

**L -** [ ]

**V -** μ  
μ [ μ μ

NAVTEX]

**W -** [ μ μ μ V]

**X -** [ μ μ μ V]

**Y -** [ μ μ μ V]

**Z -** [ μ μ ]



μ 1:

O μμ

NAVAREA ,

μμ ( μ Z )

μ μ NAVTEX NAVAREAS.

μ 2:

\_\_\_\_\_

\_\_\_\_\_ V \_\_\_\_\_ , \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ :

) \_\_\_\_\_ - ( μ )

\_\_\_\_\_ V \_\_\_\_\_ ,

—

) \_\_\_\_\_ - ( μ ) , \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ VTEX, \_\_\_\_\_

\_\_\_\_\_ NAVAREA.

21 ] \_\_\_\_\_ / \_\_\_\_\_

\_\_\_\_\_ , \_\_\_\_\_

\_\_\_\_\_

**GMDSS**

**A]**

- 1) \_\_\_\_\_ (URGENT SAFETY)
- 2) \_\_\_\_\_ ( . . SINKING VESSEL)
- 3) μ \_\_\_\_\_
- 4) μ \_\_\_\_\_ μ \_\_\_\_\_

**B]**

- 5) μ \_\_\_\_\_
- 6) \_\_\_\_\_
- 7) MMSI \_\_\_\_\_
- 8) I.D. ( ' \_\_\_\_\_ SES)
- 9) \_\_\_\_\_
- 10) \_\_\_\_\_
- 11) \_\_\_\_\_
- 12) ( μ \_\_\_\_\_ , \_\_\_\_\_ )
- 13) \_\_\_\_\_ ( \_\_\_\_\_ . .  
μ \_\_\_\_\_ μ \_\_\_\_\_ , μ \_\_\_\_\_ , . . . )

\_\_\_\_\_ ) μ ( \_\_\_\_\_ μ )

: 14) , ,

15)

16)  $\mu$

17)

18)  $\mu$   $\mu$  ,

19)

20) , ..

)  $\mu$

: 21)

22)

23)  $\mu$   $\mu$

$\mu$

24)  $\mu$  /  $\mu$

25)  $\mu$   $\mu$   $\mu$  ( § ])

26) -

-

-

$\mu$  / / ..

**22 ]** \_\_\_\_\_

[ ]

\_\_\_\_\_

\_\_\_\_\_ ( IV) ]

) μ :

μ μ μ . . . . ,

,

:

-

-

-

,

,

μ ,

, μ , μ μ

, μ .

μ μ :

) μ ,

) ,

) ,

) μ ,

) , μ ( , μ ,

...)

) , μ ,

μ , . . . .



μ μ  
, , :

1) μ «MAYDAY»

2) μ μ μ μ

μ ,

.

3) μ ( )

«S.O.S.» (SAVE OUR SALVES), ( μ

μ «DISTRESS» . . .)

4) μ C μ .

5) μ μ μ .

6) μ μ μ ( μ )

.

7) μ μ ,

( μ μ μ ) .

8) μ μ , μ μ

.

9) μ , μ

μ , ( )

.

10) μ μ μμ .

11) μ μ ( μ )

μ μ .

12) μ μ .

13) μ μ μ , μ μ

μ .

14) To μ μ , ( ) μ μ ( μ μ μ ), μ .

15) μ , μ μ , . μ . . . . : - μ / μ , / . - μ / μ μ .

μ :

μ , μ ( ) μ , (GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM - **GMDSS** ), μ SOS (SAVE OUR SALVES) μ μ μ . μ , μ : ) μ - μ μ , μ ) A.L.D.I.S. ( μ μ ) .

) μ μ

( μ ) μ .

) μ

:

- μ μ ,
- μ .

) μ :

μ μ ,

μ μ SOS :

) , μ ,

μ μ **«DISTRESS»**,

) μ ,

μ μ **«MAY-DAY»**.

μ μ μ

(PRIORITIES) , ,

:

] \_\_\_\_\_ :

- : SAFETY
- : URGENT
- : DISTRESS

] \_\_\_\_\_ :

- : SECURITE
- : PAN - PAN
- : MAY - DAY

[ ]

\_\_\_\_\_,  
\_\_\_\_\_  
\_\_\_\_\_

K

:

A] \_\_\_\_\_

**(DISTRESS ALERT)**

μ μ μ μ DSC  
( μ ) INMARSAT, μ  
μ  
μ GMDSS.

\_\_\_\_\_:

**( INMARSAT )**

**PRIORITY : DISTRESS**

**FROM: ID ( TO ID TOY KIN )**

\_\_\_\_\_ : ( \_\_\_\_\_ UTC )

**IN POSITION : ( TO \_\_\_\_\_ )**

**OCEAN REGION : ( \_\_\_\_\_ H \_\_\_\_\_ )**

**LES : ( O E \_\_\_\_\_ )**

\_\_\_\_\_ )

CLASS (KIND) OF (SUBSEQUENT) EMISSION : ( H TA

\_\_\_\_\_

\_\_\_\_\_

ATURE OF DISTRESS : ( H

\_\_\_\_\_ )

μ :

SES INMARSAT

\_\_\_\_\_ , \_\_\_\_\_ ,

μ \_\_\_\_\_ μ \_\_\_\_\_ .

\_\_\_\_\_ μ \_\_\_\_\_ , (

\_\_\_\_\_ ) μ \_\_\_\_\_

\_\_\_\_\_ μ \_\_\_\_\_

\_\_\_\_\_ .

( \_\_\_\_\_ DSC )

PRIORITY : DISTRESS

FROM: MMSI (TO MMSI TOY KIN \_\_\_\_\_ )

\_\_\_\_\_ : ( \_\_\_\_\_ UTC )

IN POSITION : ( TO \_\_\_\_\_ )

P OF CALL : ( ( \_\_\_\_\_ )

EAN \_\_\_\_\_ (KAI O

KA \_\_\_\_\_ )

CLASS (KIND) OF (SUBSEQUENT) EMISSION : ( H TA

\_\_\_\_\_

\_\_\_\_\_

ATURE OF DISTRESS : ( H \_\_\_\_\_ )

1  
( CKNOWLEGEMENT OF RECEIPT DISTRESS ALERT )

μ :

H , μ μ  
μ

B :

ACKNOWLEDGEMENT ( ACKN ) RECEIPT DISTRESS  
ALERT

1 K  
( DISTRESS CALL )

( - μ μ  
μ - )  
μ .

:

MAYDAY ( X 3 )  
THIS IS ( ONOMA OIOY  
\_\_\_\_\_ ID )( X 3 )

1 MYNHMA

( DISTRESS MESSAGE )

μ μ (μ )

\_\_\_\_\_ :

MAYDAY ( X 1 )

THIS IS ( ONOMA OIOY

ID )

P SITION ( )

AT TIME ( UTC )

COURSE ( )

FIRE IN ENGINE ROOM, UNDER CONTROL.

DUE TO HIGH SEA CONDITIONS.

REQUIRED IMMEDIATELY FIRE FIGHTING AND

SEARCH

AND RESCUE ASSISTANCE FORCES SCENE

REGION.

OVER

\_\_\_\_\_ ( \_\_\_\_\_ )  
\_\_\_\_\_ )

( CKNOWLEGEMENT OF RECEIPT DISTRESS CALL AND DISTRESS MESSAGE )

H , μ ,  
μ μ , ,  
\_\_\_\_\_ :

MAYDAY ( X 1 )

( ONOMA

\_\_\_\_\_ ID KIN ONTOS OIOY )

THIS IS

( ONOMA

\_\_\_\_\_ ID OIOY, OY

\_\_\_\_\_ )

RECEIVED MAYDAY



1 \_\_\_\_\_

**(DISTRESS ALERT RELAY)**

μ μ ,  
( ) μ .

\_\_\_\_\_ :

**DISTRESS ALERT RELAY ( X 1 )**

**( ONOMA**

**ID KIN ONTOS OIOY )**

( \_\_\_\_\_  
\_\_\_\_\_ μ \_\_\_\_\_ )

=====

1 \_\_\_\_\_

**( CKNOWLEDGEMENT OF RECEIPT DISTRESS ALERT RELAY)**

μ ( ) ,  
μ μ  
μ .

**DISTRESS ALERT RELAY ( X 1 )**

**( ONOMA**

**ID KIN ONTOS OIOY )**

**(**

**μ**

**CKNOWLEDGEMENT OF RECEIPT DISTRESS ALERT  
RELAY**

**] E ( )**

**( SILENCE )**

**μ**

**, (**

**μ**

**,**

**( )**

**,**

**( μ )**

**μ**

**.**

**MAYDAY ( X 1 )**

**ALL STATIONS ( C Q )( X 3 )**

**THIS IS ( DE ) ( ONOMA OIOY**

**EITE/KAI MMSI TOY Y)( X 3 )**

**( μ**

**μ RCC ):**

**ONOMA RCC ONOMA H/KAI**

**-**

**( X 3 )**

AT ( UTC )

FOR M/V ( ONOMA \_\_\_\_\_ )

KIN Y \_\_\_\_\_ )

SILENCE D \_\_\_\_\_

1 \_\_\_\_\_

( SILENCE FINI )

μ ( , , )

μ , ,

\_\_\_\_\_:

MAYDAY ( X 1 )

ALL STATIONS ( C Q )( X 3 )

THIS IS ( DE ) ( ONOMA OIOY \_\_\_\_\_

\_\_\_\_\_ EITE/KAI MMSI TOY Y )( X 3 )

( \_\_\_\_\_ μ \_\_\_\_\_ )

\_\_\_\_\_ μ RCC ) :

ONOMA RCC ONOMA H/KAI \_\_\_\_\_

\_\_\_\_\_ -

\_\_\_\_\_ ( X 3 )

AT ( UTC )

**FOR M/V ( ONOMA \_\_\_\_\_ )**

**KIN Y \_\_\_\_\_ )**

**SILENCE FINI)**

**1 \_\_\_\_\_**

**(MEDICAL ADVICE)**

**μ \_\_\_\_\_ :**

E \_\_\_\_\_ μ μ  
\_\_\_\_\_, \_\_\_\_\_ μ \_\_\_\_\_,  
\_\_\_\_\_.  
\_\_\_\_\_.  
\_\_\_\_\_ μ \_\_\_\_\_, \_\_\_\_\_ μ (μ  
μ ) μ \_\_\_\_\_ μ RCC ( \_\_\_\_\_ ), \_\_\_\_\_ μ  
\_\_\_\_\_, μ \_\_\_\_\_ μ  
- [ LE-MEDICAL ASSSISTANCE  
SERVICE ]

**\_\_\_\_\_ :**

**PAN PAN ( X 3 )**  
**ONOMA \_\_\_\_\_ RCC ( X 3 )**  
**THIS IS ( ONOMA OIOY \_\_\_\_\_**  
**\_\_\_\_\_ ) ( X 3 )**  
**P SITION ( \_\_\_\_\_ )**

**REQUIRED MEDICAL ADVICE,**  
**OVER**

1  
**(MEDICAL ASSISTANCE)**

... μ , (

DICAL TRASPORT ),

,

(DOCTOR EMBARKATION ON BOARD), . . .

\_\_\_\_\_ :

**PAN PAN** ( X 3 )

**ALL STATIONS** ( X 3 )

**MEDICAL** ( X 1 )

**THIS IS (ONOMA OIOY**

\_\_\_\_\_ ) ( X 3 )

**P SITION (** \_\_\_\_\_ )

**COURSE (** \_\_\_\_\_ )

**SPEED (TA** \_\_\_\_\_ ) , . . .

**REQUIRED MEDICAL ASSISTANCE IMMEDIATELY**

**TRASPORT BY HELICOPTER AN IJURED CREW**

**MEMBER**

23 ]

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ , \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ :

\_\_\_\_\_

\_\_\_\_\_

μ

μ μ , :

\_\_\_\_\_ :

μ μ ,

μ μ μ μ \_\_\_\_\_

\_\_\_\_\_ , μ ,

\_\_\_\_\_ . ..

\_\_\_\_\_ :

- μ μ ( \_\_\_\_\_

μ \_\_\_\_\_

\_\_\_\_\_), μ

INMARSAT,

μ

μ GMDSS.

---

---

---

---

---

---

---

---

---

---

---

---

GPS->SES, DSC, AIS, AIS/SART, ARPA/BRS, ECDIS

GYRO->SES, DSC, AIS, AIS/SART, ARPA/BRS, ECDIS

AIS-> AIS/SART, LRIT, ARPA/BRS, ECDIS

BAROMETER

WIND METER / INDICATOR

LOG SPEED

ECHO SOUNDER

COURSE RECORDER

AIS, ARPA, ECDIS

HYGROMETER

THERMOMETER

ECDIS



!! ,  
 μ  
 μ ,  
 μ :

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_ μ \_\_\_\_\_
- 3) \_\_\_\_\_ μ \_\_\_\_\_

1] \_\_\_\_\_ - COMPASS

( μ  
 μ ),  
 μ .  
 μ μ μ  
 , μ , .



μ , μ ,  
 :  
 ( ) \_\_\_\_\_ - (MAGNETIC COMPASS)

, μ  
 .  
 ( ) \_\_\_\_\_ - (GYRO-COMPASS)  
 , μ ,  
 μ (μ

),  $\mu$   $\mu$  ,

( ) \_\_\_\_\_ ( ) \_\_\_\_\_

– (AUTO-PILOT COMPASS)

,  $\mu$   $\mu$   
,  $\mu$  ,  $\mu$   
,  $\mu$   $\mu$   $\mu$  ,  
 $\mu$   $\mu$  .

( ) \_\_\_\_\_ -

(REFLECTOR COMPASS)

,  $\mu$

.  
,  $\mu$   
, , .



( ) \_\_\_\_\_ - (LIQUID COMPASS)

, μ (μ μ), μ μ ( μ μ), μ

( ) \_\_\_\_\_ - (DRY COMPASS)

, μ μ . μ

|               |
|---------------|
| _____ μ       |
| ( ' ) _____ , |
| _____ .       |

( ) \_\_\_\_\_ - (STEERING COMPASS)

μ , .

( ) \_\_\_\_\_ - (STANDARD COMPASS)

— μ μ μ .

( ) \_\_\_\_\_ - (EMERGENCY COMPASS)

μμ μ μ .

( ),  $\mu$   $\mu$  .

( ) \_\_\_\_\_ – (LIFE BOAT COMPASS)

$\mu$  ,  
 $\mu$  .

( ) \_\_\_\_\_  
 $\mu$   $\mu$  ,  
 $\mu$  .

( ) ( ) \_\_\_\_\_ (HAND COMPASS)  
 $\mu$   $\mu$  ,  
 $\mu$  ,  $\mu$   
 $\mu$   $\mu$   $\mu$  , .  
 ,  $\mu$  ,  $\mu$   
 .

**COMPASS - GPS**



2] \_\_\_\_\_ -

**MANUAL STEERING GEAR**

μ μ , .

,

.

μ ( )

μ μ

μ ( μ

), , . . . .



3] \_\_\_\_\_ - AUTO PILOT

μ μ  
 , μ  
 μ , μ μ μ  
 , μ μ  
 μ .



4] \_\_\_\_\_ ( \_\_\_\_\_ ) =

EMERGENCY STEERING GEAR

μ ,  
,  
μ , μ  
μ ( EMERGENCY  
STEERING GEAR ROOM ) μ

.  
μ  
μ .

, μ  
E. S. G. R. .  
O E. S. G. R.

μ ,  
μ  
μ

μ , , μ  
( μ , E. S. G.  
.





## 6] ARPA

μ μ RADAR, μ  
μ μ , μ  
, μ , μ  
, μ ( μ  
, μ ), μ  
, μ ,  
..

## ARPA - RADAR FOR NAVIGATION



## 7] \_\_\_\_\_ - (BRIDGE SIMULATOR)

μ  
μ μ , μ ,  
μ ARPA ,  
μ μ μ , μ

μ , μ μ  
μ μ .



8] \_\_\_\_\_ -  
**(G.P.S. – GLOBAL POSITION (FINDING) SYSTEM)**

μ  
μ , μ μ  
μ , μ  
μ , , ,  
μ , . . .

**GPS NAVIGATOR**



## GPS RECEIVER ANTENNA



## DGPS NAVIGATOR



## DGPS RECEIVER ANTENNA



## 9] NIGHT VISION OBSERVER SYSTEMS

, μ  
μ , MONITOR μ  
, , :  
( ) ,  
( ) .

## NIGHT VISION OBSERVER SYSTEMS



24 ]

---

---

---

1]

### STEERING ANGLE INDICATOR

,  $\mu$  (  $\mu$  ,  $\mu$  ) ,



2]

## COURSE INDICATOR

μ

.

,

μ μ μ

( GPS ), (

μ ) μ

GPS

,

( AIS, ARPA, . . ).



3]

## COURSE RECORDER

, μ .



4]

---

## MAGNETIC/GYRO REPEATERS

μ

,

,

.



5]

---

## ECHO SOUNDER

μ

,

μ

μ

,

,

μ

.

## ECHO SOUNDER



## 6] HXOBO I TIKH

### Y (SONAR)

E μ , μ

μ

ECHO SOUNDER, μ μ ‘ .

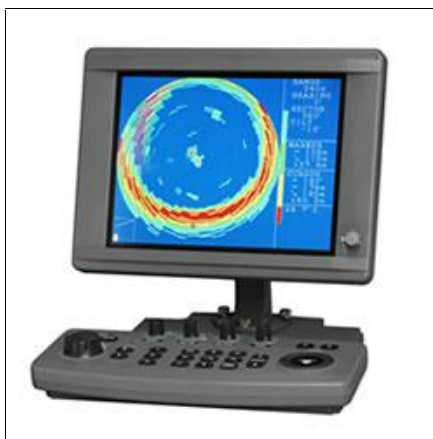
RADAR ,

μ μ μ μ

μ , , μ

, . .

### TY SONAR





7] \_\_\_\_\_

### SPEED LOG

μ μ  
, ( )  
, μ μ μ .

### SPEED LOG



8] \_\_\_\_\_ / \_\_\_\_\_

### WIND INDICATOR

μ μ ,  
μ ,  
μ .  
μ μ μ  
μ .

---

---

**LARM**

---



9] \_\_\_\_\_

**BAROMETER**

=  
μ .



**10]**

**BAROGRAPH**

, ( )  
μ μ μ μ  
μ μ .



**11]**

**CLINOMETER**

,  
( ), .



**12]** \_\_\_\_\_

## **HYDROMETER**

$\mu$   
 $\mu$                        $\mu$  ,                       $\mu$



**13]** \_\_\_\_\_

## **THERMOMETER**

μ ( μ , μ ).



**14] XRONO**  
**CHRONOMETER**

μ μ  
, μ .  
( ,  
) .  
μ μ ,  
.  
μ μ μ  
μ .  
, μ  
, μ μ

μ

## XRONO



μ , μ :

1] **RADAR**

2] **ARPA**

3] **ECDIS**

4] μ μ

1,2 3, μ μ ,

μ μ

μ μ

[( ) , , .]

,

μ ,

μ ,

, μμ :

1]

2]

3]

-

-

-

- μ , .

4]                     $\mu$

5]



**RADAR**

] \_\_\_\_\_

- 1]
- 2]
- 3]
- 4]
- 5]
- 6]

] \_\_\_\_\_ [ \_\_\_\_\_ ]

- 7]
  - 8]
  - 9]
  - 10]
  - 11]
  - 12]
  - 13]                       $\mu$                        $\mu$
- , . . .

] \_\_\_\_\_

- 14]
- 15]
- 16]                      [                      ,                      ,                      ,
- ,                      ],
- 17]     $\mu$      $\mu$

]

---

---

1]  $\mu$

2] [ ]

3]

4]

5] [ ]

6]

7] [ ] [CLOSEST

POSITION OF APPROACH - CPA]

8]  $\mu$  CPA

[TIME TO CPA]

9]  $\mu$

10]  $\mu$   $\mu$   $\mu$   $\mu$

$\mu$

11]  $\mu$  [ CPA

TCPA,  $\mu$   $\mu$   $\mu$

]

12] /  $\mu$   $\mu$

]

---

---

13]

14] [ , , ]

15]  $\mu$   $\mu$

16]  $\mu$  /  $\mu$

[AUTOMATIC IDENTIFICATION SYSTEM]

To S μ μ  
 ,  
 μ μ μ μ  
 , ,  
 ,  
 μ , μ μ ,  
 .  
 μ  
 ,  
 AIS, :

- GPS
- RADAR, ARPA, BRIDGE SIMULATOR, ECDIS
- GYRO
- AUTO PILOT
- WIND METER / INDICATOR, . .

μ μ , μ  
 VDR .

] ,  
AIS, .

O μ AIS  
, :

1] H μ \_\_\_\_\_  
( 1- 36 ), μ \_\_\_\_\_  
\_\_\_\_\_

2] \_\_\_\_\_ , \_\_\_\_\_  
\_\_\_\_\_ μ ( . . . )  
\_\_\_\_\_ )

3] \_\_\_\_\_ AIS, μ , \_\_\_\_\_  
\_\_\_\_\_ ( VTS )

μ μ  
AIS, :

1 \_\_\_\_\_

- 1] μ
- 2]
- 3] IMO number
- 4] I.D. INMARSAT
- 5] MMSI
- 6]
- 7]
- 8]

9]

10]  $\mu$

11]

12]  $\mu$  [  $\mu$  ]

13] [  $\mu$   $\mu$  ]

14]

15]

16]  $\mu$

---

---

]

17]

18]

19]

20]

---

---

]

21]  $\mu$  [ ]

22]  $\mu$   $\mu$

23] [  $\mu$  ]

---

---

]

24] [  $\mu$  , ]

25]  $\mu$  [  $\mu$  , ]

26]  $\mu$

27]

28] [ S ]

29] [ AIS ]

30]  $\mu$   $\mu$

31]  $\mu$   $\mu$

1

32]  $\mu$  [ , ]

33]  $\mu$   $\mu$  [ , ]

34]

35]  $\mu$  [ , ]

36]

AIS  $\mu$  VHF 161.975 MHz  
162.025 MHz

$\mu$   $\mu$  ,  
20  $\mu$ .

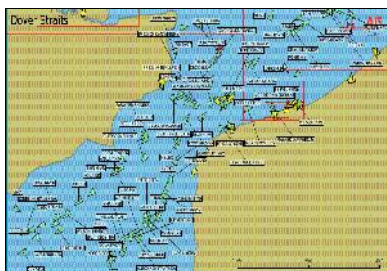
AIS



---

ECDIS

ME AIS



KENT O VTS

ME AIS

RADAR



[ELECTRONIC CHART DISPLAY AND  
INFORMATION SYSTEM - ECDIS]

μ E C D I S,  
μ μ μ  
[A R P A], μ [BRIDGE SIMULATOR],  
μ ,  
μ . μ μ μ  
μ PLOTTERS + ARPA .  
T μ  
μ , :

] RP

μ :

R P A

] CDIS

1]

---

---



( ) \_\_\_\_\_ :

- $\mu$
- $\mu \mu$
- 
- 
- 

( ) \_\_\_\_\_ :

- $\mu$
- 
- 
- 
- $\mu$  ,

( ) \_\_\_\_\_ :

- $\mu$
- $\mu \mu$ 
  - $\mu \mu$
  - 
  - $\mu$
  - $\mu$

( ) \_\_\_\_\_

\_\_\_\_\_

$\mu$  , , ,  $\mu$

$\mu$

$\mu$  [            ]             $\mu$  [  $\mu \mu$  ].

( ) \_\_\_\_\_

( 1)            (            )

- $\mu$  [            ,            ]
- ,            . . . .
- $\mu \mu$  [             $\mu$  ,             $\mu$  ]
- $\mu$             , . . . .

( 2)            (            )

,             $\mu$  ,            . . . .

2] \_\_\_\_\_

:

- 1)  $\mu$
- 2)
- 3)
- 4)
- 5)
- 6)  $\mu$              $\mu$
- 7)  $\mu$ 
  - 
  - $\mu$
  - /             $\mu$

- $\mu$   
 $\mu$  , ...

8)

- $\mu$   $\mu$  [ ]
- 
- 
- 
- $\mu$   $\mu$
- $\mu$
- [ . .
- , , , . . . ]
- 
- 
- $\mu$  ,  $\mu$
- $\mu$  [ ] , ,
- ,
- . . .
- 
- 
- ,  $\mu$  ,
- . . .
- 
- $\mu$

9) E

• μ

-  
-  
-

• μ

-  
-  
-  
-

- , μ ,

- μ

- , μ μ ,

- μ

- , μ

- μ , μ , ,

,

- , ,

• [ , μ μ ,

μ ]

• [ . . ,

μ , μ μ , μ

, [ . . μ

μ ,

μ μ ], μ

$\mu$   $\mu$  ,  
 . . . ]  
 • [ ] [ ,  
 , , ,  $\mu$  ,  
 $\mu$  . . .  
 •  $\mu$  ,  $\mu$   
 [ ]  $\mu$   
 •  $\mu$   
 ,  $\mu$  . . . ,  
 [ . . . ]  $\mu$   
 $\mu\mu$  [tsunami],  $\mu$   $\mu\mu$  ,  
 $\mu$   $\mu$  ,  $\mu$   
 , . . . ].

10)

$\mu$  ,  $\mu$  , , ,  
 $\mu$  , ,  $\mu$   $\mu$  , . . . ].

11)

.

12)

$\mu$  ,

,

.

$\mu$  1

ECDIS, μ μ μ ECDIS,  
μ μ μ μ  
μ , μ , . . .

**RADAR ECDIS**



**CHART RADAR**



**COLOR PLOTTER**



30 ]

---

---

---

[ ]

---

---

- 1]  $\mu$   $\mu$  .
- 2]  $\mu$  .
- 3]  $\mu$  .
- 4]  $\mu$  .
- 5]  $\mu$   $\mu$  .
- 6]  $\mu$   $\mu$  .
- 7]  $\mu$   $\mu$   $\mu$  .
- 8]  $\mu$   $\mu$  .
- 9]  $\mu$  ( )
- 10]  $\mu$   $\mu$
- 11]  $\mu$  ( ) .
- 12]  $\mu$   $\mu$  ( ) .
- 13]  $\mu$  ,
- 14] ( ) .
- 15]  $\mu$  .
- 16]  $\mu$  :
- ( )
- $\mu$  ( $\mu$ )  $\mu$  .

17]

μ :

-

-

18]

, :

-

-

-

-

19]

/

/

.

20]

( :

μ ,

,

,

, μ

μ

μ ).

21]

μ

.

[ ]

μ

μ

,

μ

(

),

,

:

1] \_\_\_\_\_ ( ) \_\_\_\_\_ :

1 ) ( )



1) ( μ ),  
 ( μ μ ,  
 , . )

1) μ ( μ μ , μ . . )

2] μ : μ  
 • μ  
 • :  
 - μ  
 - μ μ ,  
 μ μ μ μ

3] μ μ , ,

] .  
 4] \_\_\_\_\_ μ μ ,  
 , ( . ) μ ,  
 μ μ . )

5] \_\_\_\_\_ μ μ  
 :  
 5 ) •  
 5 ) • / μ  
 5 ) • ( )  
 5 ) •

5) • μ  
5') • μ

6] μ μ μ μ ( μ , μ 5)

5), μ μ , μ μ

( ) μ ... μ μ μ ,

μ , μ .

7] \_\_\_\_\_ μ μ , :

-( )

-

- μ

- μ μ

8] μ μ μ :

8) -

8) - : - μ

- μ

, μ :

• - μ μ

• - μ .

μ 1

μ μ μ μ , ( μ μ 1] 8 ), μ , μ μ

:

•

μ

•

.

μ μ

μ , μ , μ μ μ μ μ

.

μ 1 :

, μ

, μ :

• μ

• μ

• μ .

μ , μ

μ , μ ,

, μ , μ μ

( μ ), μ

μ μ , μ

μ μ

μ .

,

μ 2 :

μ , ' μ

, .. , ..

μ , μ μ μ μ

( μ μ μ μ

μ ):

-

- μ .

μ :

- , , μ

- μ

- μ •

•

, μ .

μ μ ,

μ μ μ μ

μ ,

μ .

μ μ ,

, μ

μ , μ .

1] \_\_\_\_\_, :

- 
-

•  $\mu$   
 $\mu$  :  
 -  
 -  
 -  $\mu$  ,  
 (  $\mu$  ) ,  $\mu$   
 $\mu$  ) , :  
 ) :  
 :  
 : ,  
 -  
 - ,  
 $\mu$  .  
 ) ( ) ,  $\mu$   $\mu$   
 .  
 2] \_\_\_\_\_ , )  $\mu$  /  
 , .  
 3] \_\_\_\_\_  
 $\mu$  ( ) ,  $\mu$   $\mu$   
 $\mu$   $\mu$  , ( ,  
 ) 1] 2] ,  $\mu$  ( )  
 $\mu$  .

---

---

---

---

\_\_\_\_\_:

, ( μ  
μ ) μ  
, :  
) ,  
) μ ,  
) μ μ ,  
) , , ,  
μ , , ,  
) μ  
, , ,  
) μ , ,  
, μ , μ  
μ , μ , μ  
μ , μ , μ  
μ , μ , μ

$\mu$  ,  $\mu$   
 .  
 $\mu$  ,  $\mu$   
 , ...  $\mu$   $\mu$   
 ,  $\mu$  ,  
 ( ) ,  
 $\mu$   $\mu$  , , .. ( )  
 $\mu$  , .. ( ..  $\mu$   $\mu$   
 -  $\mu$  , .. ).  
 , ..  $\mu$   $\mu$   
 / ,  $\mu$  ,  $\mu$   
 ,  $\mu$   
 $\mu$  , ,  
 , (  $\mu$  ) ,  
 $\mu$   $\mu$  ,  $\mu$   
 , .  $\mu$  ,  $\mu$   
 .  


---

 $\mu$   


---

 $\mu$   


---

 $\mu$   $\mu$  .

1 μ

μ , μ  
 μ μ , , .  
 , μ μ μ :

μ :

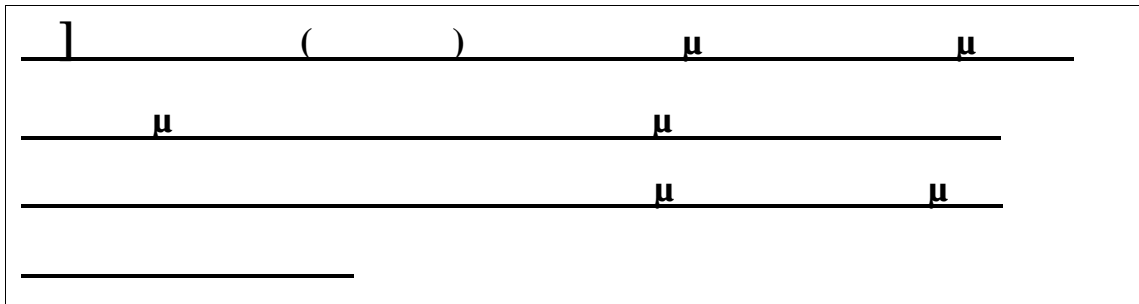
- ) μ μ .
- ) μ .
- ) μ μ
- , μ .
- ) μ
- ) μ ( μ μ )
- μ , μ ( , μ μ )
- μ μ )
- .., μ
- , μ
- μ .

μ :

- ) μ μ .
- ) μ μ
- .
- ) μ
- μ .



)                    μ    (            μ            μ )  
 μ , μ    (            ,  
 μ    μ )  
 . . ,            μ ,            μ  
 ,  
 μ            μ                    .

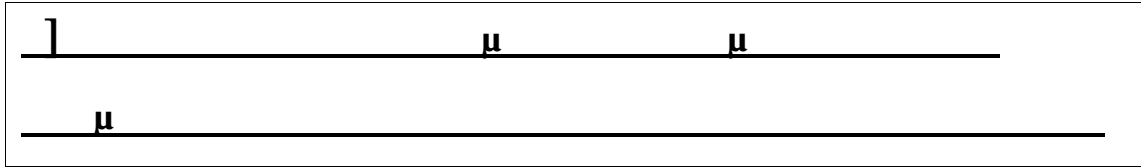


   μ                    μ ,            μ  
    μ                    (                     
    )            μ                    μ                    -  
    μ                    μ                    (                    )  
    μ  
 μ  
 .

( FAMILIARIZATION ),

μ

.



,  
 μ , μ μ  
 μ  
 , μ  
 μ ,  
 .  
 μ μ  
 μ ,  
 μ ( SOLAS, . . )  
 μ ,  
 :  
 )  
 )  
 )  
 )  
 ) μ μ ,  
 . . .

1 ( ) μ

μμ , , μ [ , ( , , . )] , ,

:

1] - μ ( μ )

2] -

3] - ( , μ )

4] - , μ

μ , μ :

•

•

•

•

5] μ μ

.

:

6] μ ( ) μ μ

,

) μ :

) μ 4],

) μ μ , :

• μ

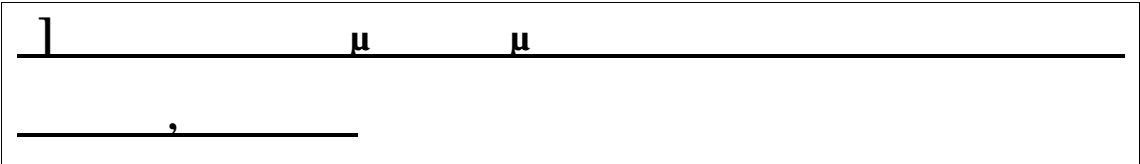
•

μ

•

μ

,



)

:

(

μ

):

μ

,

:

:

:

:

(

)

μ

.

)

μμ

μμ

(μ

),

μ

μ

μ

μ

μ

μ

,

:

1]

μ

μ

μ

,

(

))

μ

μ

.

2]

•

(

μ

μ

)

•

,

-

μ

-

- ,

μ .

3] μ μμ

μ μ μ μ ,

μ μ μ .

4]

.

μ , μ

μ , ( μ μ

) ,

:-

- μ

μ .



1)

$\mu$  ( )  
 $\mu$  ,  $\mu$  ,  $\mu$   
 ,  $\mu \mu$  ,  
 .  $\mu \mu \mu$   
 $\mu$  ( ,  
 $\mu \mu \mu$   
 $\mu$  ), ( $\mu \mu$  ),  
 , :

2 )

$\mu$  , ( )  
 )  $\mu \mu$  .  
 ) ,  $\mu$

$\mu$  :

- 1)  $\mu$
- 2) ( $\mu \mu$   $\mu$   
 $\mu \mu$   
 ,  $\mu$  )

3)

) ( )  
 .  
 ) :

1)

2)

3)

$\mu$  ,

,

$\mu$

,

$\mu$

,

$\mu$

.

)

$\mu$

$\mu$  ,

.

)

,

,

$\mu$

:

1)

$\mu$

2)

$\mu$

,

3)

$\mu$

$\mu$

$\mu$

,

$\mu$

$\mu$

,

( . .

$\mu$

)

4)

,

.

3)

,

$\mu$

,

$\mu$

$\mu$  ,

$\mu$

$\mu$

$\mu$

$\mu$  :

( )

(

)

[ . . . . ]

μ

( )

( )

μ

( ) μ .

4)

, ( μ

μ

), μ

μ

, μ

/ μ ,

μ

.

5)

( μ ), ( μ μ

),

μ

μ

μ

μ

,

, μ

μ

μ

μ

:

( ) μ μ

( ) μ

.

( ) : 1)

2)

3)

4)

μ

,

μ

.



6) \_\_\_\_\_ μ \_\_\_\_\_ μ  
\_\_\_\_\_ μ ( \_\_\_\_\_ )

**NOTICES OF READINESS - N.O.R., [ μ /**  
**\_\_\_\_\_ μ \_\_\_\_\_ ].**

7) \_\_\_\_\_ μ N.O.R., ( \_\_\_\_\_ μ  
\_\_\_\_\_ ), \_\_\_\_\_ , μ

**\_\_\_\_\_ μ \_\_\_\_\_ μ \_\_\_\_\_ μ \_\_\_\_\_ (CONFIRMATION OF**  
**RECEIPT).**

8) \_\_\_\_\_ μ N.O.R. :

- 8 ) \_\_\_\_\_
- 8 ) \_\_\_\_\_
- 8 ) \_\_\_\_\_
- 8 ) \_\_\_\_\_
- 8 ) \_\_\_\_\_
- 8 ) \_\_\_\_\_ (9 , , , , )

\_\_\_\_\_ μ \_\_\_\_\_  
8 ) \_\_\_\_\_ μ ( \_\_\_\_\_ , \_\_\_\_\_  
\_\_\_\_\_ ), \_\_\_\_\_ .

9) \_\_\_\_\_ μ  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
μ , \_\_\_\_\_ μ \_\_\_\_\_ μ  
μ , \_\_\_\_\_ μ \_\_\_\_\_ μ  
\_\_\_\_\_ .

10) \_\_\_\_\_ ( \_\_\_\_\_ ),  
\_\_\_\_\_ μ \_\_\_\_\_ , \_\_\_\_\_ :  
\_\_\_\_\_ ) \_\_\_\_\_ μ \_\_\_\_\_ μ \_\_\_\_\_ .

) ,  
.

)  $\mu$   $\mu$   $\mu$   $\mu$   
 $\mu$  (  
 $\mu$ )  
 $\mu$  ,  
 $\mu$  .

)  $\mu$  , ,  
 $\mu$  .

11)  $\mu$  ,  
 $\mu$   $\mu$   
 $\mu$  ,  $\mu$   $\mu$  :

)  $\mu$  ,  
 $\mu$   $\mu$  .

)  $\mu$   $\mu$  .  
 $\mu$   $\mu$  , ( $\mu$  ..  
 $\mu$  ),  
.

12)  $\mu$  , ,  
 $\mu$  ,  $\mu$   
 $\mu$  :

( )  $\mu$

( )  $\mu$  :

( 1) ( )

( 2)  $\mu$

( 3)

( 4)      μ

( 5)

( 6)

(      ,      ,      ,      ,      ).

( )      μ      μ      (      )

μ      ,      μ      μ      μ      μ      .

..      μ

μ      μ      ,      μ

μ      ,

,      , ( ..      μ      (      ..

)      μ      ,

μ      ).      μ

,      μ      ,

,      μ      .

---

[ ]

KAI ANTI TOIX

[ ]

1]

2]

( μ

. .)

( μ ),

( ),

3] (§ 2), μ

μ μ μ  
, μ , μ μ ,  
μ , .

4] , μ

μ μ :

μ ( μ , μ ,  
μ μ ),

, , ,  
μ ,  
( ) ,

5] μ

, μ ( )  
) , μ

μ μ ,

μ , μ

, μ

,

, .

μ ,

, ,

μ , μ ,  
 μ μ μ ,  
 μ μ μ .  
 [ ] , μ  
 μ (§ 1-5), μ ,  
 , ( ,  
 ),  
 ,  
 :  
**6]** μ μ  
 μ ( μ μ  
 μ μ μ ).  
**7]** :  
 « »  
**8]** μ μ μ ,  
 « μ », μ  
 μ .  
**9]** , μ  
 , ,  
 .  
**10]** μ , μ  
 ( . . μ ,  
 ( μ , μ . . ), /

μ μ  
, μ  
μ μ « », μ  
μ μ .

, . . .

μ μ μ μ  
, ,  
.

11] μ , μ

, , μ ,  
.

12] μ ,  
, μ , ( μ ),

μ , μ , μ μ  
« »,

μ , , . . .

13] μ , μ ,

, , μ  
, μ μ  
μ , .

μ 2

, :

) μ

)

) μ

) μ  
 )  
 ) ( )

..

14] μ  
 , μ μ μ  
 ,  
 μ .

15] [ μ  
 μ μ , ( μ  
 ) μ  
 μ , μ μ  
 μ ( )  
 ], μ :  
 ) \_\_\_\_\_ μ μ  
 μ , μ , , μ  
 μ μ ,

.) \_\_\_\_\_ μ ( μ ) μ  
 μ , , , μ ( )  
 , μ μ μ .  
 ) \_\_\_\_\_ ( ) μ ,  
 , μ ... μ  
 μ , μ  
 μ μ ,  
 μ ..



) \_\_\_\_\_ ,  
μ ,

) μ , ,  
 , ,  
 , .

( μ \_\_\_\_\_  
 , μ μ . . . )

16] , μ ,  
 , ( . . . ) ,  
 μ , , μ  
 , μ , μ . . .

17] μ ,  
 , μ

μ , μ , μ  
 , μ . .

18] μ μ μ  
 μ ,  
 μ

19] μ ,  
 μ μ μ , μ ,  
 μ μ , μ

μ , μ  
 , μ μ  
 μ , ' .  
 20] μ , μ  
 μ μ , ( ) ,  
 μ μ , μ ,  
 . . , μ  
 .

μ :  
 μ μ μ , ( SOLAS  
 chapter IV, Regulation 4 ), μ  
 ,

:  
 1) N μ μ  
 :  
 ( P (COSPAS-SARSAT)

2) μ μ  
 “ :  
 ( μ VHF – ( ) GMDSS

3) μ μ μ :  
 ( (RADAR) TRANSPONDER )

**KATA**

**1 ) VHF - ( ) GMDSS**

**2 ) EPIRB**

**3 ) SART ( AIS / SART )**

**4 ) ( μ )**

**5 ) μ μ**

**6 ) μ μ μ**

**7 ) ( μ ) μ ,**

**8 ) μ μ /**

**9 ) RADAR**

**10 ) μ**

**11 ) ALDIS,**

**12 )**

**13 )**

**14 ) ( )**

**15 ) μ**

**16 ) μ μ**

17 ) \_\_\_\_\_

18 ) \_\_\_\_\_ μ \_\_\_\_\_

μ , \_\_\_\_\_

\_\_\_\_\_ , \_\_\_\_\_ μ \_\_\_\_\_

\_\_\_\_\_ .

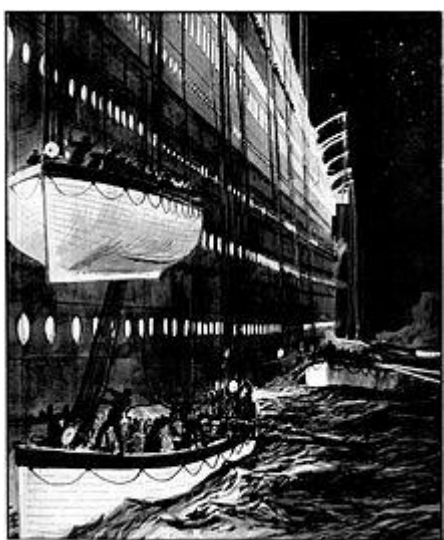
( \_\_\_\_\_ . . μ \_\_\_\_\_ μ \_\_\_\_\_

\_\_\_\_\_ , \_\_\_\_\_ μ \_\_\_\_\_ , . . . )

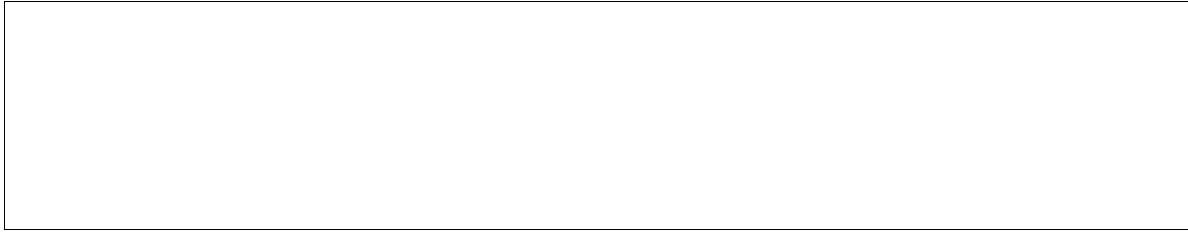
---

**TITANI**

---

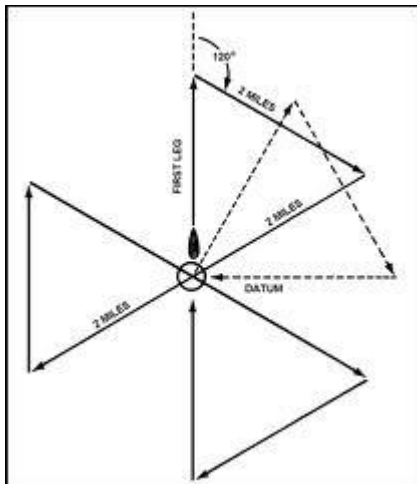


[ ]



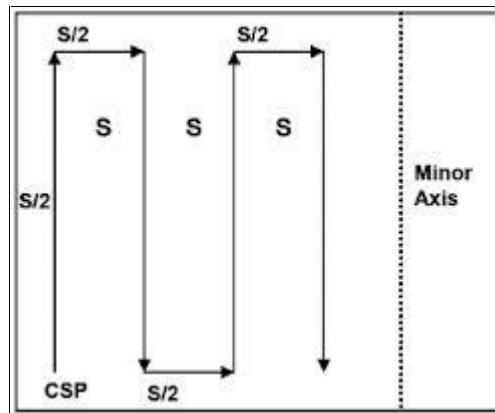
( )  
(SAR)

1] SAR KATA TOMEI ( )  
( SECTORS SEARCH PATTERN )



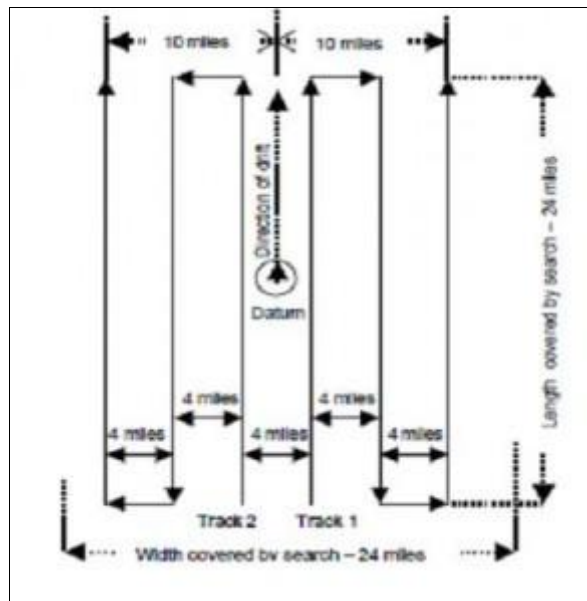
2] ) SAR

(  CREEPING LINE SEARCH PATTERN )



2] ) SAR KATA

(  TRACK LINE SEARCH PATTERN )



3] SAR \_\_\_\_\_

\_\_\_\_\_ ( \_\_\_\_\_ )

**( EXPANDING SQUARE SEARCH PATTERN )**

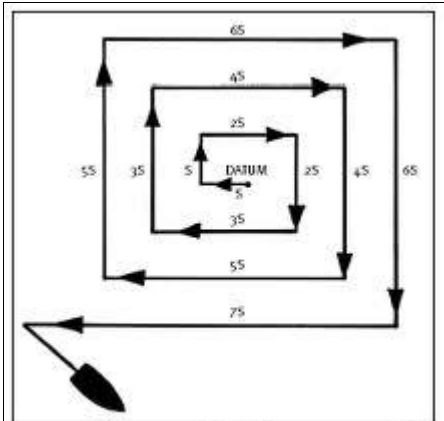
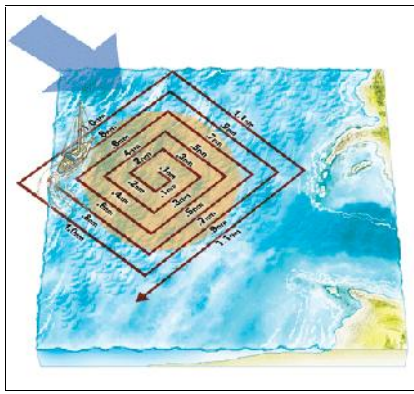


Figure 11.10: Expanding square search (SS)



4] SAR \_\_\_\_\_ , \_\_\_\_\_

**( CO-ORDINATED CREEPING LINE SEARCH FROM ONE SHIP AND ONE AIRCRAFT )**

$\mu$

SAR.

:

] - ,  
μ μ

,

] -

μμ ,

.

μ

SAR,

μ

,

..

.

( , ..)

,

.

---

---

---







3) , μ RCC

, ,

---

μ .

) , ,

μ ,

\_\_\_\_\_ μ :

- μ

-

-

-

- ,

.

(

), :

] - ,

μ , μ

,

(SAR).

] - ( / μ

μ ).

] -

] - / μ

(EPIRB),

μ

RADAR (SART),

AIS/SART.

] - μ , μ  
μ μ ( μ ,  
, . . . )

] - \_\_\_\_\_ μ \_\_\_\_\_ μ  
\_\_\_\_\_ μ \_\_\_\_\_ μ  
\_\_\_\_\_ , ,

RADAR, A μ , ,  
, μ μ ,  
μ μ , . . .

] -  
EMERGENCY , VHF  
, μ -  
, . . .



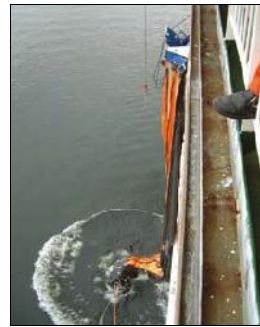


---

/ [ SES = SLIDE EVACUATION

**SYSTEMS ]**

---



SES



# 34 ]

1 \_\_\_\_\_  
\_\_\_\_\_



[ ] μ

, μ :

1] :

« , »

( ), , ,

μ .

2] ,

( , μ )

, μ ,

.

3]

, , μ μ

/ , μ μ ,  
 μ  
 .  
μ 1  
 μ ,  
 ,  
 μ , ( , ) , /  
 , μ / , /  
 .  
 / , :  
 -  
 -  
 - μ ,  
 μ :  
 ) μ  
 )  
 ) ,  
 :  
 -  
 - μ μ ,  
 - μ μ .  
 μ ,  
 / « » ,  
 / , μ .

4] , μ

§ 1,2,3, μ μ  
/ , ( μ )

μ , ( . . ),

μ , ,

,

μ μ ,

μ . . ,

, μ

.

5] , μ

, μ ,

μ μ .

..

( μ ), μ .

, μ , μ , μ ,

μ μ ,

μ ( ) ,

μ .

[ ] 6] / ,

« » , (

), μ , :

) / μ μ ( -

- μ . . ).

) ( ), .

) ( . . μ . . ).



)  $\mu$   $\mu$   
 $\mu$   $\mu$  , ,  $\mu$   
, 360 (  $\mu$  ) . . .  
)  
, ,  $\mu$  / ,  
, . . .  
)  
, . . ) . . .  
 $\mu$  , ,  
. . . .  
( - )  $\mu$  , /  
:  
-  
-  
-  
 $\mu$  ,  $\mu$   
 $\mu$  .  
 $\mu$  :  
,  $\mu$   $\mu$   
, (  $\mu$  1).  
7] / :  
,  $\mu$   
 $\mu$   $\mu$  ,

$\mu$  ,  
 : « , » . . .  
 .  
**8]** /  $\mu$   
 ,  $\mu$  ,  $\mu$   
 $\mu$  , . , . . .  
**9]**  $\mu$   $\mu$   $\mu$   
 ,  
 $\mu$   $\mu$   
 , . . . .  
**10]** /  $\mu$  ( $\mu$   $\mu$   
 $\mu$  ), ,  $\mu$  ,  
 , . . .  $\mu$   
 $\mu$  , :  
 )  
 ,  
 )  $\mu$  ,  $\mu$   $\mu$  ,  
 .  
**11]** / ( ' ),  
 , , ,  
 ( ) . . .  $\mu$   
 .  
**12]**  $\mu$  ( ' ,  
 ),  $\mu$  .

13] , μ μ μ

μ , ,

, μ μ ,

μ , μ μ ,

μ ,

μ . .

14] , μ μ

(

),

,

.

, , μ ( μ

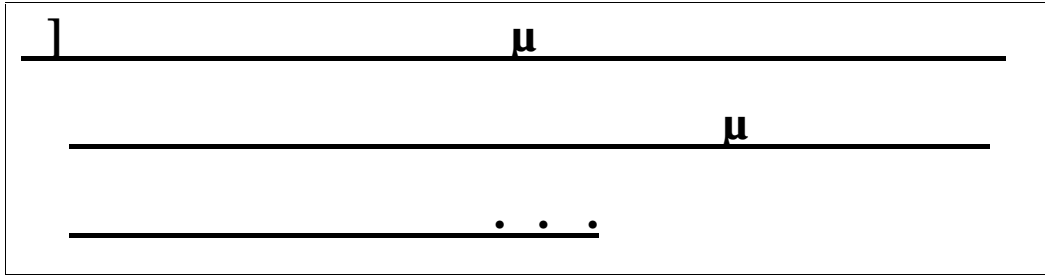
μ ) μ

MEDICO, μ .

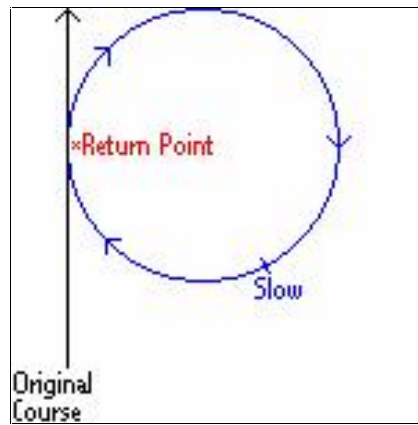
μ ,

μ ,

.



ANDERSON



H nderson

( AN VER OARD ) :

)

)

μ

μ

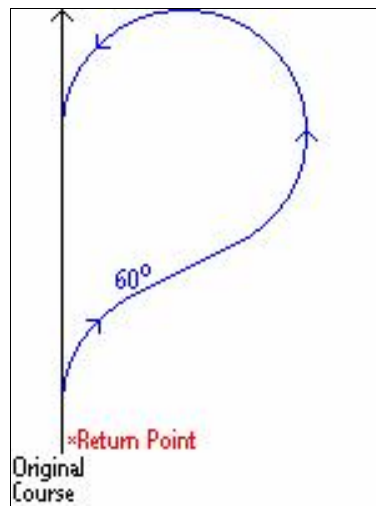
μ

.

! ( μ  
) , μ μ ,  
μ μ .

μ : E μ , μ  
μ , μ  
μ  
μ .  
μ μ  
μ μ ,  
μ .

## WILLIAMSON



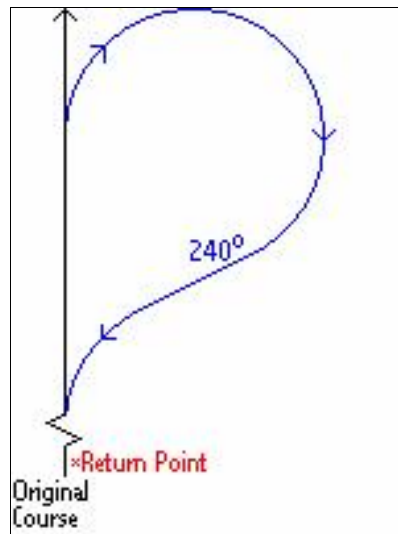
μ

,

μ

μ

## SCHARNOW



Scharnow

,

μ

( RETURN POINT ),

μ

μ

---

---

---



---

---

---



---

---

---



---

---





- μ  
μ , ( μ )  
μ μ μ μ  
μ , :  
1] μ , μ μ  
μ μ .  
( . . μ ,  
μ , μ μ , . . . )  
2] :  
-  
μ μ ,  
- , μ μ .  
.. μ  
μ , μ μ ,  
:  
) μ μ  
μ ,  
) μ μ μ μ μ  
, μ μ .

3] , μ μ  
 μ μ ( . . ,  
 , μ , , μ ,  
 . . .), , ,  
 ( μ )  
 , .

μ 1

§ 1,2,3

, , ,  
 , μ :  
 ) μ μ  
 μ .  
 ) μ , μ  
 μ μ .  
 ) μ μ μ  
 . .  
 ( . . μ μ μ ,  
 μ , μ  
 μ , μ ,  
 μ , μ μ μ  
 , . . μ , μ  
 μ , μ , μ ,  
 μ μ μ μ ) .

4] , μ μ  
 , / μ μ ,

, , ,  
 μ , μ μ ,  
 , :  
 )-  
 )-  
 ) - μ μ μ  
 / μ ( ' )  
 μ .  
 )- μ μ  
 . . .  
 μ μ ,  
 , ( ,  
 μ ),  
 μ , μ  
 μ μ μ , μ  
 ( μ ).

μ 2

) \_\_\_\_\_ μ \_\_\_\_\_ μ  
 \_\_\_\_\_, μ  
 μ μ μ μ ,  
 μ μ μ μ ,  
 μ μ .  
 - μ  
 μ , μ μ , μ  
 μ , μ

$\mu$  .  $\mu$   
 .  
 -  $\mu$   $\mu$  (  $\mu$   
 $\mu$  ), ..  $\mu$  ,  
 (  $\mu$   $\mu$   $\mu$  ).  
 -  $\mu$  ,  
 $\mu$   $\mu$  .  
 -  $\mu$   $\mu$  .. ,  
 $\mu$  .  
 )  $\mu$   $\mu$   


---

 $\mu$  ,  $\mu$  ,  $\mu$   
 ,  
 .  
 -  $\mu$  ,  $\mu$   
 $\mu$  .  
 $\mu$   $\mu$   $\mu$   
 $\mu$  ,  $\mu$   
 ,  $\mu$   $\mu$   
 $\mu$   $\mu$  .  
 .. ,  $\mu$   
 ,  $\mu$  ...  
 - ,  $\mu$   
 $\mu$  ,  $\mu$  .  
 $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   
 $\mu$  ,  $\mu$   
 . ..  $\mu$   $\mu$

μ μ μ , μ μ  
 μ μ μ , μ  
 μ . . .  
 - μ , μ  
 μ , μ  
 , ( . . μ , μ , μ ,  
 μ . .), μ ,  
 μ ,  
 μ .  
 5] / μ ( )  
 μ , ( )  
 - μ ,  
 -  
 - μ ,  
 :  
 )  
 , μ μ .  
 )  
 ,  
 μ μ .  
 μ μ μ ,  
 μ , μ  
 μ μ .  
 6] , ( μ μ § 1-5)  
 / μ , μ  
 μ , ( μ

μ / μ ),  
 « μ  
 »,  
 μ .  
 , :  
 ) μ μ ( μ  
 ).  
 ) ( ) μ .  
 ) μ μ .  
 ) μ μ .  
 ) ( μ ,  
 ).  
 ) μ , μ  
 μ μ μ μ  
 μ .  
 ) ( ) μ μ μ  
 , .  
 ) μ  
 μ μ , μ μ .  
 ) μ  
 μ μ , μ .

μ 3

μ § 6 ) ) μ  
 , , :  
 ) –  
 ) – ( ) μ μ

) – (μ )  
 - , ( )  
 ), μ μ :  
 (1) μ .  
 (2)  
 (3) μ .  
 7] μ ,  
 μ μ , ( μ  
 μ ) , ( )  
 μ μ ) ,  
 μ ( μ ) ,  
 μ , :  
 ) μ § 6 ) ,  
 μ μ .  
 μ :  
 ) ,  
 μ μ μ .  
 )  
 μ μ .  
 ) μ  
 , ( μ , ) .  
 ) μ μ  
 μ , μ

)

μ , .

)

.

)

)

, , μ , ,

, μ , . . .

8] μ , ( μ

μ § 7,

μ μ μ

), μ μ

μ μ

, μ - μ - μ

μ . . . ,

μ , μ

μ ( ) (MEDICO),

μ μ

μ μ . . .

9] ( ' ),

μ μ

μ μ , μ

μ

(MEDICO), ( ) μ μ ,

μ , μ . . .

μ μ ( ' ,

), , . . .



10] , μ  
 μ , μ ( , μ )  
 μ ), μ μ  
 ( ) . μ  
 - , μ μ μ  
 μ μ , μ μ  
 ..

11] , μ , μ ( ) ,  
 μ μ , :  
 1) – ,  
 2) – μ ,  
 μ μ ,  
 3) – μ μ , μ  
 μ , ( , . .), μ μ , :  
 ) , μ ,  
 μ (MEDICO),  
 μ .  
 ) μ ( ) ,  
 μ , .  
 ) , μ μ ,

( . . . μ  
 ), μ ,  
 , .  
 ) , μ  
 μ μ ( μ ),  
 .  
 ) μ ( μ μ  
 ), ,  
 μ .  
 ) , μ  
 , μ ,  
 μ , μ  
 , :  
 [1] –  
 ( μ ).  
 [2] – ( μ  
 ), μ ,  
 .  
 [3] – μ ( )  
 , μ μ μ μ  
 . . . .  
 ) ,  
 ( μ μ ),  
 , μ μ ,  
 μ , μ ,  
 . . .

$\mu$                      $\mu$      $\mu$     ,    . . .  
 $\mu$   
(                    )                    , . . .  
)                     $\mu$     [  $\mu$                      $\mu$   
 $\mu$                     , ( ' ,  
 $\mu$                     )],                     $\mu$   
(                    ),  
,  $\mu$   
,                    .  
**12]**                     $\mu$      $\mu$     ,  
 $\mu$                      $\mu$     , (                    ,                    ,                    ,  
. . .     $\mu$      $\mu$     ,                    ,                     $\mu$                     ,  
,                     $\mu$      $\mu$                     ,  
. . .),                    :  
( ) –                     $\mu$                     ,  
.  
( ) –                     $\mu$                     ,  
 $\mu$                     .  
( ) –                     $\mu$                     ,  
,     $\mu$                     . . . ,                    ,  
 $\mu$                     ,                     $\mu$                      $\mu$   
,                    . . .     $\mu$   
 $\mu$      $\mu$                      $\mu$                     . . .

μ 4

« μ » ( μ , μ « / », μ μ μ , μ μ ), , :

- 1) – μ μ
- 2) –
- 3) –
- 4) – μ

μ , μ :

- ( ) – μ
- ( ) –
- ( ) – μ
- ( ) – μ .

| 1   | 2       | 3 | 4 | 5        | 6           |
|-----|---------|---|---|----------|-------------|
|     |         |   |   |          |             |
| =   | · _     |   |   | ALFA     | AL FAH      |
| =   | _ ...   |   |   | BRAVO    | BRAH VOH    |
| C = | _ _ .   |   |   | CHARLIE  | CHAR LEE    |
| D = | _ _ .   |   |   | DELTA    | DELL TAH    |
| E = | ·       |   |   | ECHO     | ECK OH      |
| F = | · _ .   |   |   | FOXTROT  | FOKS TROT   |
| G = | _ _ .   |   |   | GOLF     | GOLF        |
| H = | · · · · |   |   | HOTEL    | HO TELL     |
| I = | · ·     |   |   | INDIA    | IN DEE AH   |
| J = | · _ _ _ |   |   | JULIET   | JEW LEE ETT |
| K = | _ _     |   |   | KILO     | KEY LOH     |
| L = | · _ .   |   |   | LIMA     | LEE MAH     |
| M = | _ _     |   |   | MIKE     | MIKE        |
| N = | _ .     |   |   | NOVEMBER | NO VEM BER  |
| O = | _ _ _   |   |   | OSCAR    | OSS CAH     |
| P = | · _ _ . |   |   | PAPA     | PAH PAH     |
| Q = | _ _ _   |   |   | QUEBEC   | KE BEK      |
| R = | · _     |   |   | ROMEO    | RO MIO      |
| S = | · · ·   |   |   | SIERRA   | SI ER RAH   |
| T = | _       |   |   | TANGO    | TANG GO     |
| U = | · _     |   |   | UNIFORM  | YOU NI FORM |
| V = | · · _   |   |   | VICTOR   | VIK TAR     |
| W = | · _ _   |   |   | WHISKEY  | OUISS KI    |
| X = | _ _ .   |   |   | X-RAY    | ECSS RE     |
| Y = | _ _ _   |   |   | YANKEE   | YANG KI     |
| Z = | _ _ .   |   |   | ZULU     | ZOU LOU     |
|     | -----   |   |   |          |             |

|   |           |       |  |            |  |            |
|---|-----------|-------|--|------------|--|------------|
|   |           |       |  |            |  |            |
| 1 | . _ _ _ _ | ONE   |  | UNAONE     | OO NAH WUN                                       | OY NA OYAN |
| 2 | .. _ _ _  | TWO   |  | BISSOTWO   | BEEES SOH TOO                                    |            |
| 3 | ... _ _   | THREE |  | TERRATHREE | TAY RAH TREE                                     |            |
| 4 | .... _    | FOUR  |  | KARTEFOYR  | KAR TAY  |            |
| 5 | .....     | FIVE  |  | PANTAFIVE  | FOWER  |            |
| 6 | _ . . . . | SIX   |  | SOXI SIX   | PAN TAH FIVE                                     |            |
| 7 | _ _ . . . | SEVEN |  | SETTESEVEN | SOK SEE SIX                                      |            |
| 8 | _ _ _ . . | EIGHT |  | OKTOEIGHT  | SAY TAY  |            |
| 9 | _ _ _ _ . | NINE  |  | NONENINE   | SEVEN  |            |
| 0 | _ _ _ _ _ | ZERO  |  | NADAZERO   | OK TOH AIT<br>NO VAY NINER<br>NAH DAH ZAY<br>ROH |            |

|        |    |   |             |
|--------|----|---|-------------|
| •      |    | decimal point,<br>stop, full stop         | • _ • _ • _ |
| ’      | μμ | comma                                     | _ _ • • _ _ |
| ’      |    | apostrophe                                | • _ _ _ _ • |
| (      |    | parentheses<br>(left hand,<br>right hand) | _ • _ _ •   |
| )      |    |   | _ • _ _ • _ |
|        |    | fraction bar or<br>division sign          | _ • • _ •   |
| /      |    |   |             |
| :      | -  | colon                                     | _ _ _ • • • |
|        |    | error                                     | • • • • • • |
| •••••• |    |   |             |



**CQ** =                     $\mu$                     **Q**,                    :

**SVVV** =

**BND** =                     $\mu$

**QRA** =                     $\mu$                      $\mu$  /

**QRV** =                     $\mu$

**QRK** =                     $\mu$

**QSA** =                     $\mu$

**QSO** =                     $\mu$

**QSP** =                     $\mu$

**QTC** =                     $\mu$



QSS =

QSW =

QRJ =

QSD =  $\mu \quad \mu$

QRS =  $\mu$

QRX =

QRY =

QSV =  $\mu \quad V \quad \mu$

QTE =  $\mu \quad \mu$   
 $\mu .$

QRM =

QRN =  $\mu \quad \mu$

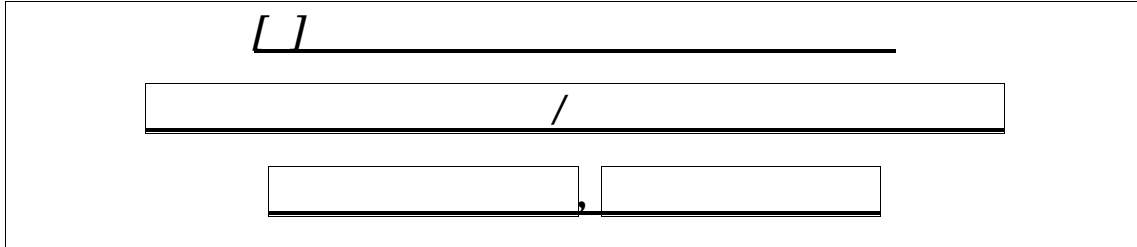
QRC =  $\mu \quad ( \quad )$   
 $\mu$

QRU =  $/$

**40 ]**

---

---



**CQ =** ,

**CW =**

**RT =**

**LL =** (LAND LINE)

**SC =** (SHIP'S CHARGE)

**CC =** (COAST CHARGE)

**CK =**  $\mu$

**DE =** (  $\mu$  .....)

**KA =**  $\mu$   $\mu$

**BT =**

**AR =**  $\mu \mu \mu$

**IMI =**  $( \mu \mu / \mu \mu )$

**AR VA =**

**NNNN =**  $\mu \mu$

**AS =**  $\mu$

**TKS, TU =**

**SU =**

**NR =**  $\mu$

**OK =**

**R =** ,

**CH = (CHANNEL)**

**K =**  $\mu$  ,

**UP =**  $\mu$  ,  $\mu$

**TR =** ,  $\mu$

**SVC =** ( )  $\mu$   $\mu$

**MSG =**  $\mu$

**MSG =** (  $\mu$  )  $\mu$   $\mu$

**PDH =**  $\mu$   $\mu$

**P =**  $\mu$

**HR =** (HERE)

**CFM, C =**

**GA =**

**CLR =**

**LT =** (LOCAL TIME)

**J =** JULIET (J) (1)

**O =** OSCAR (O) ( $\emptyset$ )

$$A = \text{ALPHA (A)} \quad (.)$$

$$\text{ADD C} = \quad ( \quad )$$

$$\text{FIX C} =$$

(12)

$$( \quad ) \quad \mu \quad (1)$$

$$\mu = \mu \quad ( \quad \mu \quad )$$

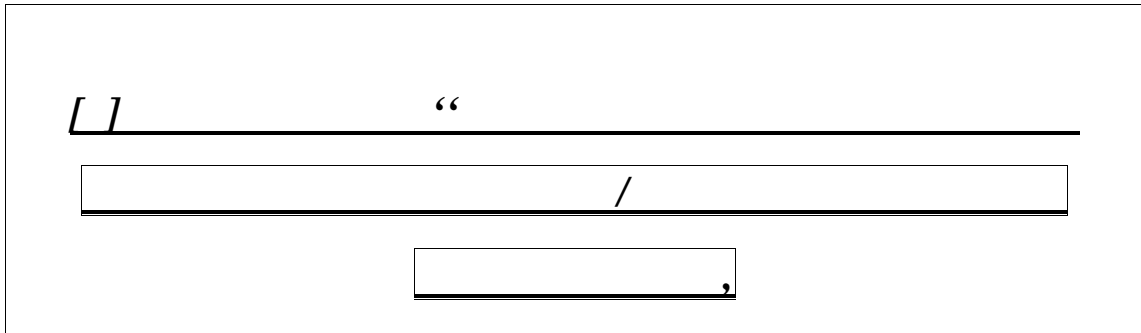
$$= \mu$$

$$= \mu$$

$$\text{S.O.S.} = (\text{SAVE OUR SALVES}) \quad \mu$$

$$\text{RRR} = \quad \mu$$

$$\text{DDD} = \quad \mu \quad \mu$$



**SVC =**

$\mu$

**RP ... (RESPONSE PREPAID) =**

$\mu$  (o

... )

**SLT =**

**OBS =**

$\mu$

$\mu$

**ST =**

$\mu$

**RST =**

$\mu$

$\mu$

**REMETTRE .... =**

$\mu$

(....  $\mu/$  )

**EXPRESS =**

$\mu$

( )

**XP =**

$\mu$

**URGENT =**

$\mu$

**PR =**

“

**PC (PREPAID CONFIRMATION) =**

$\mu$

(  $\mu$   $\mu$  - ) / /

$\mu$  ,

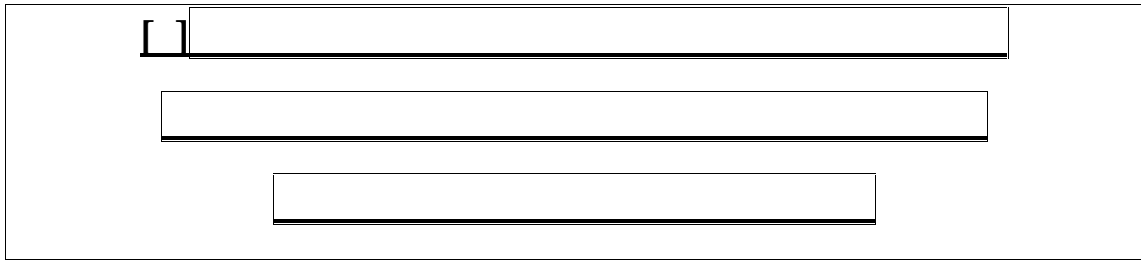
[  $\mu$  ].

**TLX =**

$\mu$   $\mu$

**TF or TLF =**

$\mu$   $\mu$



**ABS** ABSENT SUBSCRIBER =  $\mu$   
 $\mu$

**ACB** ACCESS BARRED =

**ADR** ADDRESSE REFUSE TO ACCEPT MESSAGE =  
 $\mu \mu$

**ANU** DELETE =  $\mu \mu$

**ATD** ATTEMPTING TO DELIVER THE MESSAGE =  
 $\mu \mu$

**BK** "BREAK OFF" =  $\mu / \mu$

**BUSY** BUSY =  $\mu \mu$   
 $\mu\mu$

**CCD** CALL OUT/DISCONNECTED =  $\mu /$   
 $\mu /$

**CFM** CONFIRMATION =

**CI** CONVERSATION IMPOSSIBLE =

**CNS** CALL NOT STARTED =

**COL** COLLATION =  $( \mu , \mu )$   
 $\mu \mu , \mu )$

**CRV** CONFIRM WELL RECEIVING =  
/

**DER** "DERELICT" = ( μ )  
μ μ μ

**ERROR** ERROR =

**FLIST** FILE LIST = /

**FMT** FORMAT ERROR = μ  
μ .

**FSA** FAST SELECT ACCEPTANCE =

**GA** GO AHEAD =

**IAB** INVALID ANSWERBACK =  
μ / ANSWERBACK  
μ

**IAM** INVALID ADDRESS OF THE MESSAGE =  
μ /  
/ μ μ μ .

**IDS** INVALID DATA FROM SHIP =  
μ / μ μ  
μ .

**IDT** INPUT DATA TIMEOUT =  
μ

**IFR** INVALID FACILITY REQUEST = μ  
μ



**IMS** INVALID MESSAGES SIZE =  
 $\mu \mu$  ,  
 ( MSG)

**IND** INCOMPATIBLE DESTINATION =  
 $\mu \mu \mu \mu$  ,  
 $\mu$

**INF** INFORMATION SERVICE =  
 $\mu$

**INH** INCOMPATIBLE HEADER =  
 $\mu \mu$  ,  $\mu$   
 $\mu$

**ITL** I TRANSMIT LATER =  $\mu$

**INVALID** INVALID = ,  $\mu$

**ISR** INVALID SHIP'S REQUEST =  
 $\mu$  ,

**LDE** LENGTH OF DURATION ERROR =  
 $\mu \mu$  .

**LEF** LOCAL, EQUIPMENT FAILURE =  
 ,

**LPE** LOCAL PROCEDURE ERROR =  
 , ( ).

**MCC** MESSAGE CHANNEL CONGESTION =  
 $\mu \mu$  .

**MCF** MESSAGE CHANNEL FAILURE =  $\mu \mu ,$   
 $\mu .$   
**MNS** MINUTES =  
**MOM** MOMENT (WAIT) =  $\mu$   
**MSO** MACHINE SWITCHED OFF =  
  
**MUT** MUTILATES =  $\mu\mu (\mu \mu )/( )$   
**NAL** NOT ADDRESS LINE =  $\mu\mu$   
 $\mu \mu \mu$   
**NC** NO CIRCUITS =  
 $.$   
**NCH** NUMBER (OF SUBSCRIBER) CHANGED =  
 $\mu$   
 $\mu .$   
**NDA** NO DELIVERY ATTEMPTED =  
 $\mu \mu$   
**NFA** NO FINAL ANSWERBACK =  
ANSWERBACK  $\mu .$   
**NI** NO IDENTIFICATION =  
  
**NIA** NO INITIAL ANSWERBACK =  
ANSWERBACK  $\mu .$   
**NL** NEW LINE =  $\mu\mu$   
**NOB** NOT OBTAINABLE =  
 $.$

**NOC** NO CONNECTION =  
  
**NP** NO PARTY =  
 $\mu$   
**NR** NUMBER =  $\mu$   
**NTC** NETWORK CONGESTION =  
**OAB** OPERATOR ABORTED =  
  
**OCC** OCCUPIED =  $\mu\mu$   
**OK** OKEY =  $\mu$  , ,  
**OOO** OUT OF ORDER =  
**PRC** PREMATURE FAILURE =  
  
**PRF** PROTOCOL FAILURE = ( )  
.  
  
**R** RECEIVED =  
**REF** REMOTE EQUIPMENT FAILURE =  $\mu$   
,  $\mu$   $\mu$   
.  
  
**RPE** REMOTE PROCEDURE ERROR =  $\mu$   
 $\mu$   
  
**RPT** REPEAT =  
**RSBA** RETRANSMISSION STILL BEING ATTEMPTED  
=  $\mu$  .  
  
**SCC** SUCCESSFULLY COMPLETATION OF CALL =

**SHE** SES HARDWARE ERROR =  $\mu$   $\mu$   
 $\mu$   
**SNF** SATELLITE NETWORK FAILED =  $\mu$   
 $\mu$   
**SPE** SES PROTOCOLE ERROR =  $\mu$   
 $\mu$   
**TGR** TDM GROUP RESET =  
 $\mu$  TDM  
**TIM** TIME OUT =  
**TMD** TOO MANY DESTINATIONS = (  $\mu$  )  
 $\mu$   
**UNK** UNKNOWN =  
**WFA** WRONG FINAL ANSWERBACK =  
ANSWERBACK  $\mu$   
**WIA** ANSWERBACK  $\mu$  .

$$= \frac{\mu \mu}{\mu \mu / \mu \mu} .$$

$$= \frac{\mu \mu}{\mu \mu} .$$

$$\mathbf{C} = \mu \mu .$$

$$\mathbf{D} = \frac{\mu \mu \mu}{\mu \mu \mu} \mu .$$

$$= \mu \mu .$$

$$\mathbf{F} = \frac{\mu \mu \mu}{\mu \mu \mu} \mu \mu .$$

$$\mathbf{G} = \mu \mu .$$

$$\mathbf{H} = \mu \mu .$$

$$\mathbf{I} = \mu \mu .$$

$$\mathbf{J} =$$

,  $\mu$  .

$$\mathbf{K} = \mu .$$

$$\mathbf{L} = \mu \quad \mu \ll \mu ;$$

$$\mathbf{M} = , \mu \quad \mu .$$

$$= , , .$$

$$=$$

$$= , \mu$$

(  $\mu$  )

$$= \mu \quad \mu \quad ( ), \mu :$$

Z

$$= / \mu \quad ( ),$$

$\mu$  :

$$\mathbf{Q} = \frac{E\mu \quad \mu}{\mu \quad \mu}$$

$$\mathbf{R} = , \mu$$

$$\mathbf{S} = \mu$$

$$\mu = \mu \quad .$$

$$\mathbf{U} = \mu \quad .$$

$$\mathbf{V} = / \quad .$$

$$\mathbf{W} = \quad .$$

$$= \mu \quad \mu$$

$$\mu \quad \mu \quad .$$

$$= \mu \quad \mu \quad .$$

$$= \mu \quad .$$

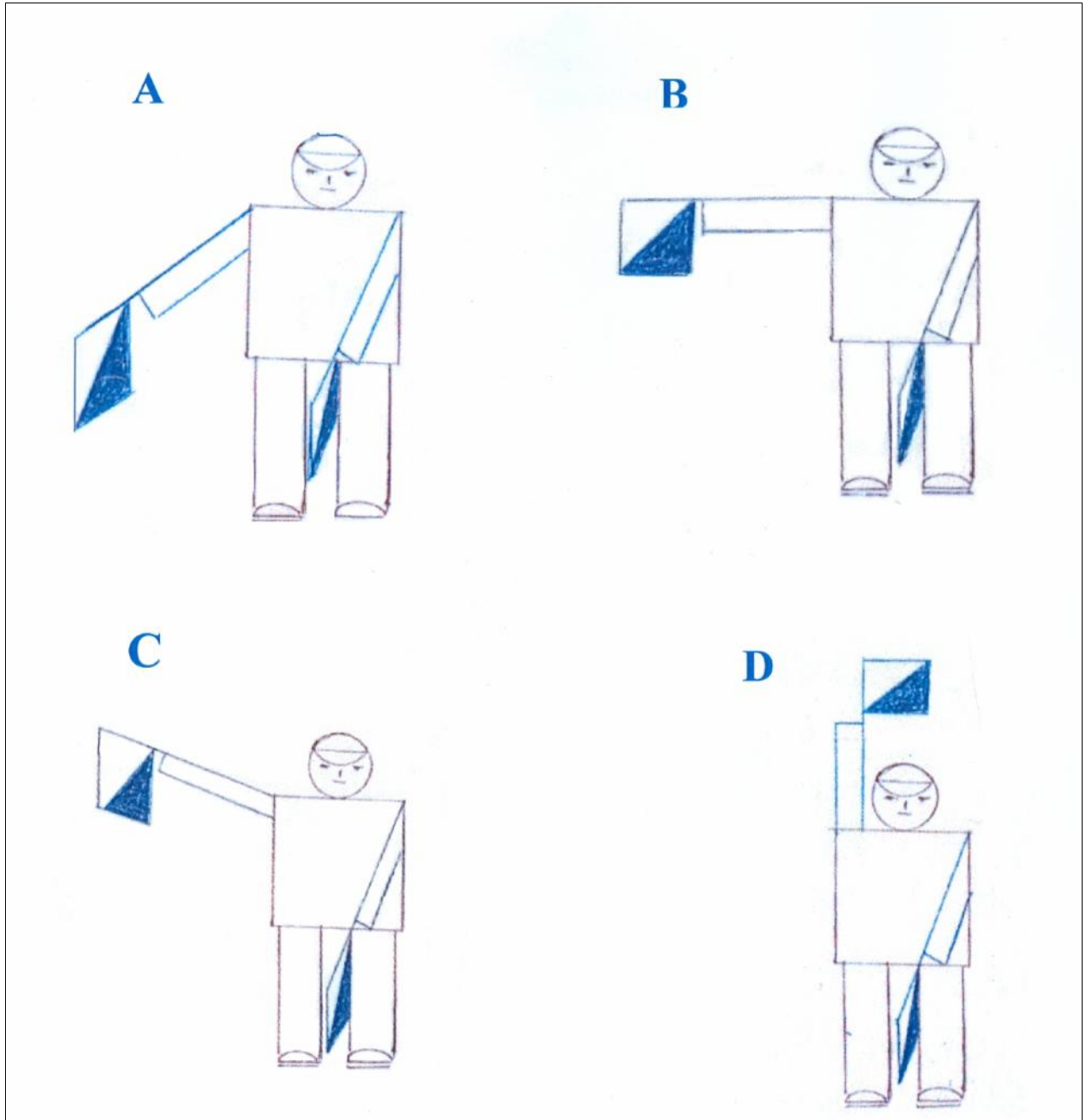
42 ]

,  
\_\_\_\_\_

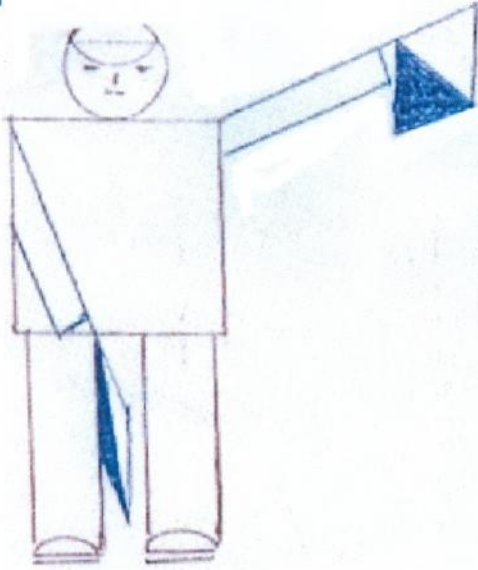
| $\mu$       |          |           |
|-------------|----------|-----------|
| $\mu$ $\mu$ | <b>B</b> | — . . . . |
|             | <b>H</b> | . . . .   |
| ,           | <b>C</b> | — . — .   |
|             | <b>T</b> | —         |
|             | <b>S</b> | . . . . . |
|             | <b>G</b> | — — .     |
|             | <b>Z</b> | — — . .   |
|             | <b>E</b> | .         |
|             | <b>I</b> | . .       |



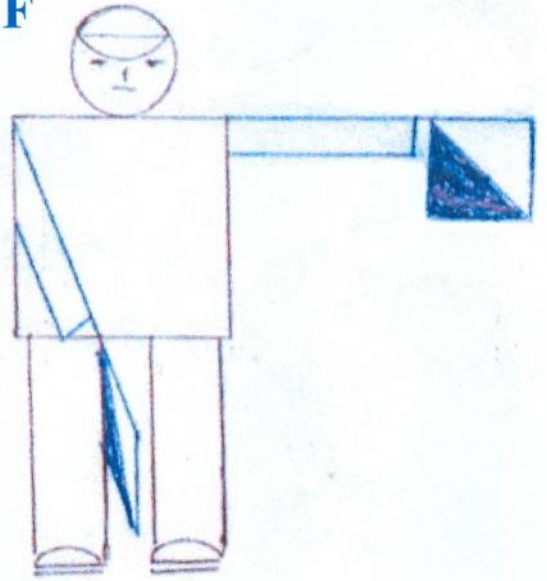
|       |   |  |
|-------|---|--|
| $\mu$ | <p style="text-align: center;"><b>S</b></p> | <p style="text-align: center;">...</p>           |
| $\mu$ | <p style="text-align: center;"><b>T</b></p> | <p style="text-align: center;">—<br/>( )</p>     |
| $\mu$ | <p style="text-align: center;"><b>D</b></p> | <p style="text-align: center;">— ·<br/>( )</p>   |
| $\mu$ |   | <p style="text-align: center;">— · ·<br/>( )</p> |



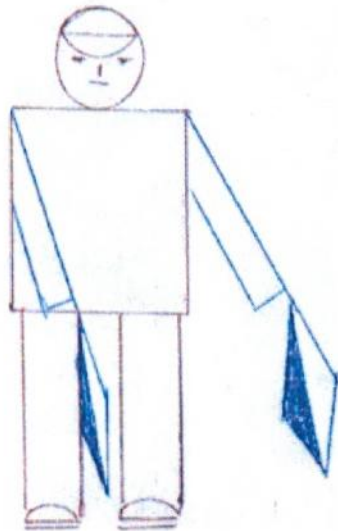
**E**



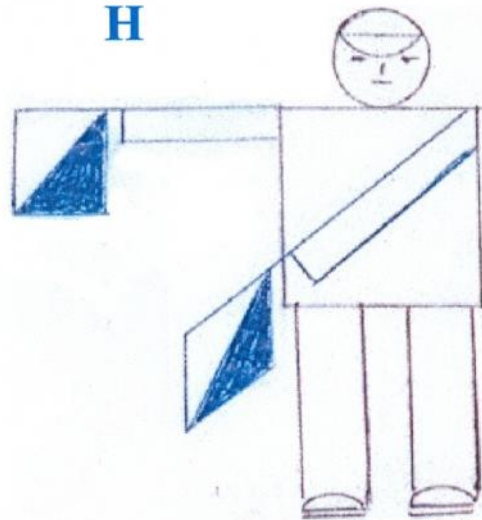
**F**



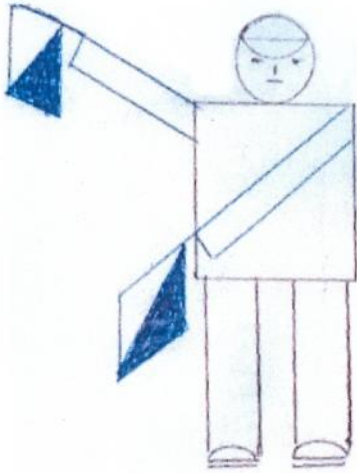
**G**



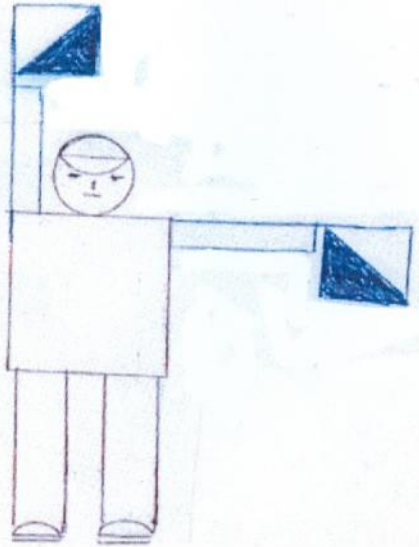
**H**



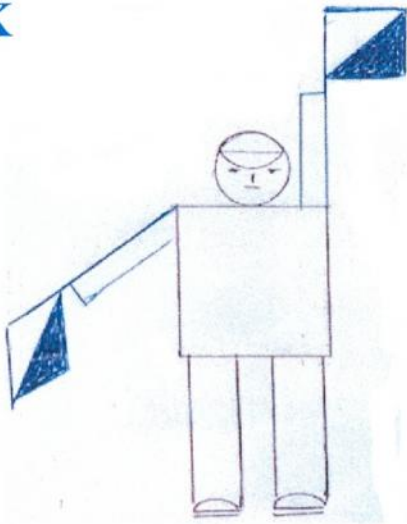
I



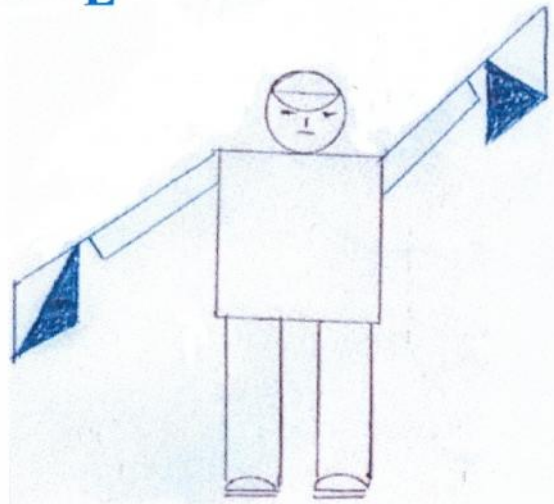
J



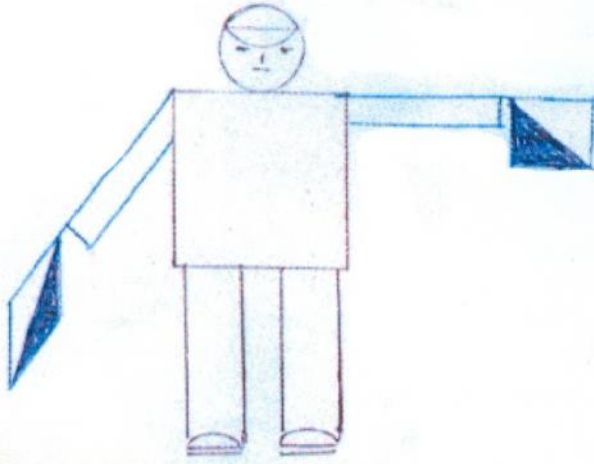
K



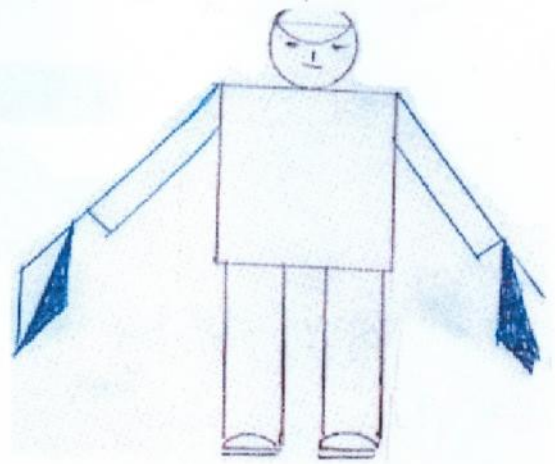
L



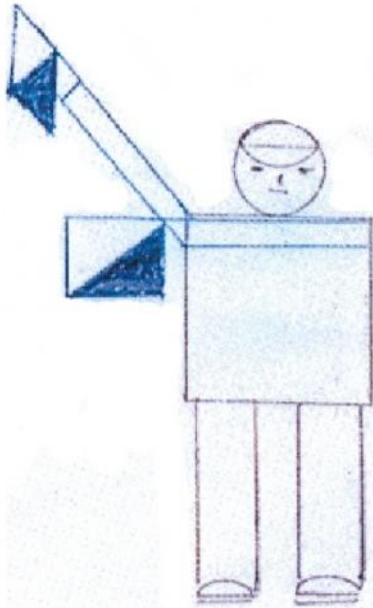
M



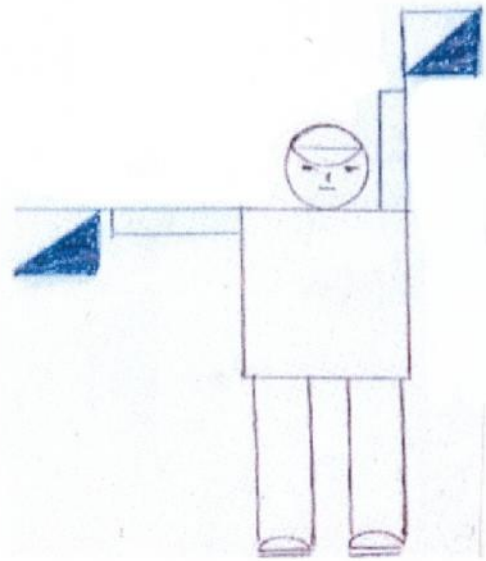
N



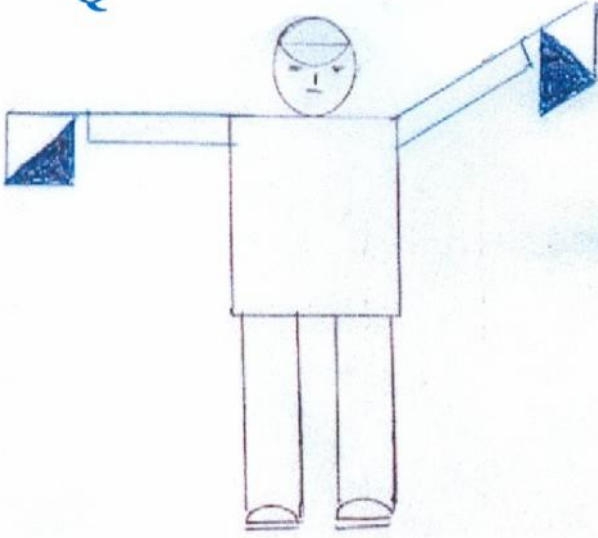
O



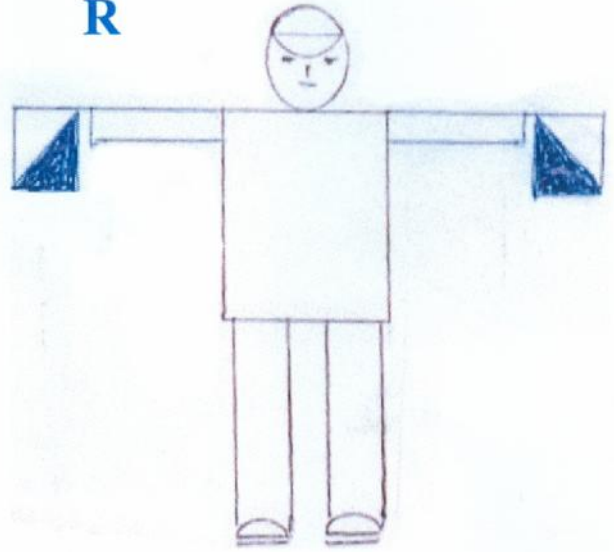
P



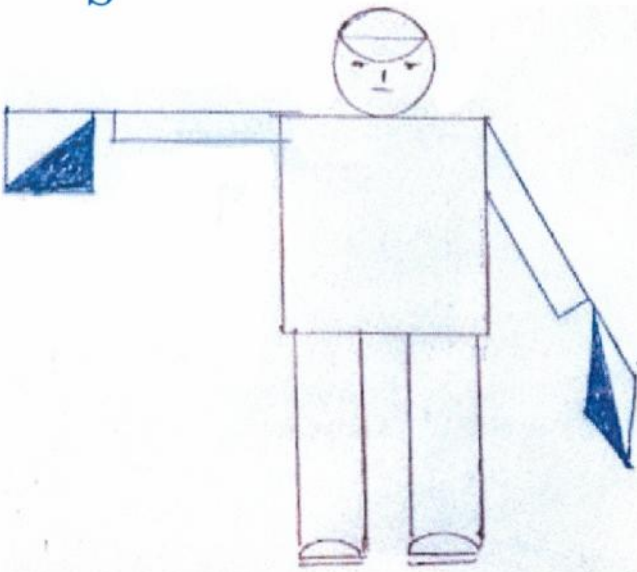
Q



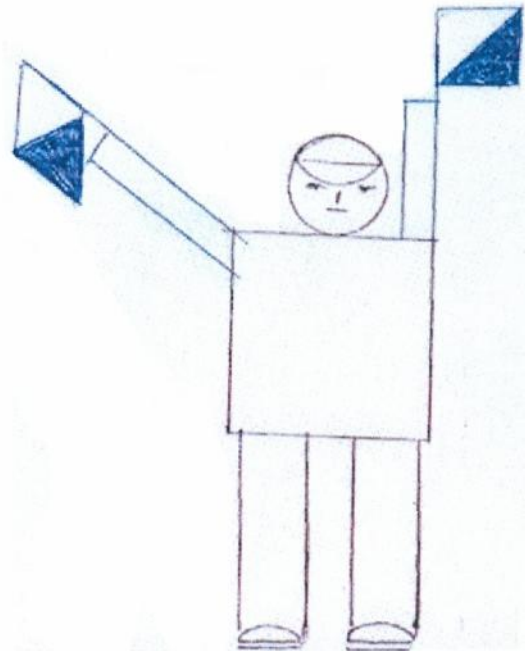
R



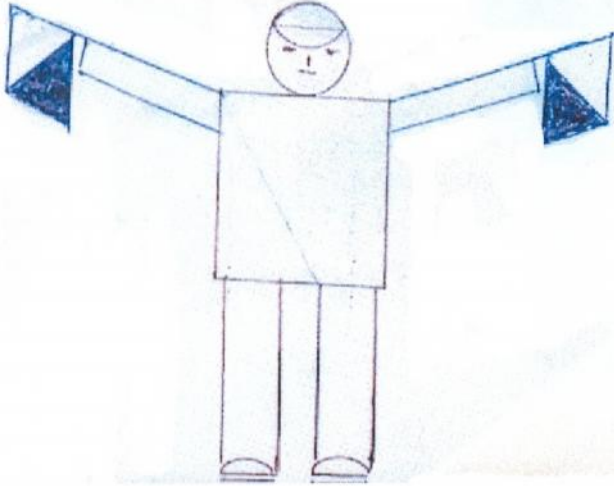
S



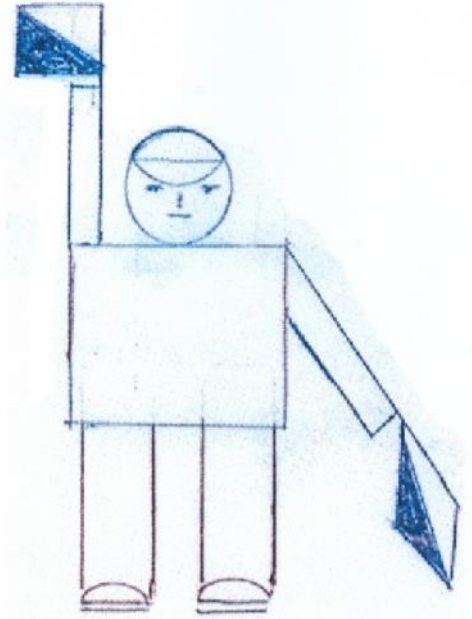
T



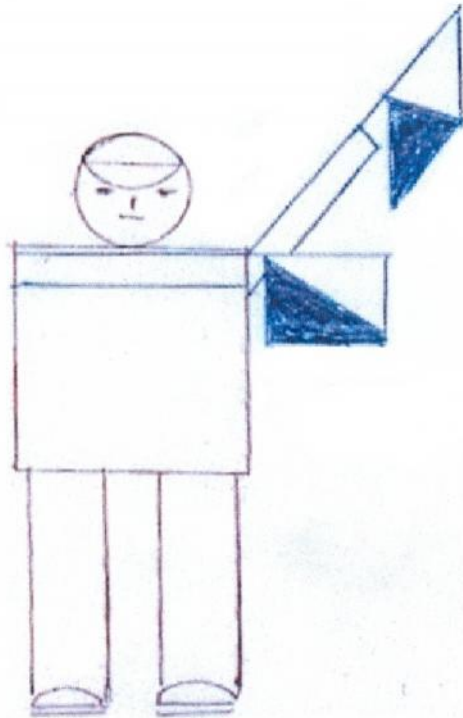
U



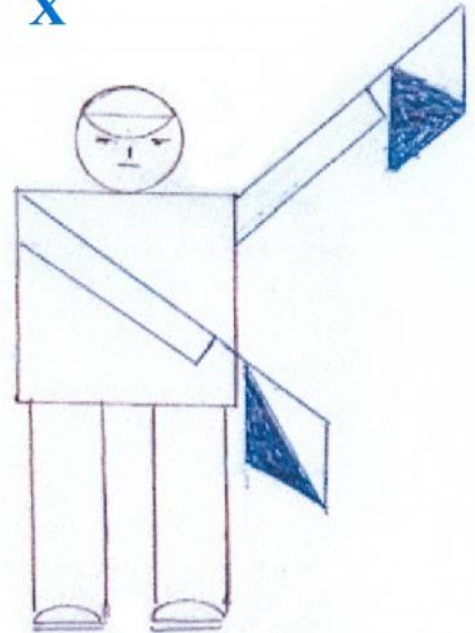
V

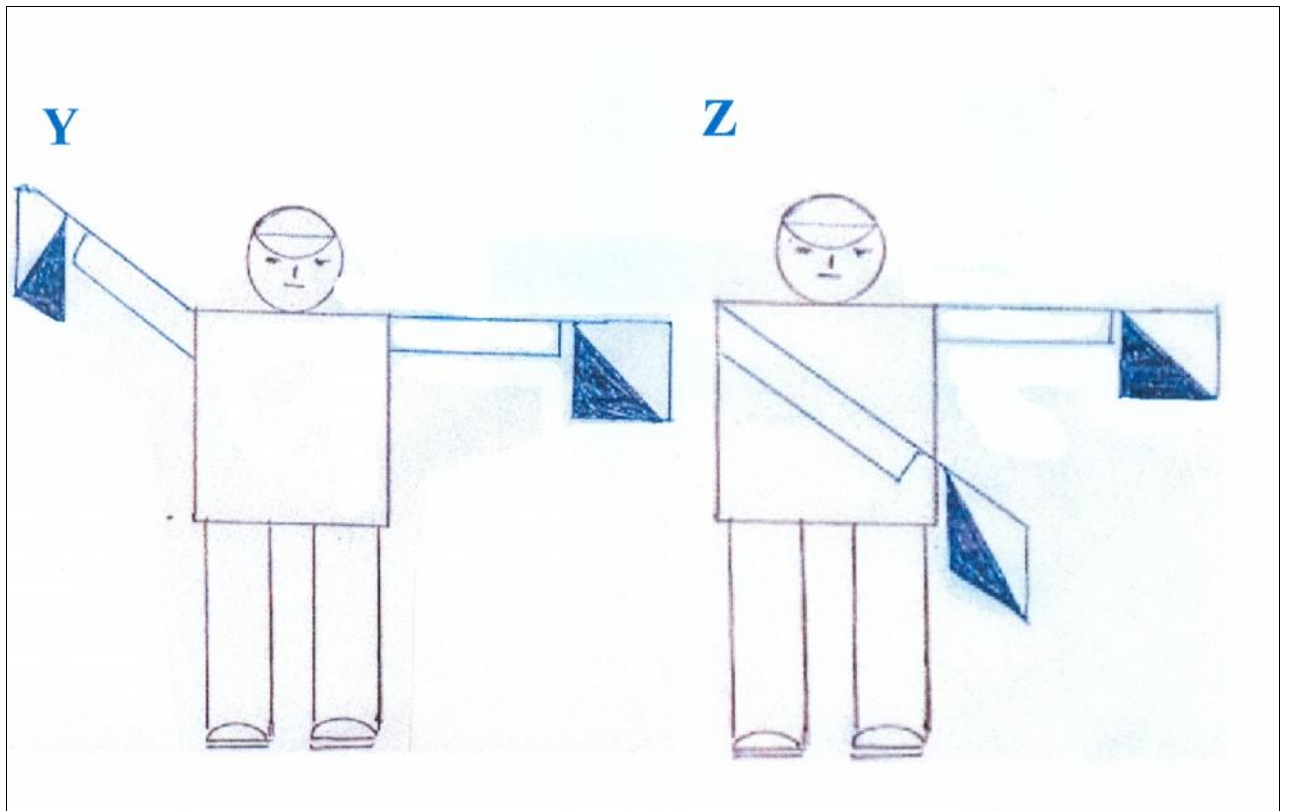


W



X

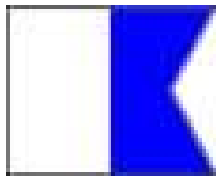








**A**



**B**



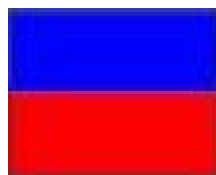
**C**



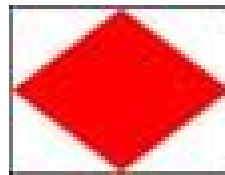
**D**



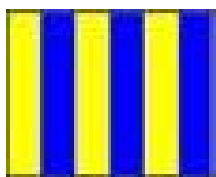
**E**



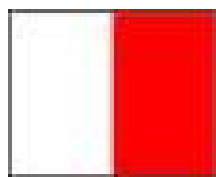
**F**



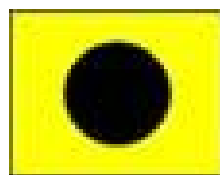
**G**



**H**



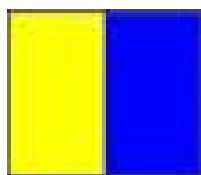
**I**



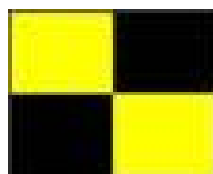
**J**



**K**



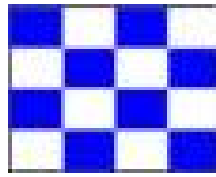
**L**



**M**



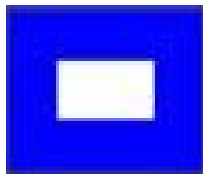
**N**



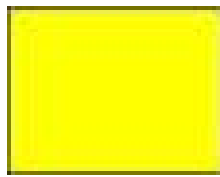
**O**



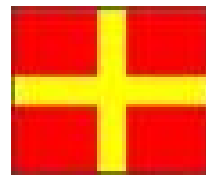
**P**



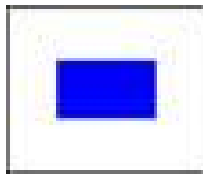
**Q**



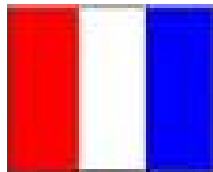
**R**



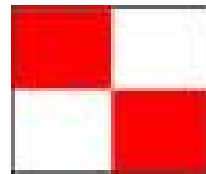
**S**



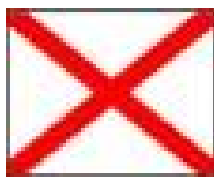
**T**



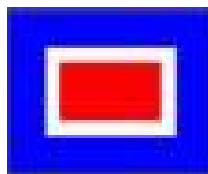
**U**



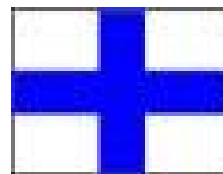
**V**



**W**



**X**



**Y**

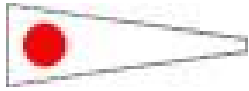


**Z**

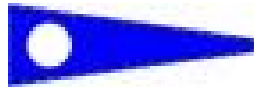


μ

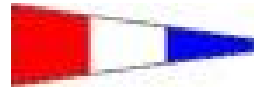
1



2



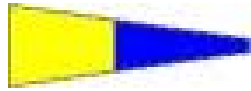
3



4



5



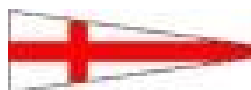
6



7



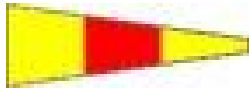
8



9



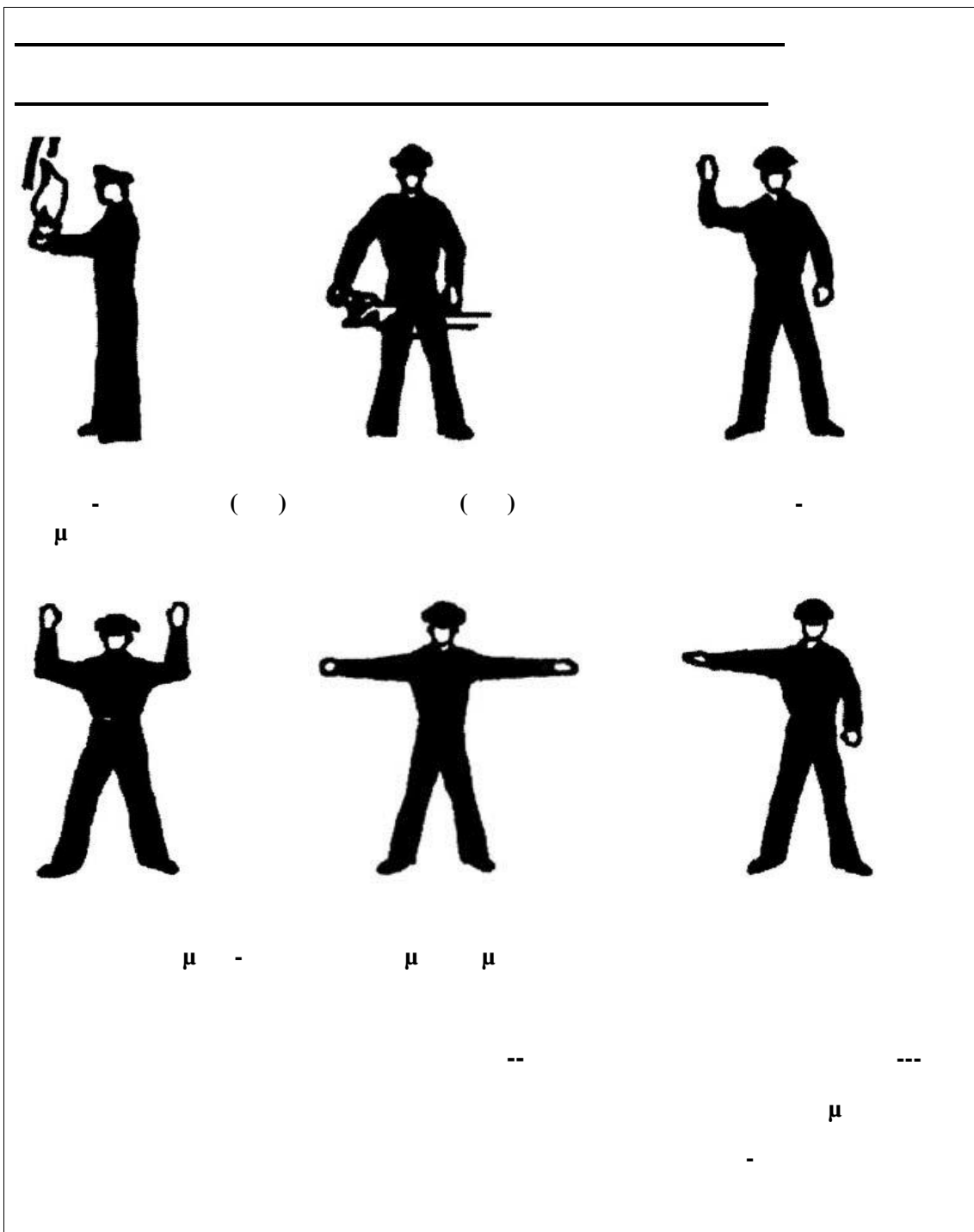
0

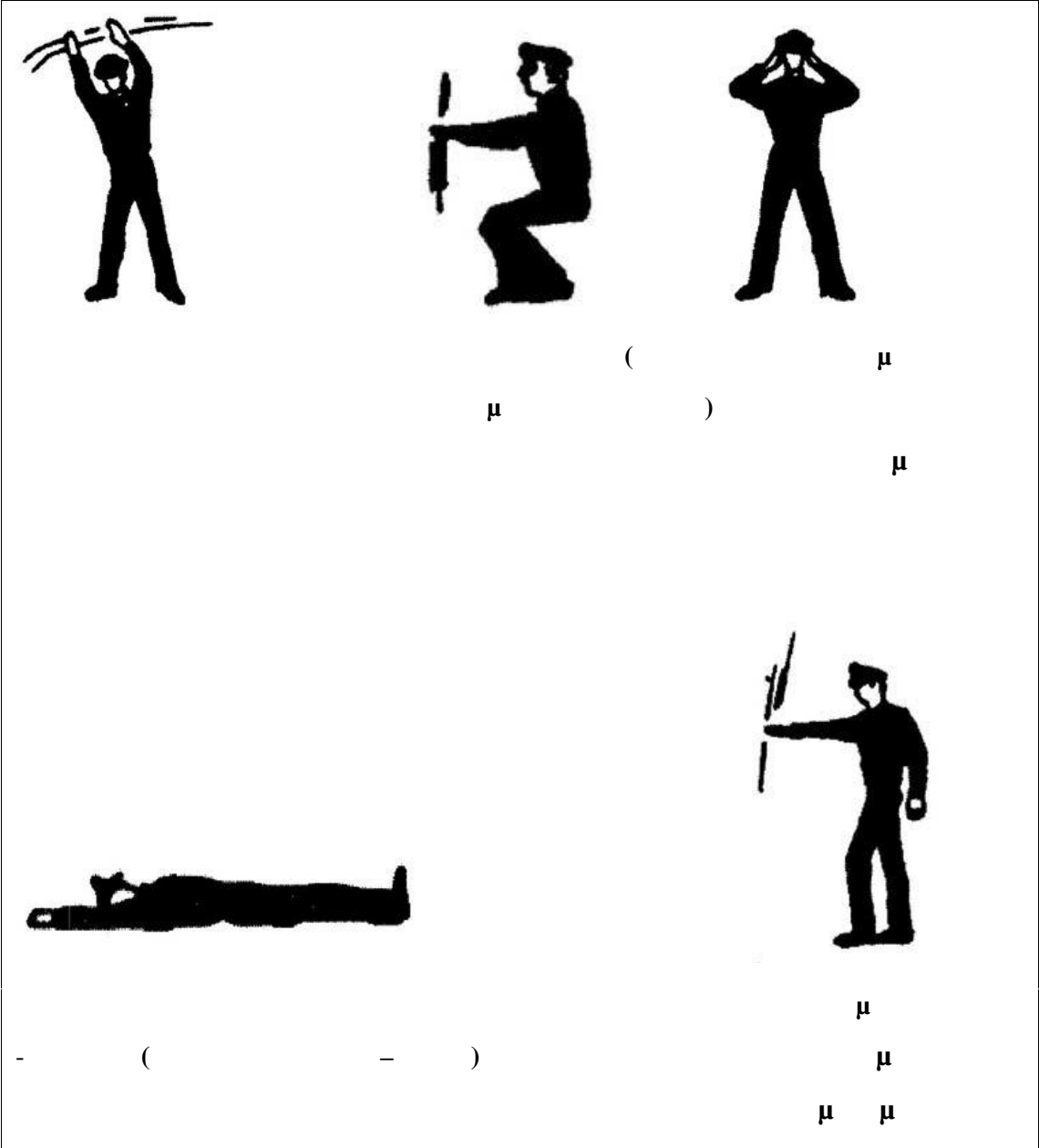


E EYNA

(SAR)

[A]





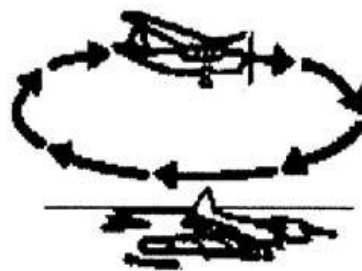
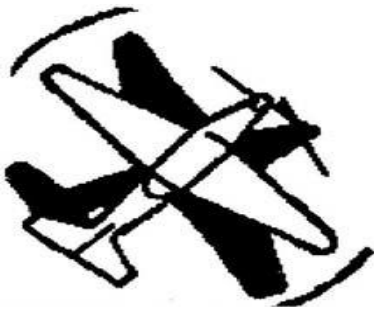
[ ]

K

SAR KAI



μ μ



μ μ

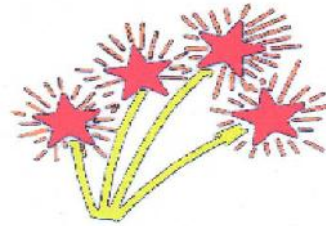
[ ]

---

---

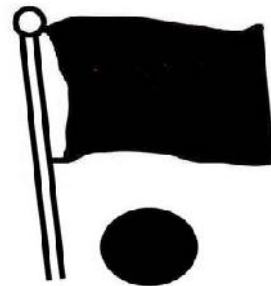
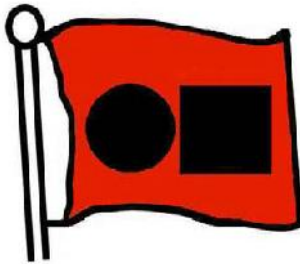
*SAR A*

---



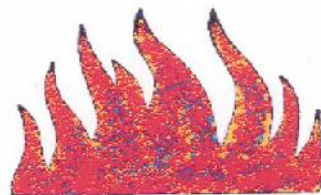
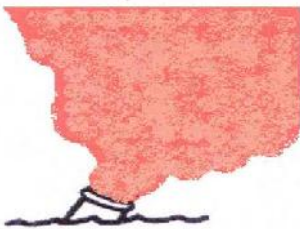
μ

μ



μ

μ

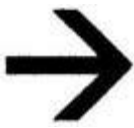


**V**

$\mu$

**X**

$\mu$



**N**

-

**Y**

-



46 ] ( )

5 :

20. μ

) μ  
 ( ) μ .  
 ) μ μ  
 μ , μ ,  
 , μ  
 μ ( ).  
 ) , .. μ μ  
 , μ  
 μ ( ).  
 ) ( μ ) μ μ  
 μ .

) μ :

μ

μ μ ,

.....

21. μ

) « » ( « »),  
 , μ  
 , 225 μ ,

180 μ , 22,5 μ

μ .

) « » ( « »),

μ

, 112,5

μ ( μ ), 90 μ

( ) 22,5 μ μ

.

- μ μ 20 μ.,

, μ ,

μ , μ .

) « » μ

μ , μ μ μ

μ 135 μ

( ), 67,5 μ ,

μ .

) « μ » ,

( μ ) ,

« » § ( ) 21.

) « » ,

μ 360 μ .

) « μ » ,

μ , μ 120

.

) μ :

μ « » « »

,

:

-

,

«

»

, (

,

,

),

,

..,

,

«

»

«

» . . . ,

μ

,

μ

«

»,

21.

-

μ

..

..

,

μ

,

,

μ

,

,

,

,

.

) μ :

,

μ

, (

,

μ ),

,

μ

μ,

μ

,

μ

,  
, ( μ ),  
( μ ) , [  
μ ,  
,  
] ( ) μ  
.

22.

- ,  
μ , μ μ  
μ , ( μ  
) :

| ) | μ μ μ | 50 μ. |
|---|-------|-------|
| - |       | 6     |
| - |       | 3 . . |
| - |       | 3 . . |
| - |       | 3 . . |
| - | (     |       |
|   | )     | 3 . . |

| ) | μ μ       | 12 μ. μ | 50 μ. |
|---|-----------|---------|-------|
| - | ( 20 μ. μ | 50 μ.)  | 5 . . |
| - | ( 12 μ. μ | 20 μ.)  | 3 . . |
| - |           |         | 2 . . |
| - |           |         | 2 . . |

- 2 . . .

- ( ) 2 . . .

)     μ μ                12 μ.

- 2 . . .

- 1 . . .

- 2 . . .

- 2 . . .

- ( ) 2 . . .

)         μ                 μ        μ                                :

- ( ) 3 . . .

)         μ                                :  
  μ        μ        . . . . .,

:

$$= 3,43 \cdot 10^6 \cdot D^2 \cdot -D$$

$$= \mu$$

$$= 2 \cdot 10^{-7}$$

μ LUX

$$\mathbf{K} = \mu$$

-  
=0,8

μ

13

μ .

23.

« »

) « » :

1)

2)

, ( μ 50 μ. μ )

3)

4)

) μ ( μ ),

:

1) § ) 23

2) , ,

) 1) μ 12 μ. μ ,

:

§ ( ) 23:

1 )

1 )

2) μ 7 μ. μ μ

μ 7 μ , :

§ ( ) 23:

2 )

- 2 ) , .
- 3)  $\mu$  12  $\mu$ .  $\mu$  ,  
 $\mu$   
 , , ,  
 .  
 -  
 ,  
 $\mu$  .

24.  $\mu$

- )  $\mu$  :
- 1)  $\xi( )1$   $\xi( )2$  23,  
 -

- ,  $\mu$   $\mu$   
 200  $\mu$ .

- 2)  
 3)  
 4) ,  $\mu$   
 .  
 5)  $\mu$  (  $\mu$  ),  $\mu$  ,  $\mu$   
 $\mu$   $\mu$  200  $\mu$ .  
 )  $\mu$   $\mu$  ,  
 $\mu$   $\mu$  ,  $\mu$  ,

23.

) μ ,

μ μ μ μ , :

1) ,

2)

3)

) § ( ) ( )

24, μ § ( )2 23.

) μ μ ,

§ ( ) 24, :

1)

2)

3) μ ( μ μ ) μ , μ

μ μ 200 μ.

) μ μ , ( μ

μ μ ), μ μ

μ , μ μ ,

, :

1) μ :

2) : ( )

) μ ( ) μ μ ,

μ μ μ ,

:

1 ) ,

1 ) , ,

( μ ) μ 25 μ.



2) ,  
 , , ,  
 μ , , ,  
 μ 25 μ.

3) § ( ) 1) 2) 24,  
 , , μ  
 μ , (μ μ  
 μ - μ 100 μ.),  
 μ μ μ μ 100 μ.

4) μ ( μ μ ) ,  
 μ μ μ , ,  
 μ μ μ 200 μ.  
 μ , μ

) μ μ μ  
 μ , μ μ § ( ) ( ) 24,  
 , μ μ μ , μ  
 μ .

) μ , μ  
 μ μ ,  
 μ μ § ( ) ( ) 24,  
 μ μ  
 μ μ μ μ ,  
 μ , μ μ 36.



1) μ μ 7 μ.,

§ ( ) ( ) 25,

μ ,  
) μ ,  
( ) , :

μ ( μ μ )  
μ , μ .

) μ :

(  
) ( )  
μ , μ , . .) μ

26. \_\_\_\_\_

) , « » , « μ »  
μ 26.

) , ,  
:

1) ,

μ :  
μ μ μ  
, .

$\mu$   $\mu$  20  $\mu$ ., ,  
 ,  $\mu$  .  
 2) (  $\mu$  ) ,  $\mu$   
 $\mu$  § ( ) 1) 26, .  
 -  $\mu$   $\mu$  50  $\mu$ .,  
 .  
 3) ( ) ,  
 § ( ) 26,  
 :  
 )  $\mu$   $\mu$  ( )  
 :  
 1) :  
 ,  
 $\mu$  :  
 $\mu$   $\mu$   
 .  
 -  $\mu$  ,  $\mu$  20  $\mu$ .,  
 ,  $\mu$  .  
 2) ,  $\mu$  ,  $\mu$   
 150  $\mu$ ., , ,  
 ,  $\mu$  : ,  $\mu$   
 (  $\mu$   $\mu$  )  
 $\mu$  .

3) § ( ) 26, ,

§ ( ) 26, :

μ μ  
μ

.....

) μ ,

,

( ) μ μ .

27.

μ

μ

) :

1) , ,

μ .

2) μ ,

μ .

3) ,

§ ( ) 1) 2) 27, :

) μ μ ( μ ) , :

1) , ,  
 μ :

- 
- μ
- 

2) μ μ , ,  
 μ :

- 
- μ
- 

3) . . . , §

( )1) 27, :

- 
- 
- 

4) . . . μ ,  
 μ § ( )1) 2) 27,  
 μ 30.  
 ) μ , μ  
 μ μ μ . . . , μ  
 :

( μ § ( ) 24, ( )  
 μ § ( )1) 2) 27.  
 ) μ , ,  
 . . . , :

§( )1), 2) 3) 27,

, μ , μ ( . . μ . . )  
:

1) , ,  
μ :  
, ,  
.

2) , ,  
μ :  
, ,  
,

3) μ § ( )  
27, , μ § ( ) 27,  
30.

) μ ,  
μ μ § ( ) 27, :

1) , ,  
μ :  
-  
- μ  
-

2) μ , μ μ ,  
1μ., μ ( μ μ ) μμ « »  
, .

) μ ,  
μ 23 ( )  
30 ( μ ), ,  
:

-  
:  
-  
-  
( ).  
-

μ :  
μ .  
) μ μ μ 12 μ., (  
μ ), μ  
μ 27.  
) μ μ 27 μ ,  
μ .

) μ :  
§ ( )2 27:

μ ,  
... μ μ « »  
, μ :  
« ,  
1.000 μ., μ  
».

§ ( ) 27:  
μ μ  
§ ( ) 27, μ :



« , ,  
1.000 μ.»

**28.** \_\_\_\_\_ μ μ μ  
μ μ μ ,  
μ , 23, ,  
:  
- ,  
:  
-

**29.** \_\_\_\_\_  
) μ , :  
1) , :  
-  
-  
2) « », μ  
μ § ( ) 1) 29, :  
-  
-  
3) μ , μ  
μ § ( ) 1) 29, :

30,

)  $\mu$  ,  
 $\mu$  ,  
 , (  $\mu$  , )  
 $\mu$   $\mu$  .

30.  $\mu$   
 $\mu$

)  $\mu$  ,  
 $\mu$  :  
 1) , , :

2) , , , (  $\mu$  ) .

)  $\mu$   $\mu$  ,  $\mu$   
 50  $\mu$ . ,  $\mu$  § ( ) , 30, :  
 - ,  $\mu$   
 .

)  $\mu$  ,  $\mu$   
 $\mu$  100  $\mu$ . ,  $\mu$  ,  
 $\mu$   $\mu$   
 .

)  $\mu$  :  
 $\mu$  § ( ) ( ) 30 :  
 - ,  $\mu$  ,  
 :

- ) μ μ μ 7 μ., μ  
 :

- μ / μ μ  
 -

, μ μ § ( ) ( )  
 30.

, μ  
 , , μ § ( ) ( )  
 30.

) μ μ μ 12 μ.,  
 μ ,  
 , μ , μ § ( ) 1) 2)  
 30.

**31.** \_\_\_\_\_

μ 20 μ 31, μ  
 μ , μ , μ  
 μ .

47 ] ( )

6 :

32. μ

) , μ μ . . . .

μ μ μ

μ .

) μ , ,

,

) μ , ,

, μ .

33. μ

) μ μ 12 μ.,

:

-

-

,

μ μ 100 μ.,

:

1) -

2) -

3) - , μ μ

μ .

) μ μ 12 μ.,  
μ μ ,  
§( ), 33, ,  
μ , μ μ  
μ .

**34.** μ μ  
) « », «  
» μ , , μ ,  
μ μ ,  
μ μ :  
1) μ , μ :  
« »  
2) μ , μ :  
« »  
3) μ , μ :  
« »  
) 1) μ μ § ( ) 1), 2) 3)  
34, , μ μ  
μ μ μ ,  
:  
- , μ :  
« »  
- , μ :  
« »  
- , μ :  
« μ »

2) - μ , .  
 - μ μ μ ,  
 .  
 - μ μ μ μ ,  
 μ .

3) , μ  
 μ μ :  
 -  
 -  
 - μ 5 . . .  
 - μ μ μ μ  
 . . . .

) « » « » μ  
 , μ ( μ μ  
 ), :

1) ,  
 μ μ 9 § ( )1), μ  
 μ , :  
 - μ , μ :  
 « μ ».  
 - μ , μ :  
 « μ ».

2)  
 , , , μ μ 9 § ( )1),  
 , μ μ :

-  
-  
-  
-  
)  
μ μ ,  
μ « » ,  
μ :  
- , μ  
( ):  
- μ .  
) « » :  
-  
-  
- μ / μ μ  
,  
, μ μ  
μ , , « »  
μ :  
- μ ,  
,  
μ μ  
- μ  
) μ ,  
μ 100 μ., μ  
, μ μ .

35.

μ

μ

μ

,

μ

μ

,

:

)

μ :

μ

2

)

, μ

2

,

μ :

μ

, μ

μ

μμ

2

.

)

:

1)

2) . . .

3) μ μ

μ

4)

5)

6) μ

,

μ

§ ( )

( )

35,

μ

2

,

μ

)

. . .

μ

,

μ

§ ( )

35,

μ

μ

§ ( )

35.

)

μ

μ

μ

μ

,

,

,

μ

2

:



- μ μ μ μ  
 μ μ .  
 ) μ , μ  
 μ , ,  
 μ μ § ( ) ( ) 35.  
 ) 1) μ , μ μ μ ,  
 μ μ , 5 ,  
 μ μ μ 1 .  
 2) μ 100 μ., μ  
 , μ , μ ( μ μ  
 μ § ( )1) 35), 5 μ  
 μ .  
 3) μ μ μ :  
 , μ ,  
 , .  
 ) μ , μ μ  
 μ μ § ( ) 35,  
 , μ μ 3  
 μ .  
 - μ μ μ μ  
 .  
 ) μ μ μ 12 μ., μ  
 μ μ μ μ 35, ,  
 μ , μ μ 2  
 μ .

)  
 $\mu$  § ( ), ( ) ( ) 35,  $\mu$   $\mu$   
 , 4  $\mu$  .

36.  $\mu$

,  
 $\mu$   $\mu$  ,  
 $\mu$  ,  $\mu$   
 $\mu$  . . . .  
 $\mu$  (  $\mu$  )  $\mu$   
 , ,  
 $\mu$  .

37.  $\mu$

$\mu$   $\mu$  ,  $\mu$   
 .  $\mu$

**48 ]**

---

---

---

---

1) \_\_\_\_\_, μ :

WEATHER SHIPPING BULLETIN, by:

NAVTEX

E.G.C.

DSC . . . .

2) \_\_\_\_\_ μ

NAVIGATIONAL WARNINGS

3) \_\_\_\_\_ μ μ **S.R.S.**

SHIPS REPORTING SYSTEMS, REPORTS

4) \_\_\_\_\_

(METE ) ROUTEING REPORTS

5) \_\_\_\_\_ μ μ \_\_\_\_\_ , \_\_\_\_\_

SAFETY, URGENT OR DISTRESS MESSAGES

6) \_\_\_\_\_

METEO OBSERVATIONS REPORTS



**A] ---**

- =====
- **[www.imo.org](http://www.imo.org)**
  - PUBLICATIONS
  - CATALOGUE AND BOOK CODE LISTS
  - IMO PUBLISHING CATALOGUE (JANUARY 2012)  
( PUBLICATIONS CATALOGUE (TILL 1/2012) [PRINT  
AND DIGITAL] )
- =====

**B] ---**

- =====
- **[www.ukho.gov.uk](http://www.ukho.gov.uk)**
  - PRODUCTS AND SERVICES
  - PAPER PUBLICATIONS
  - VIEW MORE DETAILS
  - ADMIRALTY NAUTICAL PAPER PUBLICATIONS
    - (SAILING DIRECTIONS, TIDAL PUBLICATIONS,  
LIST OF RADIO SIGNALS, LIST OF LIGHTS,  
OTHER PUBLICATIONS)
- =====

|                            |
|----------------------------|
| <p>INMARSAT,<br/>GMDSS</p> |
|----------------------------|

INMARSAT - INTERNATIONAL MARITIME SATELLITE ORGANIZATION

- 1] GMDSS, INMARSAT ROLE
- 2] GMDSS INFORMATIONS, CARRIAGGE REQUIREMENTS
- 3] GMDSS, OCEAN VOICE SUPPLEMENT
- 4] INMARSAT HELP-LINE FAST SHEET
- 5] INMARSAT MARITIME COMMUNICATIONS HANDBOOK
- 6] INMARSAT -C, MARITIME USER'S MANUAL
- 7] ENHANCED GROUP CALL RECEIVER DESIGN AND  
INSTALLATION GUIDELINES
- 8] INMARSAT -C OPERATIONAL LAND EARTH STATIONS
- 9] INMARSAT -C SHIP EARTH STATION DESIGN AND  
INSTALLATION GUIDELINES
- 10] INMARSAT -B, EARTH STATION DESIGN AND  
INSTALLATION GUIDELINES
- 11] INMARSAT -M, MARITIME COMMISSIONING  
PROCEDURES MODULE
- 12] MOBILE EARTH STATIONS ALPHABETIC DIRECTORY

( INMARSAT, ,  
NMARSAT ,  
μ .)

( N μ C  
( μ ) “ μ  
INMARSAT )

IEC : INTERNATIONAL ELECTROTECHNICAL COMMISSION  
- \_\_\_\_\_ )

=====

- **[www.inmarsat.com](http://www.inmarsat.com)**
- MARITIME
- MERCHANT
- SAFETY
- GMDSS
- INMARSAT AND THE GMDSS
- DESIGN AND INSTALLATION GUIDELINES
- DESIGN AND INSTALLATION GUIDELINES
- (MARITIME DESIGN AND INSTALLATION GUIDELINES )

=====

“NON GMDSS

**50 ]**

**“ THURAYA**

1) :

) K ( μ )  
( **250.000** )

) **TELEX**

) μ ( **DATA** )

) **e – mail**

) ( **INTERNET** )

) μ

)

) μ

2) :

**144 ilobits / second**

3) :



13.750

μ

4) :

μ

,

( “BOEING SATELLITE SYSTEMS” )

μ

μ

.

: 35.786 hmtrs

: 044 ast

5)

μ THURAYA

:

)

)

)

)

)

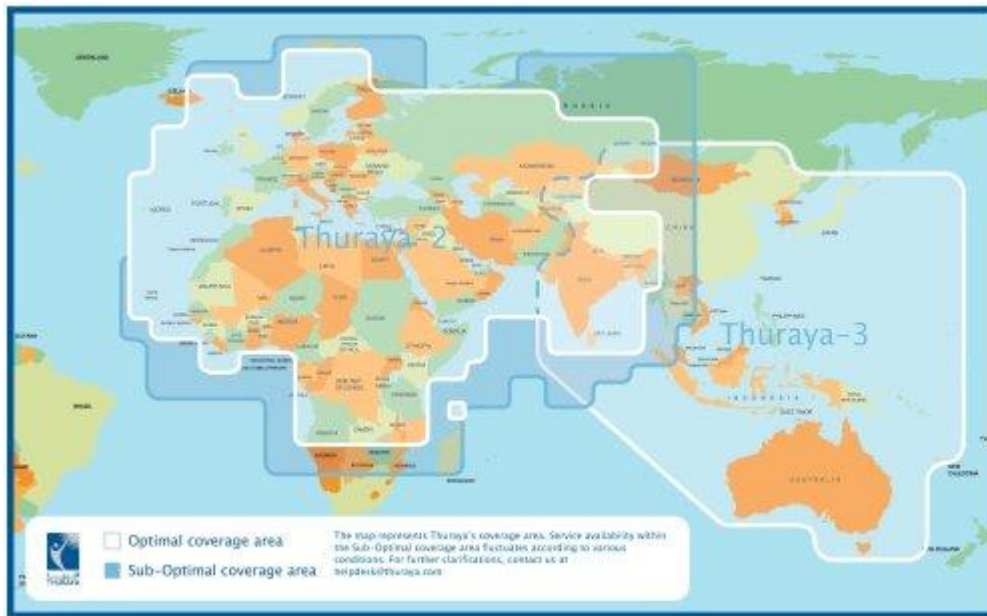
)

)

)

)

# “THURAYA



**51 ] \_\_\_\_\_ “**

**GLOBALSTAR**

**1) \_\_\_\_\_ :**

) \_\_\_\_\_

) \_\_\_\_\_

) \_\_\_\_\_ **SMS – ( SHORT MESSAGING SERVICE )**

) **FAX**

) \_\_\_\_\_ **( DATA )**

**2) \_\_\_\_\_ :**

\_\_\_\_\_ ,  
\_\_\_\_\_ **9.6 Kilobits / second** \_\_\_\_\_ **NON COMPACT**  
( \_\_\_\_\_ ) \_\_\_\_\_ .

3 ) :

( 48 ) μ  
K ( 8 ) μμ

: 1.414 Khm

: GLOBASTAR

μ μ μ μ ,  
, μμ ,

( -

μ  
μ - ) ( 100 )

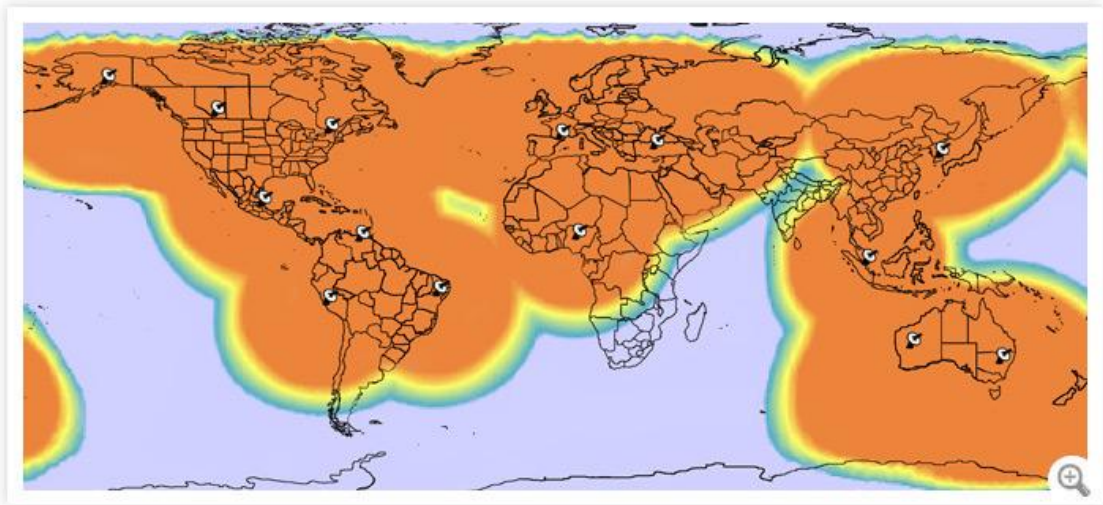
μ .

4 )

70 μ 70

μ  
μ μ μ

**GLOBALSTAR**



*Last update August 08, 2012*

“ IRIDIUM ”

1) \_\_\_\_\_ :

- ( \_\_\_\_\_ )
- ) \_\_\_\_\_
- ) \_\_\_\_\_
- ) \_\_\_\_\_ **SMS – ( SHORT MESSAGING SERVICE )**
- ) \_\_\_\_\_ **( DATA )**
- ) \_\_\_\_\_ **( INTERNET )**
- ( \_\_\_\_\_ )

2) \_\_\_\_\_ :

- \_\_\_\_\_ ,
- \_\_\_\_\_ **9.6 Kilobits / second**
- ( \_\_\_\_\_ **INMARSAT Mini-M**
- \_\_\_\_\_ )

3) :

(66)

μ

(LEO)

,

.

**BOEING**

4)

μ

,

μ

μ

.

μ

μ

,

μ

μ ,

μ

.

μ

μ

μ

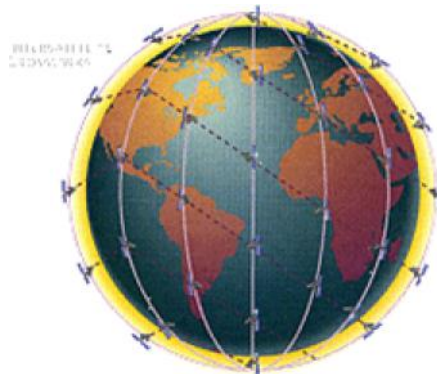
”

μ

.

---

“ RRIDIUM ”







3 ) :

To μ VSATs :

- μ
- μ
- μ ( TRANSPONDER SEGMENT)

μ , μ :

1) μ

μ μ μ

μ

μ .

( X μ μ )

2) “full – mesh :

μ μ μ

, μ μ

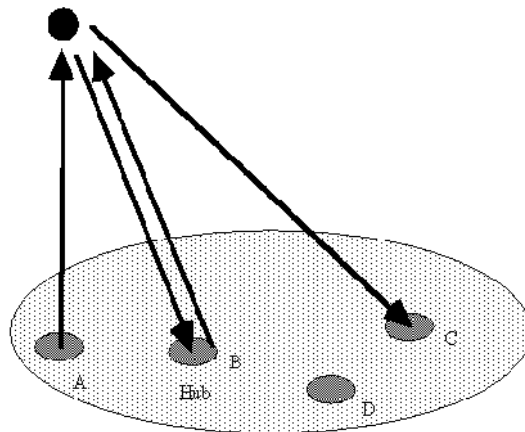
μ .

3) “ μ :

μ μ μ μ μ μ .

---

*VSAT*



---

*VSAT*

---



“BGAN

1) :

To μ

BGAN- ( BROADBAND GLOBAL AREA NETWORK ),

:

) - \_\_\_\_\_

) - \_\_\_\_\_ μ \_\_\_\_\_

) - \_\_\_\_\_

) - \_\_\_\_\_ μ INTERNET μ \_\_\_\_\_

\_\_\_\_\_

) - \_\_\_\_\_ μ VIRTUAL PRIVATE NETWORKS

) - \_\_\_\_\_ - \_\_\_\_\_

) -

2)

:

$\mu$  144 ilobits / second  
 $\mu$   $\mu$   
500 ilobits ( 0,5 Megabit ) /

second

3)

:

( 4 ) INMARSAT ( ) .

: 35.786 Khm

T (  $\mu$   $\mu$   $\mu$  )

): 11.064 Khm / hour

: DS

4)

$\mu$

$\mu$

99 .

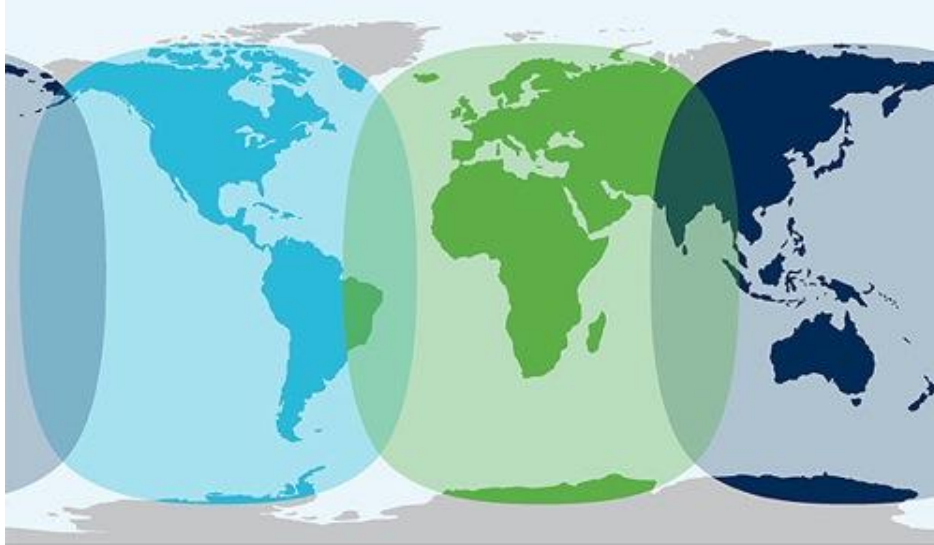
$\mu$  ,

o

INMARSAT.

---

## BGAN



**55 ] \_\_\_\_\_ :**

1. \_\_\_\_\_ :

\_\_\_\_\_  $\mu\mu$  \_\_\_\_\_  $\mu$

\_\_\_\_\_ :

\_\_\_\_\_  $\mu\mu$  NC

2. \_\_\_\_\_ :

\_\_\_\_\_  $\mu\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$

“  $\mu$  \_\_\_\_\_ :

\_\_\_\_\_  $\mu$

\_\_\_\_\_ :

\_\_\_\_\_  $\mu\mu$  Q \_\_\_\_\_  $\mu$

3. \_\_\_\_\_ :

\_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu\mu$  V \_\_\_\_\_  $\mu$

\_\_\_\_\_ :

\_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  : “AIT

\_\_\_\_\_ ,

4. \_\_\_\_\_ :

\_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu\mu$  \_\_\_\_\_  $\mu$

\_\_\_\_\_ :

“ \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_ :

5. \_\_\_\_\_ :

\_\_\_\_\_  $\mu$  \_\_\_\_\_ , \_\_\_\_\_  $\mu$  : \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

\_\_\_\_\_ :

\_\_\_\_\_  $\mu$  \_\_\_\_\_ ( \_\_\_\_\_ (6) )

6. \_\_\_\_\_ :

\_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  :

1) “

- 2) “
- 3) “

\_\_\_\_\_ :  
 μμ :  
 E = .  
 I = ..  
 S = ...

7. \_\_\_\_\_ :  
 μ μ μ μ

\_\_\_\_\_ :

8. \_\_\_\_\_ :  
 μμ μ :  
 1) “  
 2) “

\_\_\_\_\_ :  
 μμ :  
 1) G = \_ \_ .  
 2) Z = \_ \_ ..

9. \_\_\_\_\_ :  
 μ μ μ μ :  
 “

\_\_\_\_\_ :  
 μμ μ

10. \_\_\_\_\_ :  
 μ μ μ μ μ μ μ μ ( hotel )  
 μ μ , μ μ μ μ μ μ

\_\_\_\_\_ :  
 μ .

11. \_\_\_\_\_ :  
 μμ μ μ μ μ :  
 1) K  
 2)  
 3)

\_\_\_\_\_:

- 1) SOS = ... \_ \_ \_ \_ ...
- 2) XXX = \_...\_ \_...\_ \_...\_
- 3) TTT = \_ \_ \_ \_

12. \_\_\_\_\_:

- \_\_\_\_\_  $\mu$  \_\_\_\_\_ ; \_\_\_\_\_  $\mu$

\_\_\_\_\_:

$\mu$  \_\_\_\_\_ ( )  $\mu$   $\mu$   $\mu$  (-----).  
 $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_ AUTO-ALARMS  
 $\mu$  \_\_\_\_\_ : “ \_\_\_\_\_ ,

13. \_\_\_\_\_:

$\mu\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  : “EX  
 $\mu$

\_\_\_\_\_:

$\mu\mu$  \_\_\_\_\_  $\mu$

14. \_\_\_\_\_:

$\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_  $\mu$   
 $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_ .

\_\_\_\_\_:

$\mu$  \_\_\_\_\_ ( ) \_\_\_\_\_ .

15. \_\_\_\_\_:

- 1) \_\_\_\_\_  $\mu$   $\mu$  \_\_\_\_\_  $\mu$  \_\_\_\_\_ :
- 2) \_\_\_\_\_  $\mu$  \_\_\_\_\_
- 3) \_\_\_\_\_

\_\_\_\_\_:

- 1) \_\_\_\_\_
- 2) R
- 3) AR VA



16. \_\_\_\_\_: \_\_\_\_\_ μ, μ, ALDIS μ μ μ μ

- \_\_\_\_\_:
- 1) \_\_\_\_\_ μ \_\_\_\_\_ μ
  - 2) \_\_\_\_\_ μ, \_\_\_\_\_, μ \_\_\_\_\_ μ
  - 3) \_\_\_\_\_, . . .
  - 4) \_\_\_\_\_ μ

17. \_\_\_\_\_: \_\_\_\_\_ μ μ \_\_\_\_\_ μ \_\_\_\_\_ .

- \_\_\_\_\_:
- 1)
  - 2)
  - 3) \_\_\_\_\_ μ

18. \_\_\_\_\_: \_\_\_\_\_ μ \_\_\_\_\_ ( \_\_\_\_\_ μ \_\_\_\_\_ ) \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ μ \_\_\_\_\_ .

- \_\_\_\_\_:
- 1) \_\_\_\_\_ μ VHF (EMERGENCY)
  - 2)
  - 3) “ \_\_\_\_\_”
  - 4) ( \_\_\_\_\_ μ \_\_\_\_\_ )

19. \_\_\_\_\_: \_\_\_\_\_ μ \_\_\_\_\_ μ \_\_\_\_\_ μ \_\_\_\_\_ .

- \_\_\_\_\_:
- 1) \_\_\_\_\_ μ \_\_\_\_\_, \_\_\_\_\_ μ \_\_\_\_\_ μμ “ \_\_\_\_\_”
  - 2) \_\_\_\_\_ μ \_\_\_\_\_ μ \_\_\_\_\_ μ \_\_\_\_\_, \_\_\_\_\_ μ \_\_\_\_\_ μ \_\_\_\_\_)

20. \_\_\_\_\_: \_\_\_\_\_ ( \_\_\_\_\_ μ \_\_\_\_\_ μ \_\_\_\_\_ ), \_\_\_\_\_ μ \_\_\_\_\_ μ \_\_\_\_\_ μ \_\_\_\_\_ .

μ . , μ .

\_\_\_\_\_:

- 1) μ μ
- 2) μ , μ ( . . μ
- μ , μ , . . .)
- 3) ,
- μ - μ , - μ μ μ
- μ μ
- 4) μ μ , μ μ
- 5) μ μ - μ μ
- 6) , μ (
- ) μ μ

21. \_\_\_\_\_:

μ  
 ( , , ):  
**EM** , ,

\_\_\_\_\_:

- 1) ( )
- 2) GA ( )
- 3) OVER ( )

22. \_\_\_\_\_:

μ : “ **REMETRE AT....** μ μ

\_\_\_\_\_:

.....

23. \_\_\_\_\_:

μ - μ :

- 1) **CFM**
- 2) **RRR**
- 3) **DDD**
- 4) **ACKN**

\_\_\_\_\_:

- 1) / / μ μ ( )
- 2) μ

3) μ μ

4) μ

24. \_\_\_\_\_:

μ GMDSS, o μ μ ,

\_\_\_\_\_:

1) 16 CHANNEL VHF

2) 2182 KHz MF

25. \_\_\_\_\_:

μμ μ μ :

“A

\_\_\_\_\_:

μμ , μ μ (3) (\_\_\_\_)

26. \_\_\_\_\_:

μ

μ :

1) - μ

2) - , μ

\_\_\_\_\_:

1) S

2) QRY

27. \_\_\_\_\_:

μ

μ :

1) CLR

2) UP

3) LT

\_\_\_\_\_:

1)

2) μ

3)

28. \_\_\_\_\_:

μ :

μ

- 1) PDH
- 2) OBS
- 3) SVC

\_\_\_\_\_:

- 1) μ
- 2) μ
- 3) μ μ

29. \_\_\_\_\_:

- 1) E μ Q, :
- 2) μ μ
- 3) μ μ

\_\_\_\_\_:

- 1) QSA
- 2) QRK
- 3) QRS

30. \_\_\_\_\_:

- 1) LL μ :
- 2) CK
- 3) CW

\_\_\_\_\_:

- 1) T (LAND LINE)
- 2) μ
- 3)

31. \_\_\_\_\_:

- 1) QRC μ Q: μ
- 2) QRN
- 3) QRM

\_\_\_\_\_:

- 1) μ / ( ) μ
- 2) μ μ μ μ
- 3) /

32. \_\_\_\_\_:

μ

μ

Q:

- 1) QRJ
- 2) QSW
- 3) QSS

\_\_\_\_\_:

- 1)
- 2)
- 3)

33. \_\_\_\_\_:

μ

μ μ μ , μ

.

\_\_\_\_\_:

- 1) μ ( . . SVC, PDH . . . )
- 2) μ ( μ ) μ μ μ
- 3) μ μ μ
- 4) μ μ / μ
- 5) μ ( μ μ )

34. \_\_\_\_\_:

/ μ μ μ μ μ .

\_\_\_\_\_:

- 1) ( )
- 1)
- 2) μ μ
- 3) μ μ μ
- 4)

35. \_\_\_\_\_:

μ μ μ μ

\_\_\_\_\_ :  
μ MSG

36. \_\_\_\_\_ :

. μ μ μ

\_\_\_\_\_ :  
1) = .

2) μμ = \_ \_ . . \_ \_

3) = \_ \_ \_ . . . .

4) μ = \_ . . \_ .

37. \_\_\_\_\_ :

μ μ μ μ U  
μ

\_\_\_\_\_ :

38. \_\_\_\_\_ :

μ μ μ :

1) W

2) Y

3) Z

μ

\_\_\_\_\_ :

1)

2) μ μ

3) μ

39. \_\_\_\_\_ :

μ , μ μ 40

\_\_\_\_\_ :

$$4 =$$

$$0 =$$

$$40. \quad \underline{\hspace{2cm}} :$$

$$\mu\mu$$

,

$\mu$

$$\underline{\hspace{2cm}} : \\ \mu\mu \quad R$$

# 56 ] \_\_\_\_\_ :

1. \_\_\_\_\_ :

μ μ , μ μ ( μ μ ) μ

\_\_\_\_\_ :

\_\_\_\_\_ μ μ ( μ μ ) μ  
 1second\_ second

F=c/s Hertz F=Hz

\_\_\_\_\_ μ μ ( ) μ μ  
 (μ μ ), .

\_\_\_\_\_ ( ),  
μ  
=1/F

\_\_\_\_\_ μ ( μ μ μ  
 μ ), , μ  
=c/F ( c = \_\_\_\_\_ )

\_\_\_\_\_ μ μ μ μ ,  
 μ .

μ : c=300.000 kHz/second

2. \_\_\_\_\_ :

μ μ μ μ

\_\_\_\_\_ :

) μ \_\_\_\_\_ : μ



)  $\mu$   $\mu$   $\mu\mu$  :  
 $\mu$  ,  $\mu$   $\mu$

)  $\mu$   $\mu$  :  
 $\mu$   $\mu$   
 (  $\mu$  ).

)  $\mu$   $\mu$  :  
 $\mu$   $\mu$   
 (  $\mu$  ).

)  $\mu$   $\mu$  :  
 $\mu$  ,  $\mu$   $\mu$   
 \_\_\_\_\_

3. \_\_\_\_\_ :  
 $\mu$

\_\_\_\_\_ :  
 )  
 )

4. \_\_\_\_\_ :  
 $\mu$

\_\_\_\_\_ :

$\mu$   $\mu$  ,  $\mu$   $\mu$   
 $\mu$   $\mu$   $\mu$   $\mu$  .  
 MF, HF, VHF, UHF,  $\mu$  .

$\mu$   $\mu$   
 $\mu$   $\mu$  ,  
 (1MHz, 2MHz, 3MHz, 4MHz, . . .)

5. \_\_\_\_\_ :

**μ GMDSS μ**

\_\_\_\_\_ :

- ) \_\_\_\_\_ μ μ ( ) μ
- μ , - - - : (μ -
- μ . .)
- ) \_\_\_\_\_ :
- μ
- μ
- ,
- ) \_\_\_\_\_ ,
- μ μ μ μ -

**6.** \_\_\_\_\_ :

**μ μ μ μ μ μ**  
**GMDSS**

\_\_\_\_\_ :

- μ μ ( . . . )
- μ ) μ (INTERNATIONAL MARITIME ORGANIZATION),
- μ μ ,
- ) (INTERNATIONAL TELECOMMUNICATION UNION), μ
- μ , . . .
- μ , μ
- (COMSAR).
- :
- 1) μ (INTERNATIONAL CONVENTION FOR SAFETY OF LIFE AT SEA),
- 1) μ (RADIO REGULATIONS)
- μ μ ,
- ITU.
- μ :
- COMSAR
- RADIO REGULATIONS
- CHAPTER IV ( 4) SOLAS, μ

μ  
μ  
(GLOBAL MARITIME DISTRESS AND SAFETY  
SYSTEM - GMDSS).

7. \_\_\_\_\_:

μ NAVTEX ( μ ),  
μ SAFETY NET-EGC,  
μ MSI. μ N -

\_\_\_\_\_:

μ (HF)

8. \_\_\_\_\_:

DSC, μ DSC μ

\_\_\_\_\_:

) ( )  
) ( μ )  
) ( μ )  
) - μ ( μ )  
) μ μ μ μ  
( μ )

9. \_\_\_\_\_:

DSC μ

\_\_\_\_\_:

)  
)

10. \_\_\_\_\_:

μ INMARSAT, μ DSC  
μ LES INMARSAT μ CRS DSC μ

\_\_\_\_\_:

μ CRS ( COAST RADIO STATION ) μ DSC  
 LES ( LAND EARTH STATION )  
 INMARSAT ], :  
 ) μ μ μ -  
 ) μ ( , μ ,  
 , )  
 )

11. \_\_\_\_\_:

μ μ μ μ  
 μ DSC μ μ

\_\_\_\_\_:

μ ) - μ DSC :  
 , μ ( μ CRS), μ μ  
 ) - :  
 μ μ μ μ μ μ

12. \_\_\_\_\_:

, μ μ μ μ  
 , μ μ , μ DSC. μ

\_\_\_\_\_:

**PRIORITY: URGENT**  
**FROM: 237543894**  
**TIME: 11:30 UTC 10 JUN 2011**  
**POSITION: 08° 00N 150 00W**  
**TYPE OF CALL: ALL SHIPS**  
**TRANSMISSION (CLASS OF) : F3E/G3E**

13. \_\_\_\_\_:

K μ μ μ μ DSC.



➤ , μ μ  
 , , μ  
 ➤ , :  
 ( ) μ ( )  
 ( ) μ ( )  
 \_\_\_\_\_ )  
 \_\_\_\_\_ )  
 μ , μ μ , μ ,  
 μ μ ,  
 , .

16. \_\_\_\_\_:

- μ GMDSS :
- SART
- EPIRB
- μ VHF,
- ( )

\_\_\_\_\_:

O μ VHF

17. \_\_\_\_\_:

μ μ μ . μ

\_\_\_\_\_:

) ( ) , ,  
 )  
 ) μ μ , μ μ  
 ) μ μ μ ( μ ) μ μ  
 ) μ μ μ ( . μ μ  
 μ μ μ μ , μ  
 μ . .)

18. \_\_\_\_\_:

\_\_\_\_\_ :  
 ) μ ( ),  
 ) ,  
 ) μ μ  
 )

**19. \_\_\_\_\_ :**

\_\_\_\_\_ :  
 ) μ DSC INMARSAT, ( )  
 MMSI ID.

**DSC :**  
**1) -- MMSI \_\_\_\_\_ :**  
 MIDXXXXXX (9 ) (239573414)  
 O :  
 ) MID = ( )  
 ( . . 237561492 )  
 ) XXXXXX = ( ) μ  
 ) Ø MID XXXXX ( μ Ø DSC MMSI, μ )

**2) -- ID \_\_\_\_\_ :**  
 ) ØØ MID XXXX ( ØØ (μ ) )

**INMARSAT,**  
**I.D ( \_\_\_\_\_ :**  
 MID XXXXXX (9 ) ( . . 423759426 )  
 O :  
 ) X = ( INMARSAT )  
 :  
 INMARSAT-B 3  
 INMARSAT-C 4  
 INMARSAT FLEET F77 76 ( )  
 INMARSAT FLEET F77 60 ( DATA )  
 ( μ )  
 ) MID = ( )

( . . . 237 ) XXXXXX = ( 239 ) μ  
INMARSAT

I.D ( )

INMARSAT -C :  
K X (3 ) ( . . 221 )  
O :  
K = o μ

= K μμ ,

( . . : )

AOR- E = 121  
AOR-W = 021  
IOR = 321  
POR = 221 )

INMARSAT , INM -C :  
(3 ) ( . . 306 )  
O :  
=

( . . AOR- E = 306, AOR-W = 306, IOR = 306, POR = 306 )

20. \_\_\_\_\_ :

3 μ 4 μ , μ H.F., μ  
DSC ( )

\_\_\_\_\_ :

, \_\_\_\_\_ μ , μ  
\_\_\_\_\_ μ , ( μ , μ  
μ , . .).

21. \_\_\_\_\_ :

\_\_\_\_\_ μ \_\_\_\_\_ μ \_\_\_\_\_ μ \_\_\_\_\_ μ \_\_\_\_\_



H.F, μ DSC

\_\_\_\_\_:

μ , << ALL BANDS >>, \_\_\_\_\_  
μ , BANDS ( \_\_\_\_\_ )  
4, 6, 8, 12 16MHz.

μ  
μ , , μ μ ,  
) μ μ ,  
) μ μ μ μ  
μ , μ μ μ

22. \_\_\_\_\_:

( μ GMDSS),

μ .

\_\_\_\_\_:

GPS, μ  
μ , , ,

23. \_\_\_\_\_:

μ μ , μ  
μ μ μ  
SOLAS . FORUM μ

\_\_\_\_\_:

, μ μ .

24. \_\_\_\_\_:

GMDSS A1,A2, A3,A4, μ

\_\_\_\_\_:

- 1) - 1, VHF DSC,  
 μ μ VHF DSC.
- 2) - 2 VHF/ DSC, MF/ DSC  
 μ μ μ MF/  
 DSC.
- 3) - 3, μ 76° 76°  
 , VHF/ DSC, MF/ DSC, :  
 HF/ DSC,  
 (INMARSAT)  
 (INMARSAT-C,  
 INMARSAT-B FLEET 77)

25. \_\_\_\_\_ :

**μ SOLAS (SAFETY OF LIFE AT SEA)**

\_\_\_\_\_ :

(SAFETY OF LIFE AT SEA).

STANDARDS

μ μ μ μ μ μ  
 , μ μ μ μ μ μ  
 , ( μ ) [ μ μ ],  
 μ μ μ μ μ μ

26. \_\_\_\_\_ :

**μ GMDSS,**

**μ μ . . SOLAS**

\_\_\_\_\_ :

GMDSS 300 ,

μ μ , μ GMDSS

12m.

27. \_\_\_\_\_ :

μ μ μ GMDSS .

\_\_\_\_\_:

) μ : μ INMARSAT, μ GMDSS,

) μ COSPAS – SARSAT, μ μ .

28. \_\_\_\_\_:

μ GMDSS. , μ μ

\_\_\_\_\_:

1. μ μ μ - μ μ μ , μ
2. μ μ μ μ
3. μ μ
4. μ μ μ
5. μ " μ "
6. μ μ
7. μ μ μ μ μ .
8. μ μ μ
9. μ

29. \_\_\_\_\_:

μ μ o μ μ μ

\_\_\_\_\_:

- RADAR ( 9 GHZ).
- SART ( radar).
- EBIRB ( ).
- AIS/SART ( μ SART, 1 2010 μ )

30. \_\_\_\_\_:



1. Distress alert (priority)
2. ID ( )
3. μ / / / ( μ GPS)
4. Undesignated Unspecified ( )

) μ ,  
 :  
 1) - INMARSAT -C μ LES,  
 μ μ μ (RCC), μ μ  
 μ .

FROM: M/V HELLAS/SVCF  
 TO: RCC PIRAEUS VIA THERMOPYLAE LES  
 DATE: 21st DECEMBER 2011 TIME: 10 00 UTC  
 WE HAVE SENT OUT A FALSE DISTRESS ALERT VIA INMARSAT  
 SES.  
 PLEASE CANCEL SAME WE CONFIRM THAT OUR SHIP IS SAFE.  
 MASTER

2) - μ GMDSS,  
 μ .

34. \_\_\_\_\_ :

μ μ .

\_\_\_\_\_ :

- μ μ μ VHF  
 - EPIRB  
 - SART

35. \_\_\_\_\_ :

\_\_\_\_\_ :

- ANDERSON  
 - WILLIAMSON  
 - SCHARNOW

36. \_\_\_\_\_ :

μ μ  
 μ μ DSC  
 HF, 4, 6, 8, 12 16 z,

( 18, 22, 25 z . . . ).

\_\_\_\_\_ :

.  
:

( ) - 16 z, μ μ  
μ  
,

( ) - μ μ μ μ  
μ , μ μ μ μ  
,

( \_\_\_\_\_ )

( ) - μ , ( μ - )  
)

( ) - , μ o 24 μ (4,  
6, 8, 12, 16),

( ) - μ μ . ( , , , ), μ μ  
( μ / ) DSC, μ DSC,  
μ HF

**37. E \_\_\_\_\_ :**

μ μ 4, μ μ .

\_\_\_\_\_ :

- ) VHF
- ) F
- ) HF

**38. E \_\_\_\_\_ :**

( ) - EGC INMARSAT ( μ μ μ μ )

( ) - ,



1 25 .μ. GMDSS, MF  
 ( ) , μ μ  
 μ μ  
 μ .  
 1, 15 .μ.,  
 μ  
 .  
 \_\_\_\_\_:

MF, μ VHF. 1

**43. E \_\_\_\_\_:**

μ μ μ μ , HF  
 DSC, μ μ  
 8 MHz, ,  
 .  
 \_\_\_\_\_:

8 MHz,  
 :  
 ) ( μ -  
 ) μ μ .  
 ) μ μ  
 μ μ .

**44. E \_\_\_\_\_:**

EPIRBS,  
 .  
 \_\_\_\_\_:  
 )- , μ EPIRB μ  
 μ .  
 )- EPIRB μ  
 )- μ EPIRB μ  
 μ μ , μ .

**45. E \_\_\_\_\_:**

, μ INMARSAT.



\_\_\_\_\_:

INMARSAT

μ

- ) - μ INMARSAT, μ :
- ) - μ μ μ SES INMARSAT

**46. E** \_\_\_\_\_:

μ

INMARSAT  
( INMARSAT),

μ

μ

\_\_\_\_\_:

- ) - μ μ μ (LES)
- ) - μ μ μ μ μ μ  
(RCC) (μ LES)

**47. E** \_\_\_\_\_:

- ( ) - μ μ ( ) ,
- μ 4. ,

\_\_\_\_\_:

- ( ) - μ (HF)

**48. E** \_\_\_\_\_:

- μ μ μ
- μ μ μ
- 18 z ,
- μ μ μ
- ( ) - :
- ( ) - μ

( ) - . ( 24 ) ,

\_\_\_\_\_ :

( ) - ,

μ ,

( ) .

( ) - ,

( ) -

μ (

μ 24 ,

( μ - ) ,

μ .

μ μ

1. . . . 160 - 141/2.7.97 “  
1995 μ  
1974”
2. : “SOLAS CONSOLIDATED EDITION 2001”
3. LLOYD’S REGISTER: “FUTURE IMO LEGISLATION 2002.  
ENTERING INTO FORCE BETWEEN JANUARY 2002 AND  
2010 AND OTHER LEGISLATION UNDER  
CONSIDERATION AT 28 FEBRUARY 2002”
4. BRITISH ADMIRALTY: “LIST OF RADIO SIGNALS  
VOLUMES I-VIII EDITION 2008-2009”
5. MALCOLM MACLACHLAN (MARINE MASTER, LECTURER  
IN BUSINESS AND LAW, IN GLASGOW COLLEGE OF  
NAUTICAL STUDIES): “THE SHIPMASTER’S BUSINESS  
COMPANION”
6. DET NORSKE VERITAS: “NEW IMO REQUIREMENTS  
PRESENT AND FUTURE AMENDMENTS 11<sup>TH</sup> EDITION  
JANUARY 2005”
7. IMO: “REVISED LIST OF CERTIFICATE AND  
DOCUMENTS REQUIRED TO BE CARRIED ON BOARD  
SHIPS”
8. IMO: “INTERNATIONAL CODE OF SIGNALS”
9. IMO: “INTERNATIONAL REGULATIONS FOR  
PREVENTING COLLISIONS AT SEA”

10. IMO: “ISM CODE MANAGEMENT CODE”

11. IMO: “SEARCH AND RESCUE MANUAL (IAMSAR) III  
AND AMENDMENTS”

12. “

,

2008” ( )

13. “

:

) /

) / :

1) ARPA

2) RADAR/

,

,

) /

) :

-

14. “ , 2008” ( )

15. “

,

2008” ( )

16. A O

,

.

17.

,

INMARSAT ( [www.inmarsat.com](http://www.inmarsat.com) ), ITU ( [www.itu.int](http://www.itu.int) ),  
BA( [www.ukho.gov.uk](http://www.ukho.gov.uk) ), IHO ( [www.iho.int](http://www.iho.int) ),  
IMO ( [www.imo.org](http://www.imo.org) ), ICAO ( [www.icao.int](http://www.icao.int) ),  
WWNWS([www.iho.int/.../IRCC2-09-wwnws.pdf](http://www.iho.int/.../IRCC2-09-wwnws.pdf)),  
IALA ( [www.iala-aism.org](http://www.iala-aism.org)), . . . ,

SOLAS, STCW, MARPOL, COLREGS,

COMSAR, IAMSAR, . . .

18. . . . 1446 -- 3 2006 :

STCW ME

TI

SOLAS - IMO

XETIKA

GMDSS T

19. - :

GMDSS –

( G O C )

2010

20. - :

GMDSS –

( G O C )

2010

21. :

:

2008,

2009

22. :

( ) ( ) 1977

23. :

. . :  
( - )

24. :

. . :  
( - )

25. :

2001

26. :

- , 3

1996

27. :

-

-

- ( ) ,

,

:

1) [www.alfavita.gr/](http://www.alfavita.gr/)

2) [www.teiath.gr/](http://www.teiath.gr/)

( )

3) [www.teicrete.gr/](http://www.teicrete.gr/)

( )

4) [www.teithe.gr/](http://www.teithe.gr/)

( )

5) [artemis.cslab.ntua.gr/](http://artemis.cslab.ntua.gr/)

**1.**

**2007**

(ISBN 978-960-93116-9)

**2. ANTIME**

**2007**

(ISBN 978-960-930120-6)

**3.**

**2007**

(ISBN 978-960-92576-0-2)

**4. ANTIMET**

**2007**

(ISBN 978-960-92576-2-6)

**5.**

**2007**

(ISBN 978-960-92576-4-0)

**6.**

**2007**

(ISBN 978-960-92576-6-4)

**7.**

**2008**

(ISBN 978-960-92576-9-5)

**8.**

**2008**



(ISBN 978-960-92654-0-9)

**9.** -- **2008**

(ISBN 978-960-92654-1-6)

**10. ANTIMET**

**2009**

(ISBN 978-960-92654-3-0)

**11.** **2009**

(ISBN 978-960-92654-4-7)

**12.** —

**2009**

(ISBN 978-960-92654-2-3)

**13.**

**2010**

(ISBN 978-960-92654-5-4)

**14.** **2010**

(ISBN 978-960-92654-6-1)

**15.**

**2010**

(ISBN 978-960-92654-7-8)

**16.**

**2010**

(ISBN 978-960-92654-8-5)

**17.**

**2010**

(ISBN 978-960-92654-9-2)

**18.**

**2011**

(ISBN 978-960-92905-1-7)

**19.**

**2011**

(ISBN 978-960-92905-2-4)

**20.**

( 978-960-92905-5-5)

**21.**

**2011**

(ISBN 978-960-92905-3-1)

**22.**

**. . . 2011**

(ISBN 978-960-92905-4-8)

**23.**

–

**GMDSS**

(ISBN 978-960-92905-6-2)

**24.**

–

**GMDSS**

(ISBN 978-960-92905-7-9)