

VHF SHORT RANGE CERTIFICATE COURSE



AIMS and OBJECTIVES

By the end of today you will be able to:

- Understand the Radio Rules and Regs
- Operate Marine VHF DSC equipment
- Call using the correct channel
- Understand basic radio language
- Use the Phonetic Alphabet

AIMS and OBJECTIVES

- Make calls to other stations
- Send a **Distress Alert** and **Distress Message**
- Learn about the Global Maritime Distress & Safety System
- Send an **Urgency Alert** and a **Safety Call**
- Prepare for the SRC Assessment

there are many different manufacturers



HAND HELD VHF RADIOS

NO DSC

- simple
- submersible
- with flashlight
- not expensive



Maximum power = 5W

WITH DSC & GPS

- Waypoint navigation
- (distress position)
- AIS
- MMSI Number
- expensive

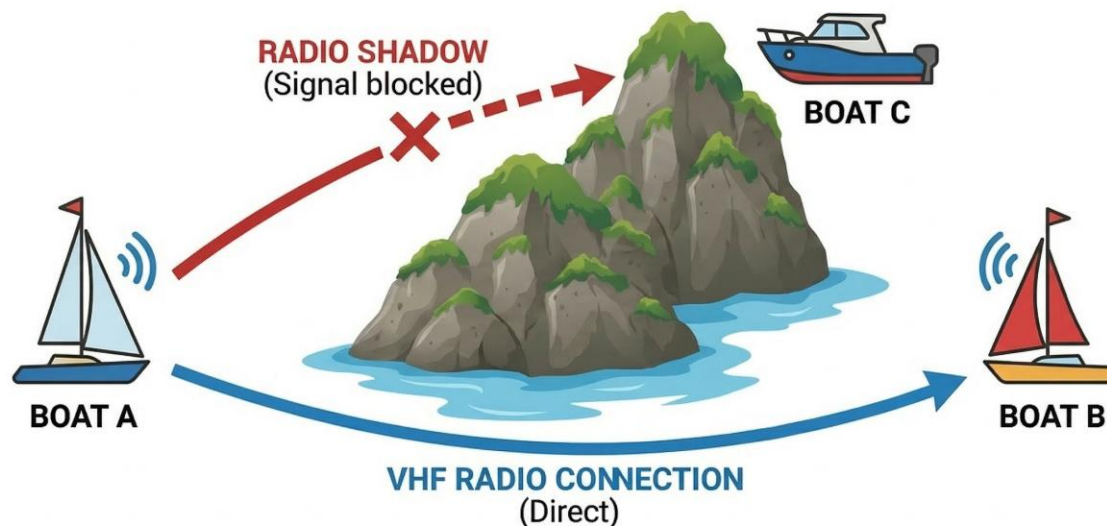


Maximum power = 6W

VHF RADIO

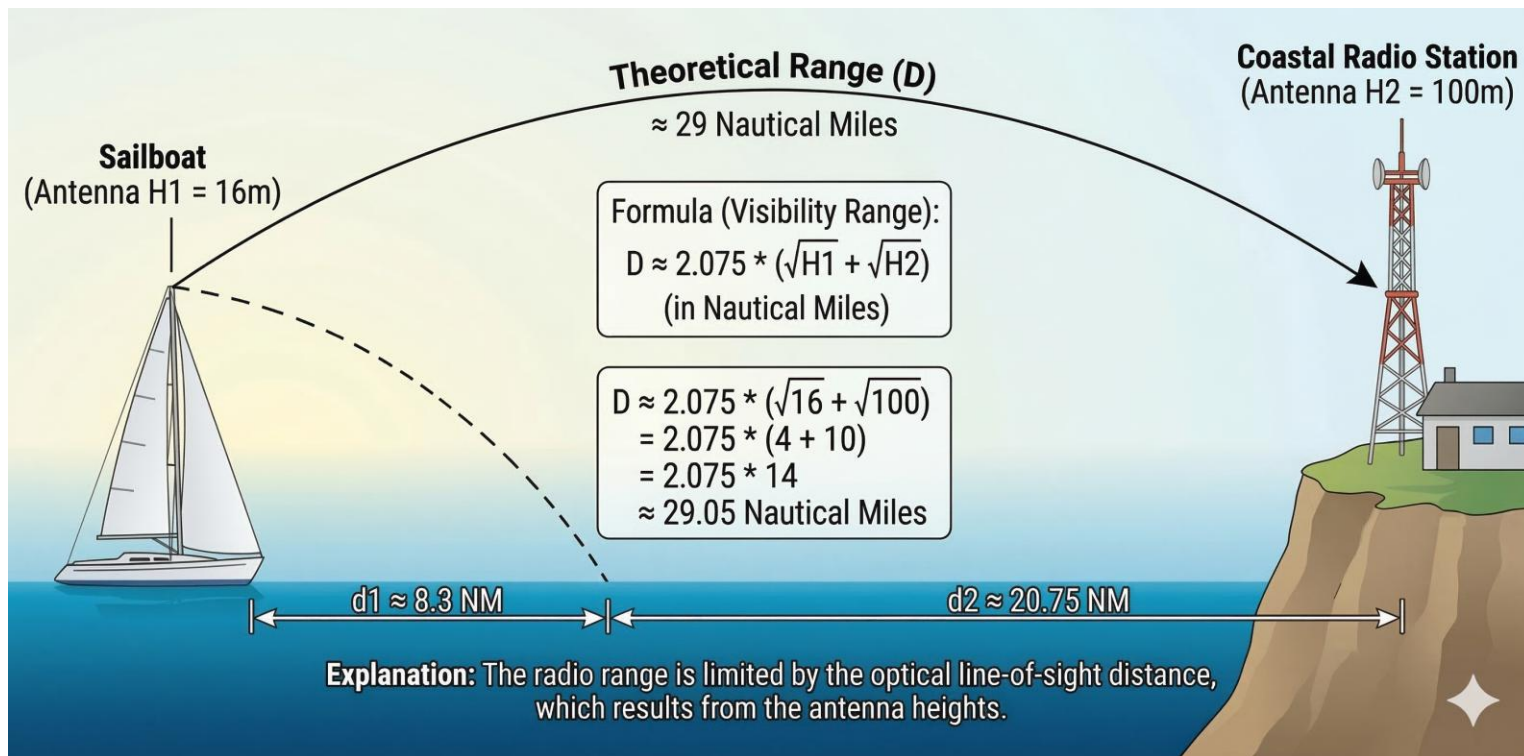
VERY HIGH FREQUENCY radio waves travel in straight lines & don't bend round the earth's surface or penetrate land masses.

Antennas have to be able to see each other
– the higher the antenna the greater the range

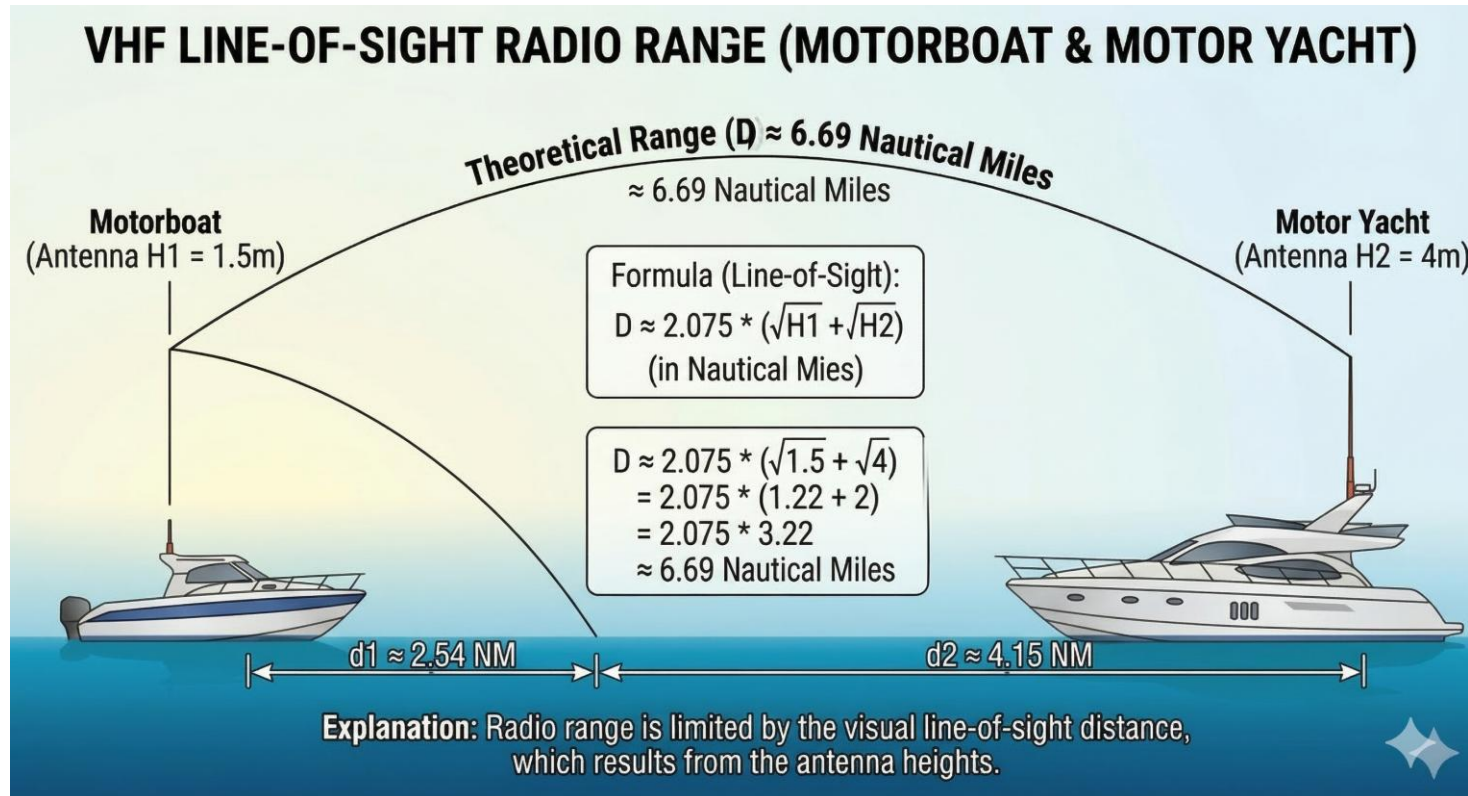


The islands block the direct line-of-sight and prevent Boat C from receiving the VHF signal.

HOW FAR AWAY CAN THEY BE?



TYPICAL RANGES of Powerboats



Radio Regulations

What you say can be heard by everyone tuned to the channel you are using



Many are waiting to speak on the few usable intership channels

Radio Regulations

- never transmit without the skipper's consent
- never send false or misleading emergency or security messages
- never send without identification
- do not turn off your radio in an emergency situation that could affect you
- Never forward messages to everyone except in case of emergency notifications

Radio Regulations

- never transmit music via radio
- do not make unnecessary transmissions
- do not transmit using profane, immoral or obscene language
- do not use radio frequencies that are not approved
- do not send any messages that are to be received by land, except to licensed coastal radio stations

CERTIFICATION & LICENSING

If you use a VHF radio on board a boat you will be expected to have the following items on board:



Ofcom
OFFICE OF COMMUNICATIONS

Ship Radio Licence / Ship Portable Radio Licence

United Kingdom of Great Britain & Northern Ireland, the Channel Islands & the Isle of Man
Royaume-Uni de Grande Bretagne et d'Irlande du Nord, les Îles Anglo-Normandes et l'Île de Man
Vereinigtes Königreich von Großbritannien und Nordirland, die Kanalinseln und die Isle of Man

Wireless Telegraphy Act 2006

Note: This Licence is valid only if the vessel and Licensee accord with the details of the Licence and shall continue in force until the Licence is surrendered by the Licensee or revoked by Ofcom.

Section 1

Licence details

Licence Class	Ship Radio Licence
Licence number	1-156733906
Licencee's name	Mrs Alison Noice
Licencee's address	3 Gorseion Road

SHIP RADIO LICENSE
(for fixed radios) and/or
SHIP PORTABLE LICENSE

**CERTIFICATE of COMPETENCE
& AUTHORITY TO OPERATE**



THE SHORT RANGE CERTIFICATE OF COMPETENCE AND AUTHORITY TO OPERATE

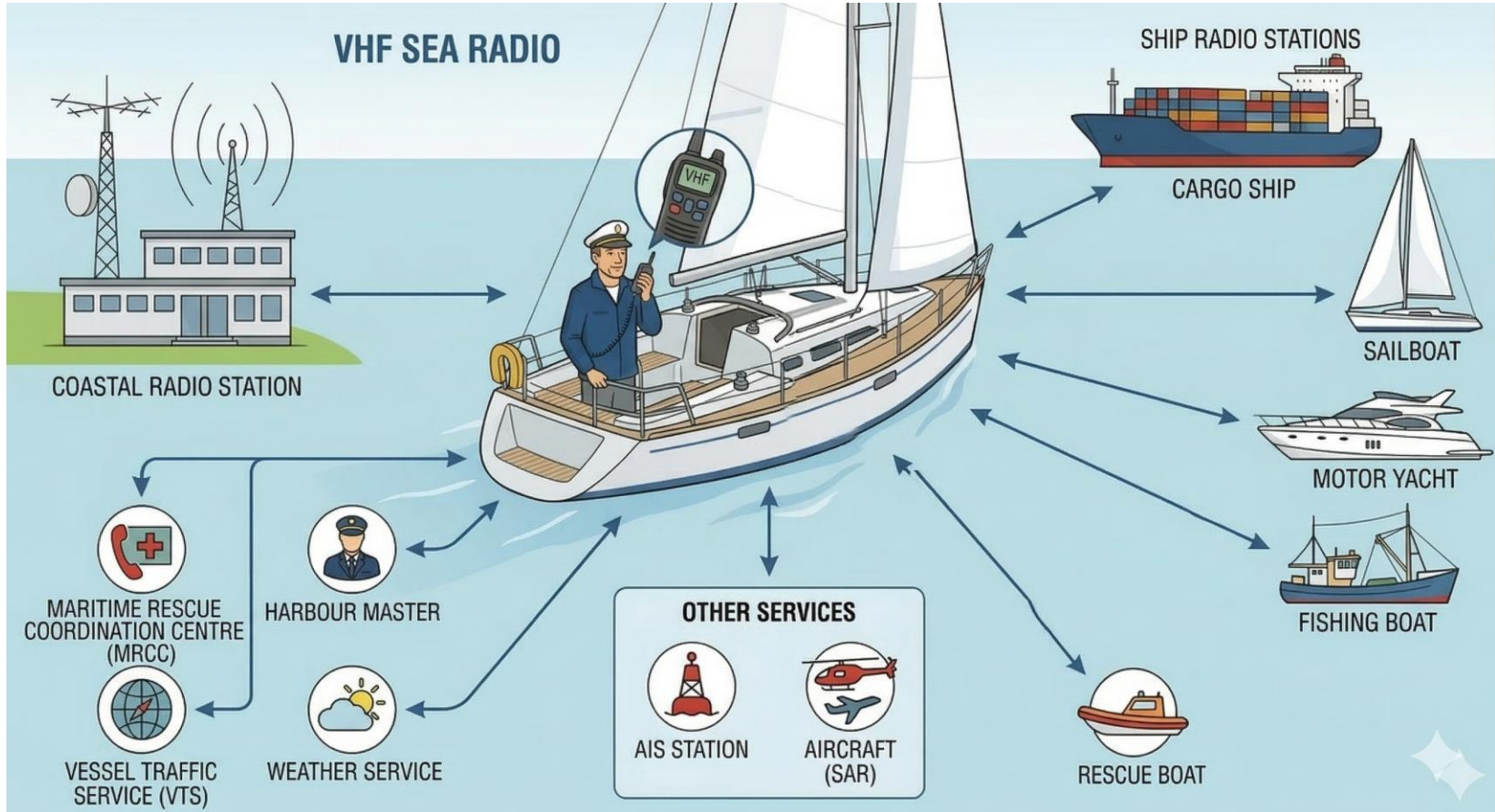


The Driving License

For those **not operating** under SOLAS rules; i.e. leisure boaters over the **age of 16**, using a **Class D set**, portable or fixed.

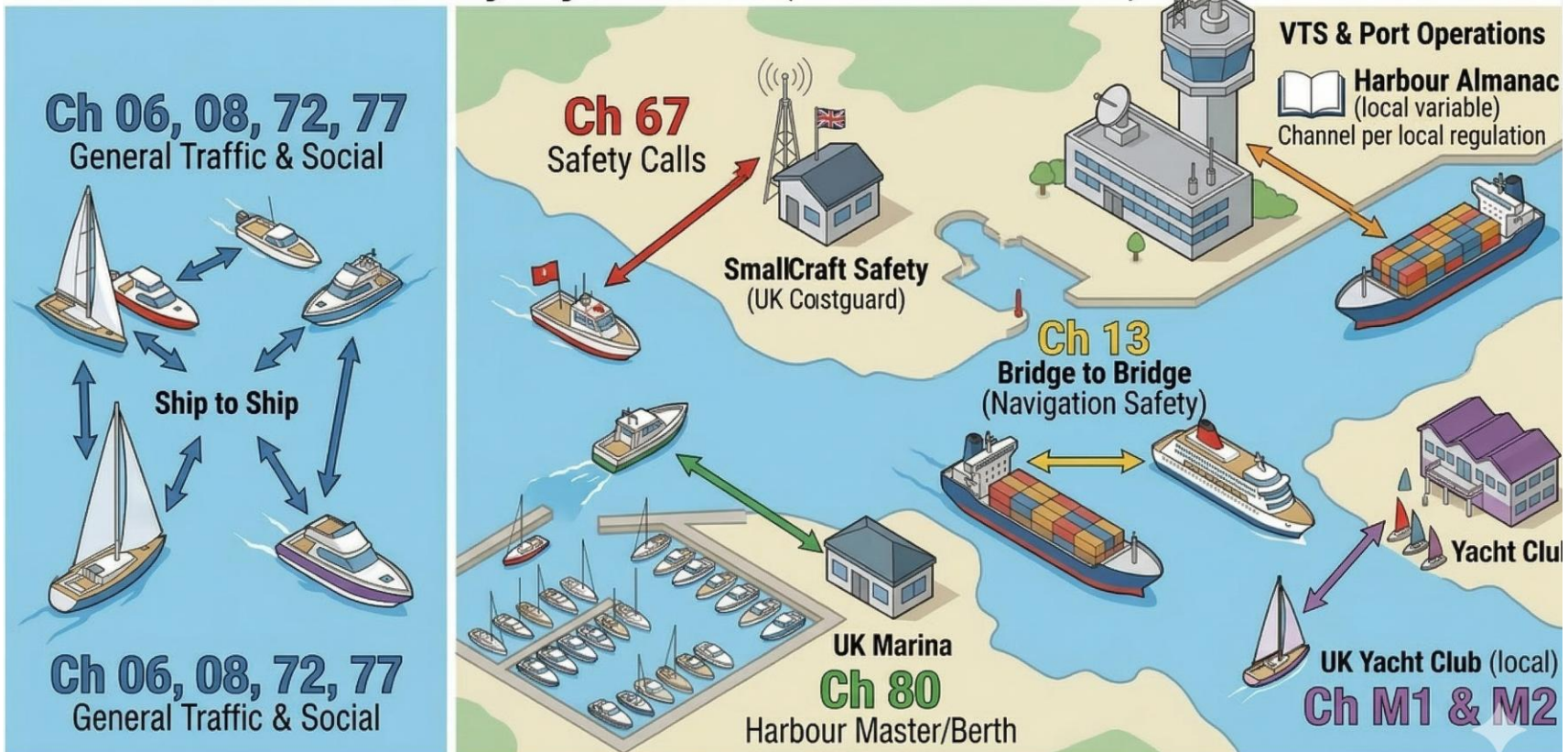
The SRC is valid for life !

WHO MIGHT WE TALK TO?



WHICH CHANNELS MAY WE USE?

VHF Channels in Everyday Practice (UK/International)



Legend: Blue = Ship to Ship, Red = Safety, Green = Harbour/Marina, Yellow = Navigation/Bridge, Purple = Club/Local, Orange = VTS/Port Operation:

Fist mike with PTT button where to hold it, don't shout

Channel selector

Ch16 quick select

Power & Volume

Squelch

High/low power

Dual watch

International channels



SIMPLEX & DUPLEX CHANNELS

SIMPLEX channels use 1 frequency & are for:

- | | |
|-----------------------|--------------------|
| 1. Distress | Ch 16 |
| 2. Urgency | Ch 16 |
| 3. Inter-ship | Ch 6, 8, 72, 77 |
| 4. Port Operations | Ch see Pilot books |
| 5. Small craft safety | Ch 67 |
| 6. Bridge to bridge | Ch 13 |
| 7. Yacht clubs | Ch M1, M2 |

SIMPLEX & DUPLEX CHANNELS

DUPLEX channels use **2 frequencies** & are for:

1. Routine weather & safety information
2. UK Marinas (Ch 80)
3. Ship to shore telephone calls (Various)

You cannot talk to another boat on a duplex channel unless you have the correct equipment

DUAL (TRIPLE) WATCH

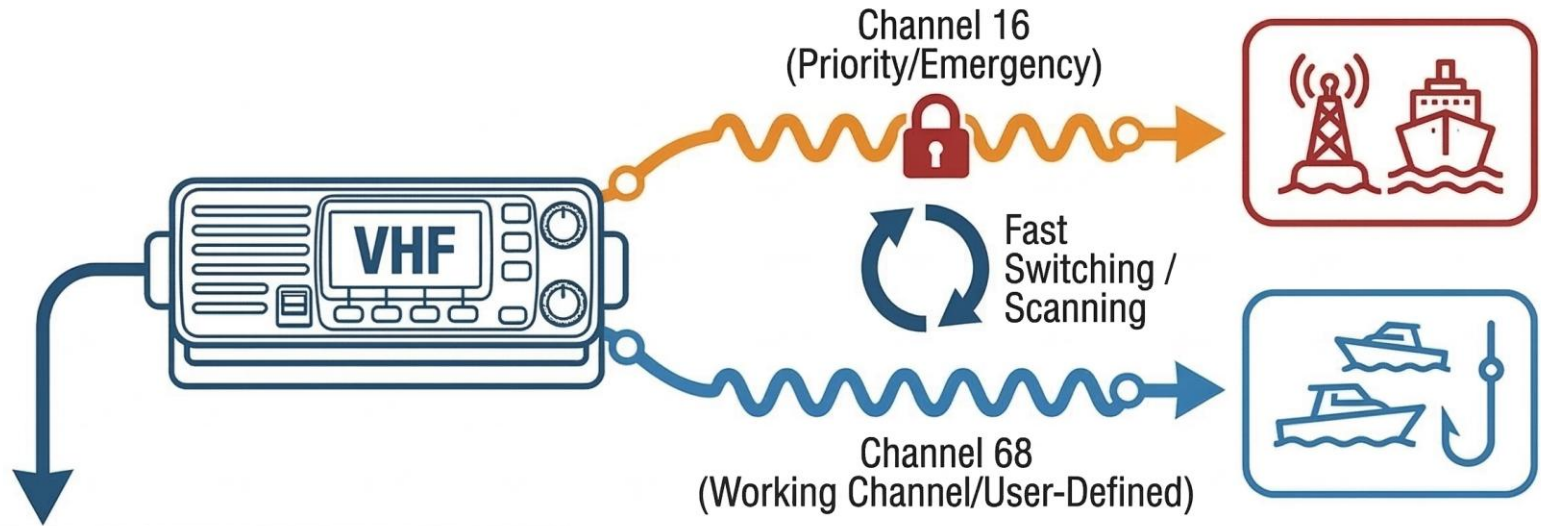
DUAL WATCH is a function to monitor:

- channel 16

AND

- another channel at the same time

TRIPLE WATCH monitors channel 16 and two other channels



► Dual Watch (DW) alternately monitors the Priority Channel 16 and a selected working channel. If a Signal is detected on Channel 16, the radio immediately locks onto it. If the signal is on the working channel, it pauses until the transmission is complete, then resumes scanning both channels.

INTERNATIONAL CALL SIGN

On issue of a Ship Licence a boat is given a unique
INTERNATIONAL CALL SIGN

This call sign remains with boat on change of ownership.

Typical UK Ship call sign = **2ATN6**

Typical Austrian Ship call sign = **OEX7022**

INTERNATIONAL CALL SIGN

PORTABLES

are registered to a person not the boat

Typical "T" identification = T132916



MARITIME MOBILE SERVICE IDENTITY (MMSI)

If the boat has a DSC set, a unique 9 digit MMSI number will be issued

THE FIRST THREE FIGURES IDENTIFY NATIONALITY (MID)

UK & OFFSHORE ISLANDS	232, 233, 234, 235
GERMANY	211, 218
CROATIA	238
ITALY	247
SLOVENIA	278
SWITZERLAND	269
AUSTRIA	203

TYPES OF MMSI

UK SHIP STATION IDENTITY

2 3 2 X X X X X

GROUP SHIP STATION IDENTITY

0 2 3 2 X X X X X

COAST STATION IDENTITY

0 0 2 3 2 X X X X

WHAT IS DSC?

DIGITAL SELECTIVE CALLING

A perfectly normal radio transceiver fitted with an added digital alerting device and interfaced with a GPS receiver

A Digital Announcement or Alert may be sent to:

- a) All Stations
- b) A Group of Stations
- c) An Individual Ship Station

DSC are transmitted digitally on channel 70

Types of calls and prowords

Type	Proword	Channel
DISTRESS (alert)	Mayday	16
URGENCY	Panpan	16
SAFETY	Securite	16 + other
ROUTINE	-	16 + other
URGENCY	Mayday Relay	16

DSC ROUTINE CALL

1. Select menu – DSC call
2. Select 'Individual', then 'Routine'
3. Input MMSI (or from memory)
4. Choose channel
5. Transmit

The receiver will have to first stop the sound, then press OK 3 times to establish the connection

PS: every radio model has its own specifics!

TIME FOR TALKING



DSC ROUTINE CALL

ADVANTAGES

- Does not occupy channel 16
- The alarm on the called radio is very loud!
- A 'missed' call remains in the call log

DISADVANTAGES

- You must know the MMSI of the other vessel
- You need to enter the MMSI in the radio

DIRECTORY OF MMSIs

PROVIDED ON THE INTERNET AT I.T.U.



MARS

BACK TO ITU MAIN

Q Ship Station - Search

Ship Name	MMSI (Including for craft associated with a parent ship) or handheld VHF DSC identity		
<input type="text"/>	<input type="text"/>		
Call Sign	Ship (Vessel) Identification Number	EPIRB Hex Id Code	Satellite Number
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Administration	Geographical Area	General Classification	
<select one>	<select one>	<select one>	



Ship Station List Please, enter search criteria.

Ship Name ↓	Call Sign	MMSI	Administration	Geographical Area	Ship (Vessel) ID Number	Update Date
-------------	-----------	------	----------------	-------------------	-------------------------	-------------

www.itu.int/mmsapp/ShipStation/list

A.I.S (Automatic Identification System)

Is a collision avoidance system

Gives information on: Vessels, GPS location, name, true heading, MMSI (and Callsign), speed

Uses VHF frequencies

Class B Transceiver – used on pleasure boats,

- 2 Watt power on VHF
- Transmits every 30 seconds
- Shows vessels in area (up to 20miles depending on transmission)

A.I.S (Automatic Identification System)

AIS vs. Radar

AIS Cons:

- Doesn't pick up vessels without AIS fitted
- Can't see rocks, obstructions, piers, etc.
- Can't see through fog

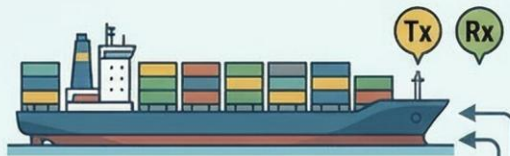
AIS Pros:

- Can ID vessels
- Can see round corners
- Cheaper to install than radar
- Less battery consumption

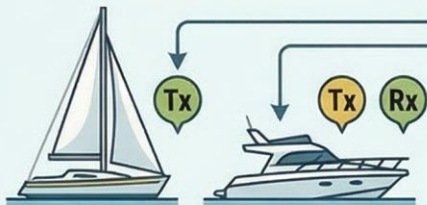
A.I.S (Automatic Identification System)

The AIS System (Automatic Identification System) on Recreational Boats

AIS Classes (Transmitter & Receiver)

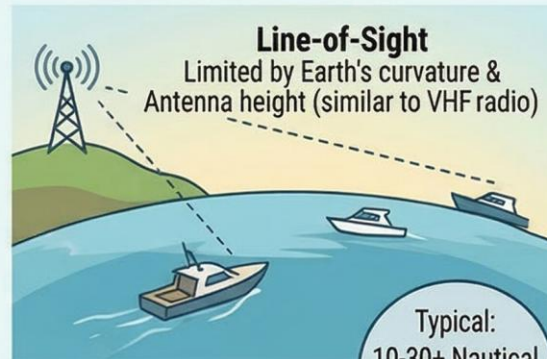


Class A (Commercial Shipping)
Transmit & Receive (high priority, 12.5 W).
Mandatory for large vessels.



Class B (Recreational Boats)
Transmit & Receive
(lower priority, 2 W - 5 W).
Voluntary for most recreational boats.

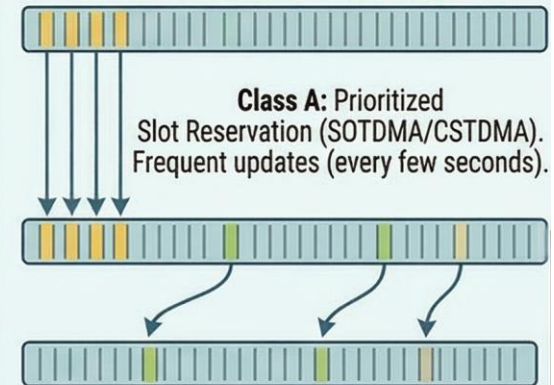
Range (Line-of-Sight)




Formula: $\text{Range} \approx 2.1 * (\sqrt{H1} + \sqrt{H2}) \text{ nmi}$

AIS Principle of Operation (Time Slots)

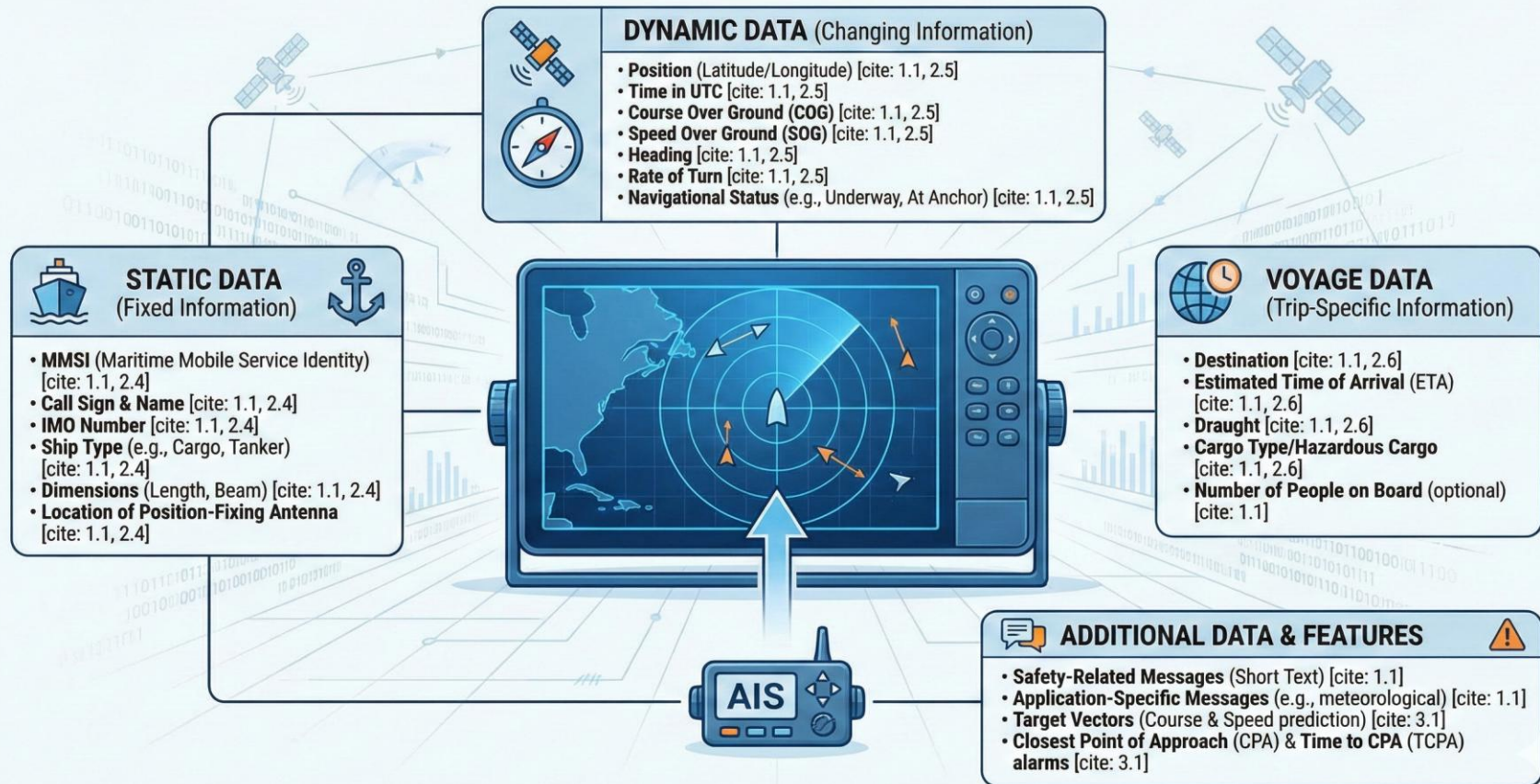
AIS Data Frame (Time Slots)



 Update rate varies by
Speed & Course change

Benefits for Recreational Boats: Improved safety, collision avoidance other vessel identification, "Being seen".

AIS (Automatic Identification System) - What it Displays



HANDHELD VHF/DSC/GPS



**Has an MMSI
beginning 235 9...(UK)**

This tells a Coastguard that:

- 1. The radio is portable**
- 2. It is fitted with GPS**
- 3. It has limited range**
- 4. It has a short battery life.**



DISTRESS

MAYDAY (from French "M'aider")

Used only when there is:

GRAVE and IMMINENT DANGER

to: PERSON,

VESSEL

AIRCRAFT or

VEHICLE

and **IMMEDIATE ASSISTANCE** is required

Real Life Mayday

Liverpool Coastguard

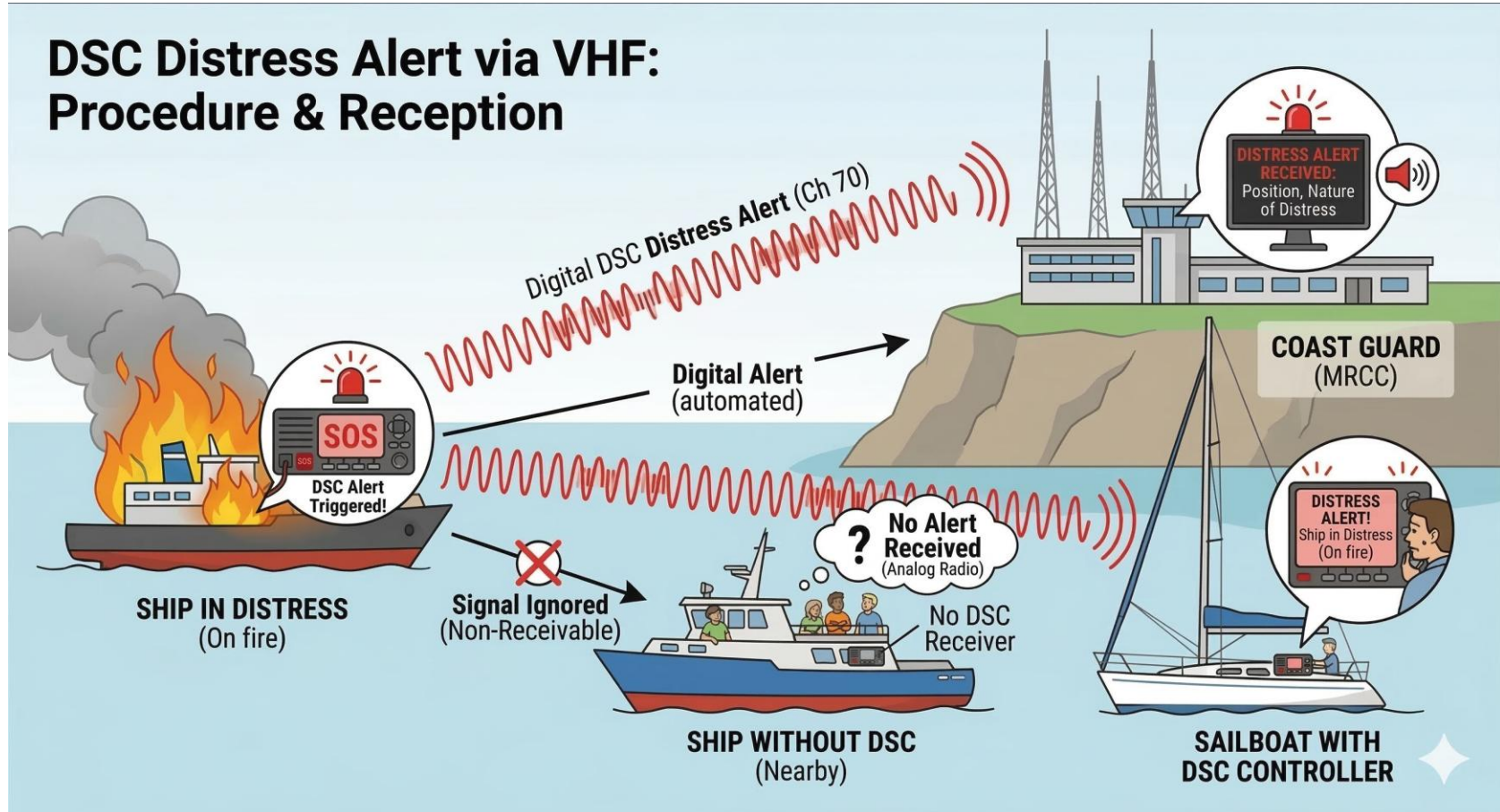


Swansea Coastguard

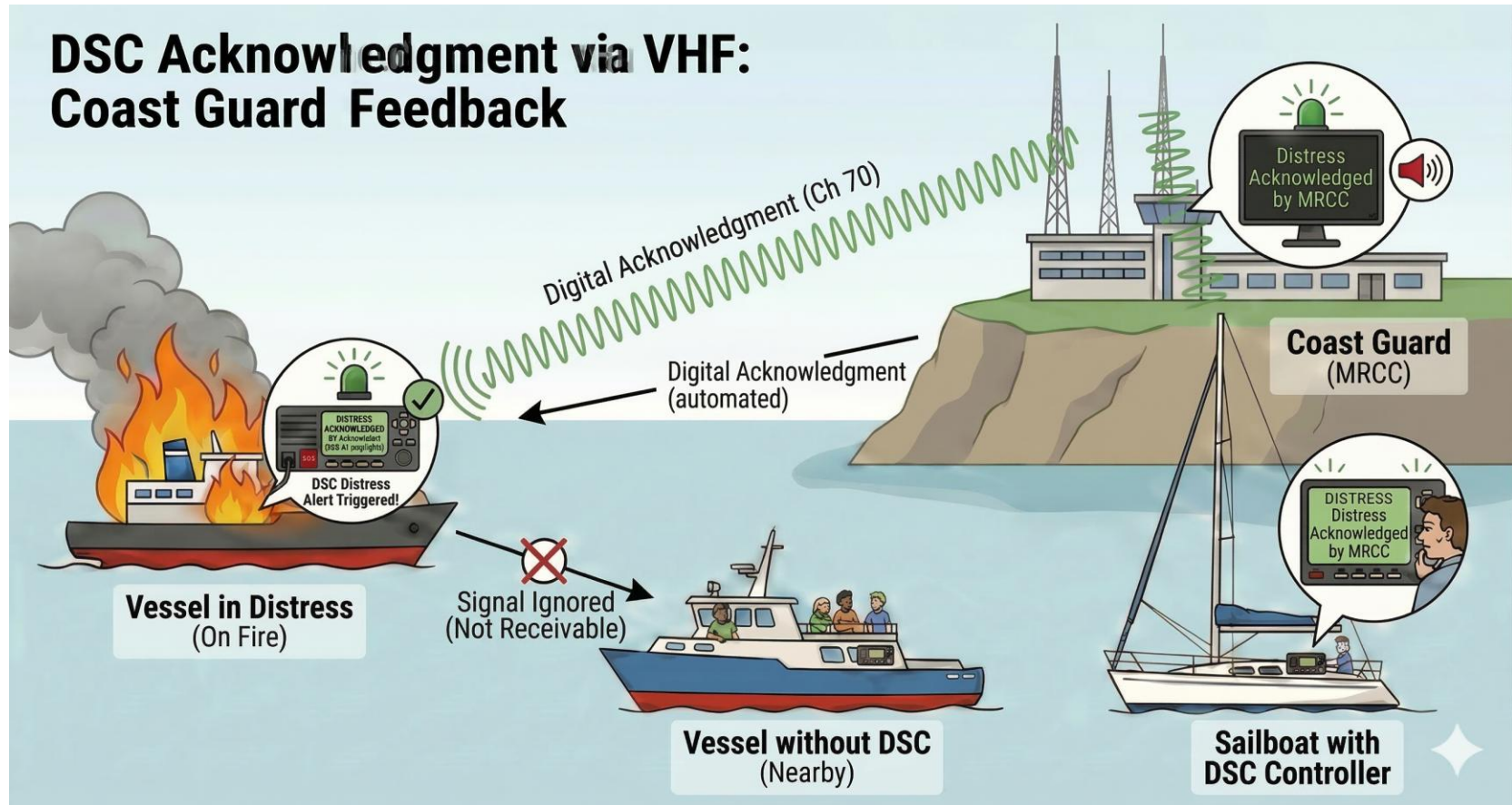


DISTRESS ALERT - PHASE 1

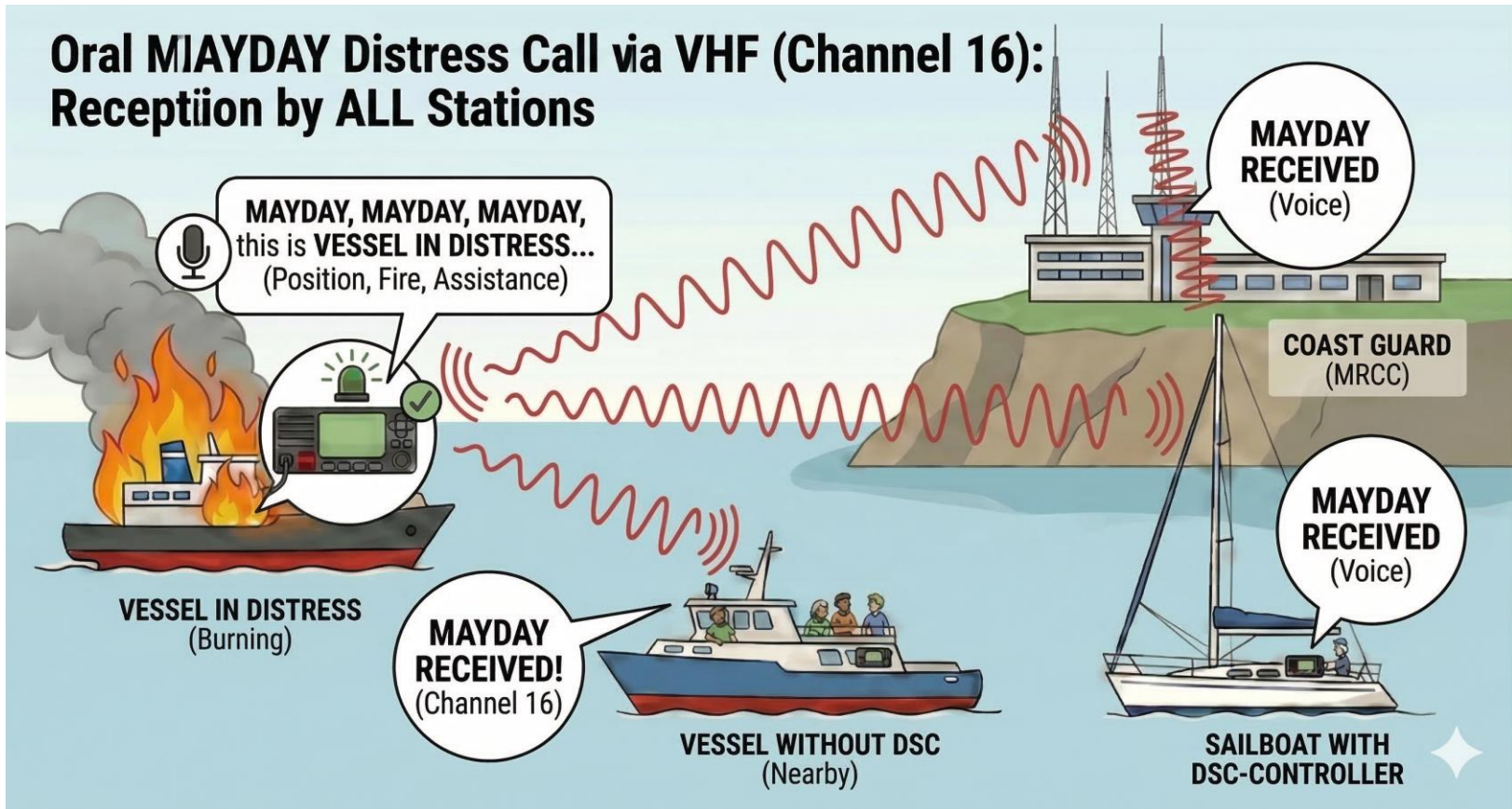
DSC Distress Alert via VHF: Procedure & Reception



DISTRESS ALERT - PHASE 2

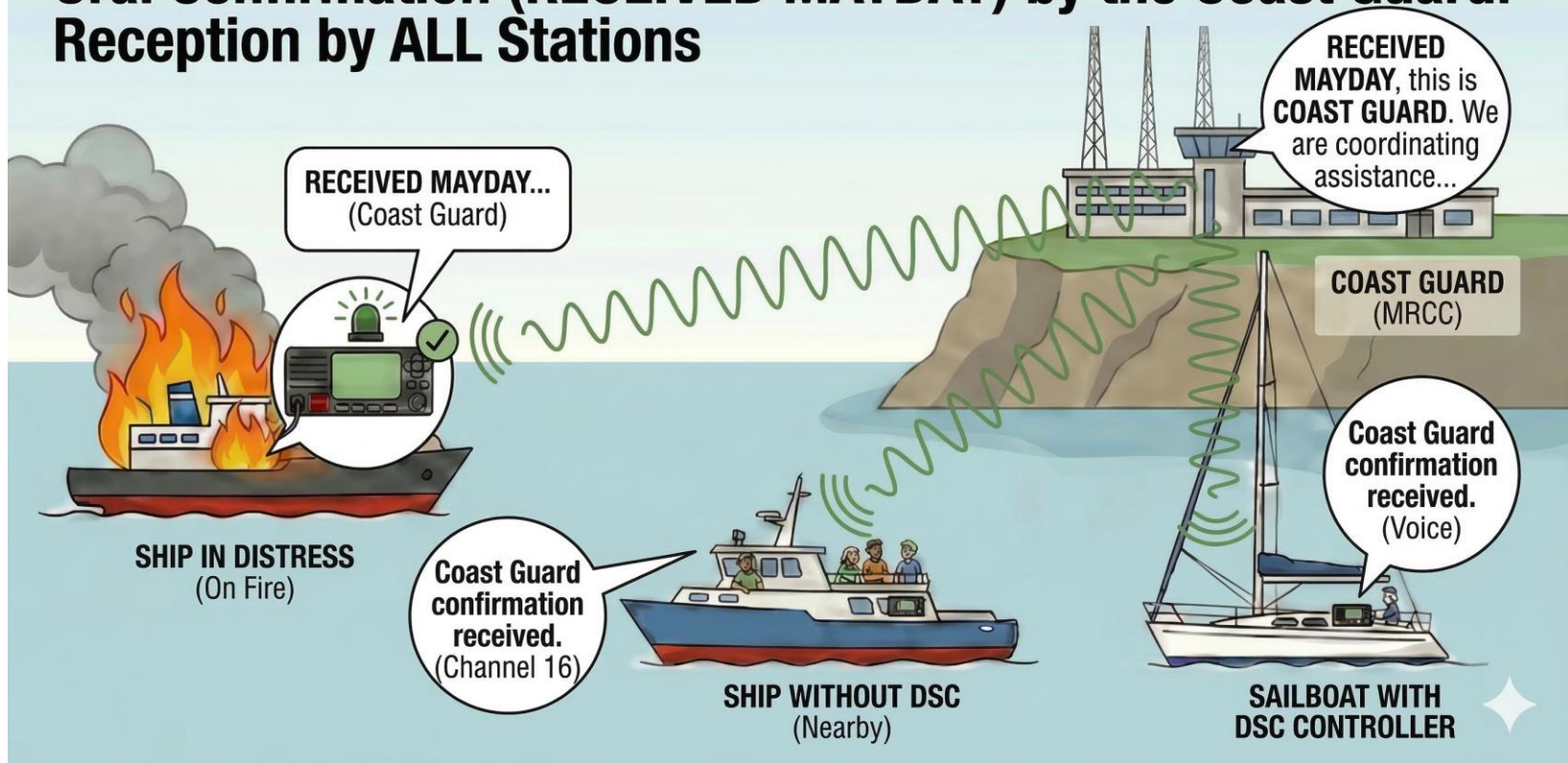


DISTRESS ALERT - PHASE 3



DISTRESS ALERT - PHASE 4

Oral Confirmation (RECEIVED MAYDAY) by the Coast Guard: Reception by ALL Stations



DISTRESS CALL & MESSAGE

M	MAYDAY
I	IDENTIFICATION
P	POSITION
D	DISTRESS
A	ASSISTANCE
N	NUMBER OF PERSONS
I	INFORMATION
O	OVER

DISTRESS CALL & MESSAGE

Mayday, Mayday, Mayday

This is M/V Flam, Flam, Flam

Callsign 2CGE4 MMSI 235899982

- M** Mayday
- I** Flam 2CGE4 MMSI 235899982
- P** In position $50^{\circ}47'.51N$ $001^{\circ}17'.29W$
(approx 1 mile north of Cowes)
- D** Fire on board
- A** I require immediate assistance
- N** Eight persons on board
- I** Abandoning to life-raft.
- O** Over



TIME FOR TALKING



CANCEL a DISTRESS ALERT

- Switch off the radio to stop retransmitting.
- Make a VOICE call to all stations on CH 16, high power:

All stations, all stations, all stations

This is Broadsword (3 times)

Call sign GMDS9, MMSI 235912345

Cancel my distress alert

I say again

Cancel my distress alert
(sent in error at 1230 LT)

Out

BASIC CALLING -What to say

First **WHO YOU ARE CALLING**
(boat name and/or call-sign)

Second **WHO YOU ARE**
(boat name and/or call-sign)

Call their name **up to a maximum of 3 times** depending
on the situation

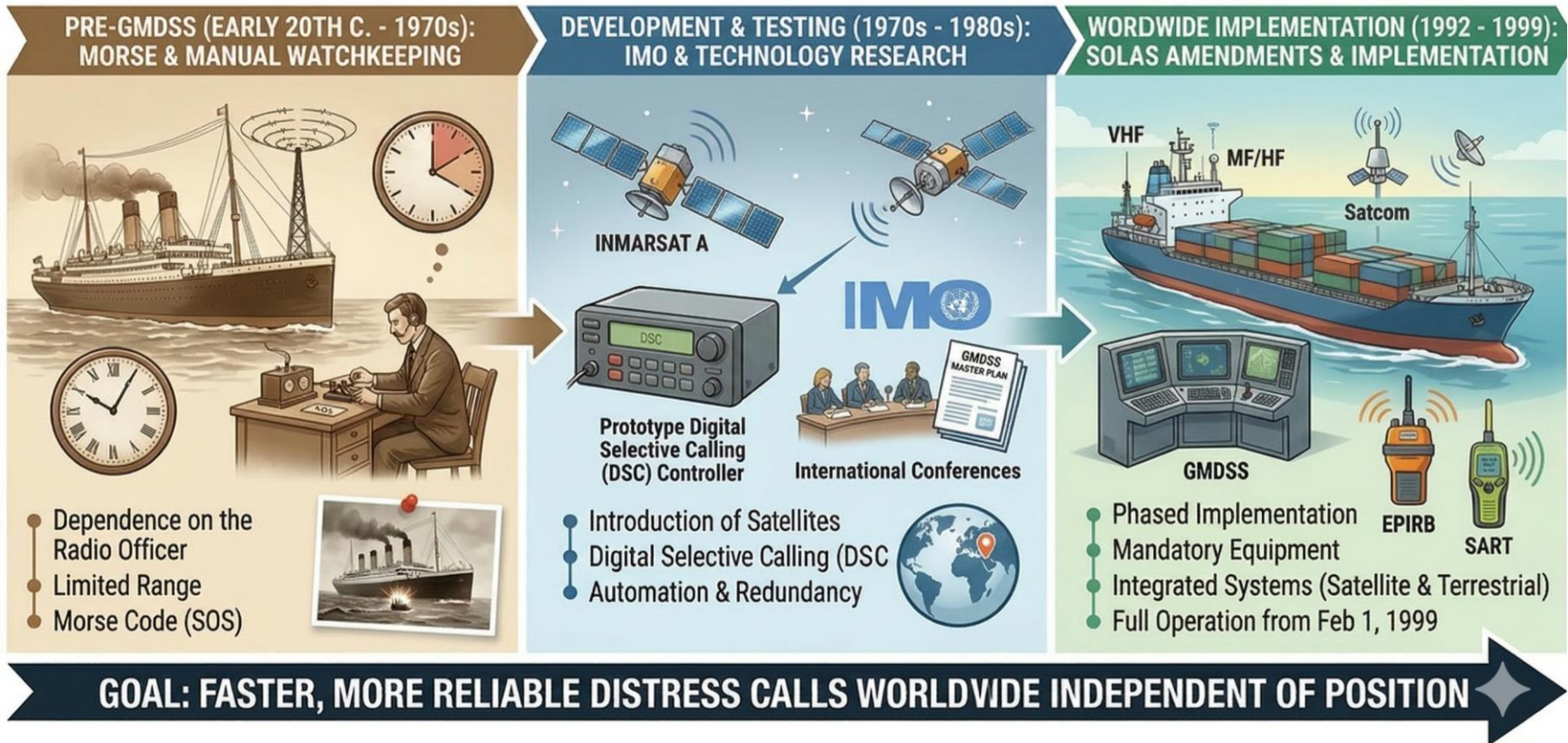
Generally 1 or 2 times to a shore station or if the other
boat has been contacted with a DSC alert

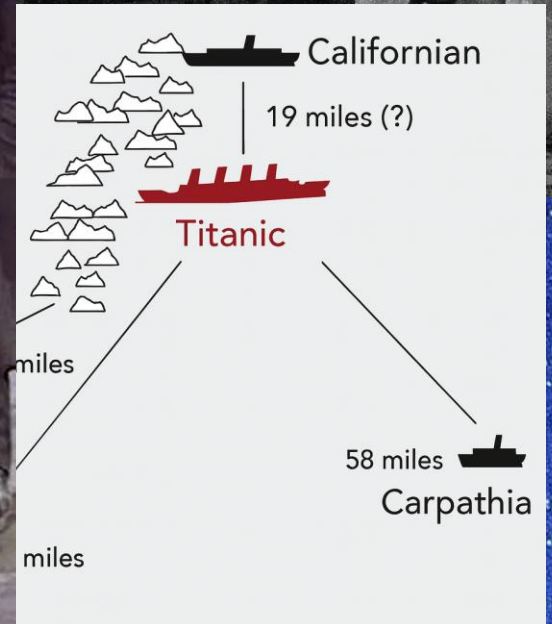
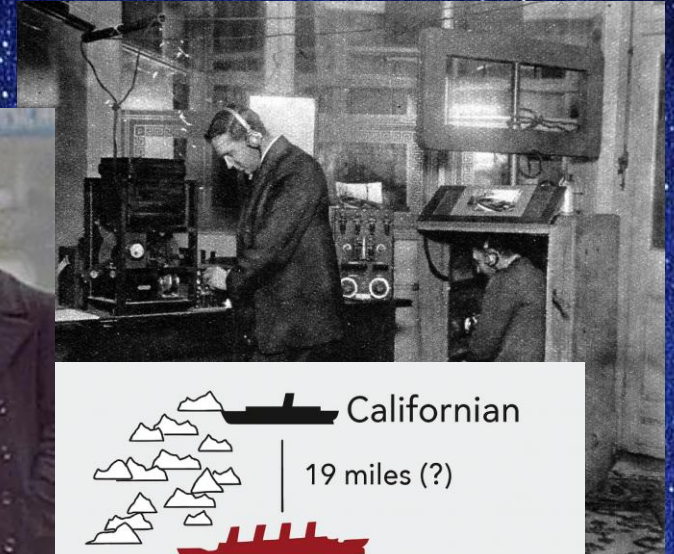
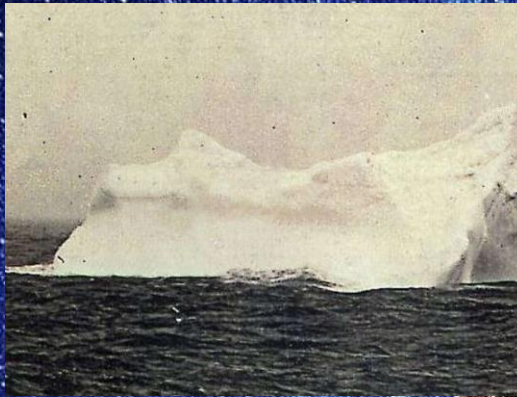
TIME FOR TALKING



GMDSS

Global Maritime Distress and Safety System





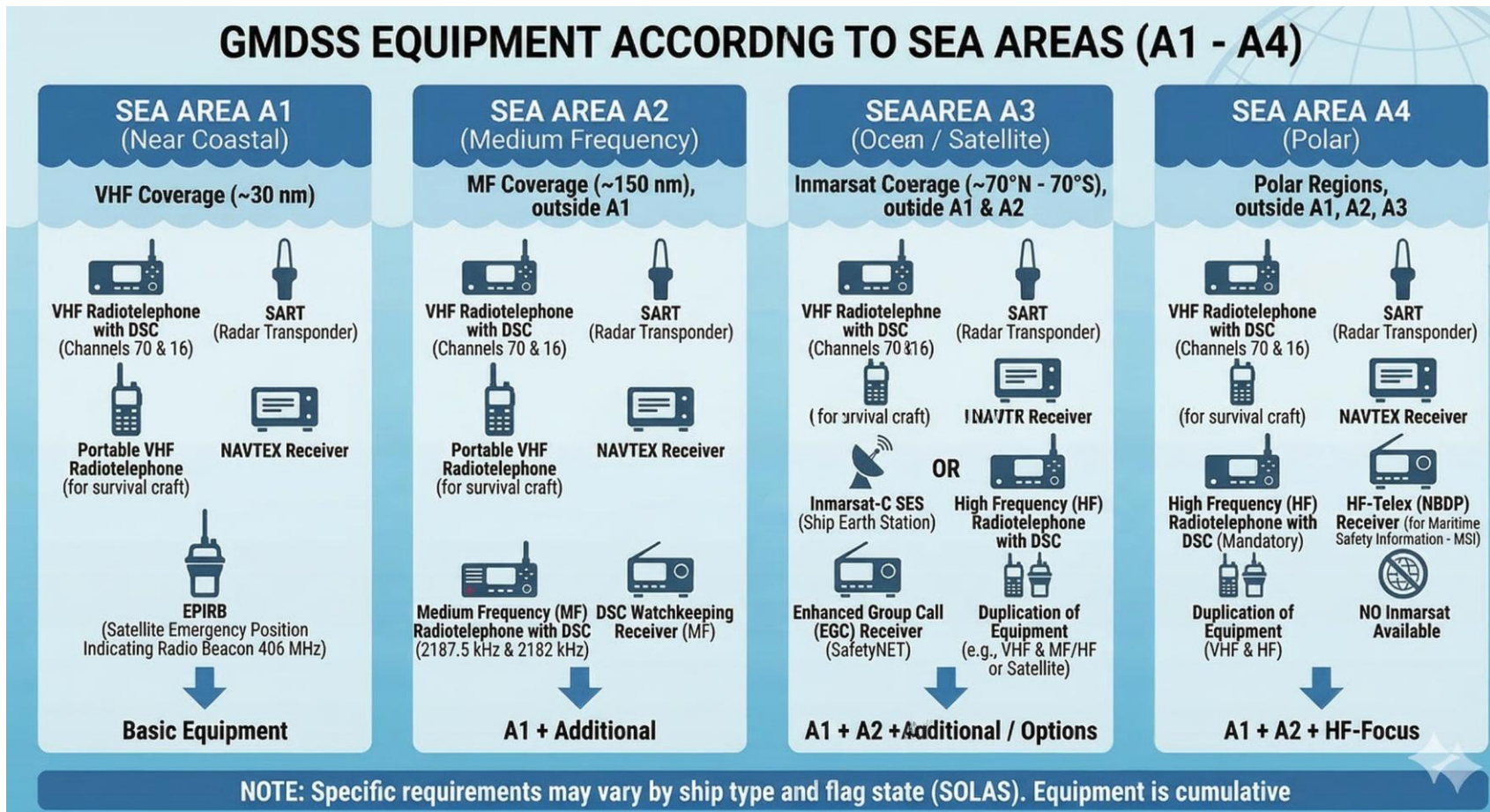
GMDSS - Components

- Digital Selective Calling (DSC)
- NAVTEX
- RMSS (INMARSAT & IRIDIUM)
- EPIRBs
- SARTs
- VHF, MF and HF Communications

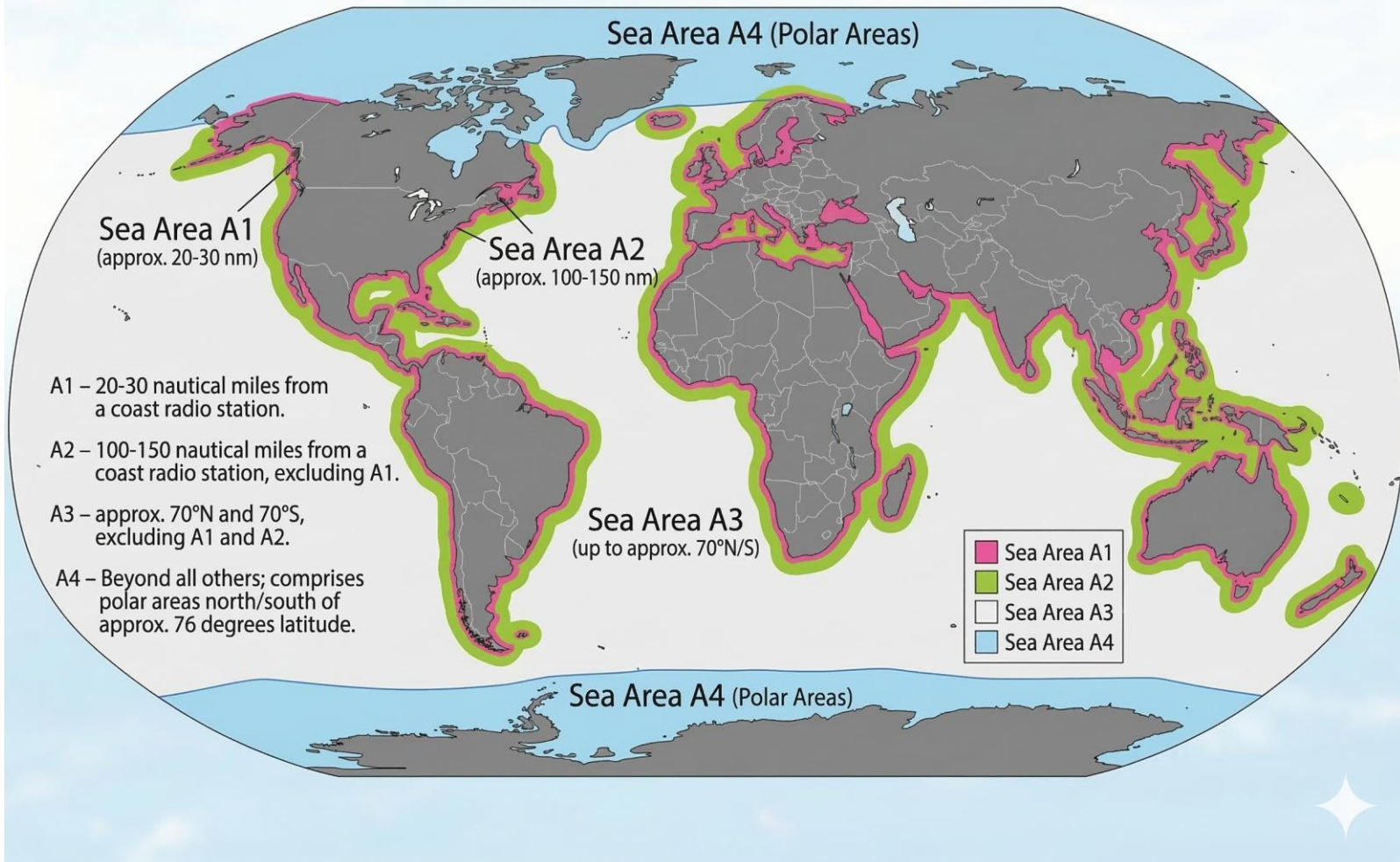
Various AIS and DSC MOB Beacons
Are commercially available but not part of GMDSS

GMDSS – Equipment at Sea Areas

GMDSS EQUIPMENT ACCORDING TO SEA AREAS (A1 - A4)

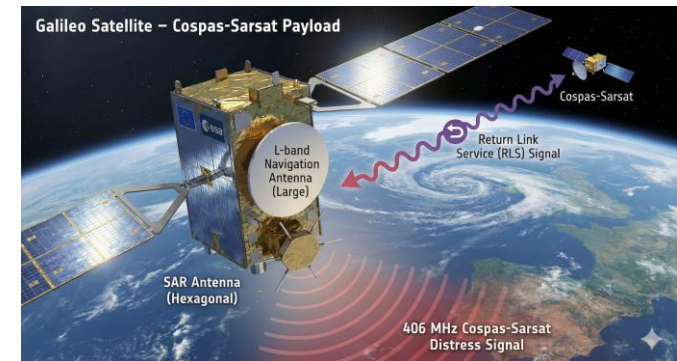


GMDSS SEA AREAS MAP

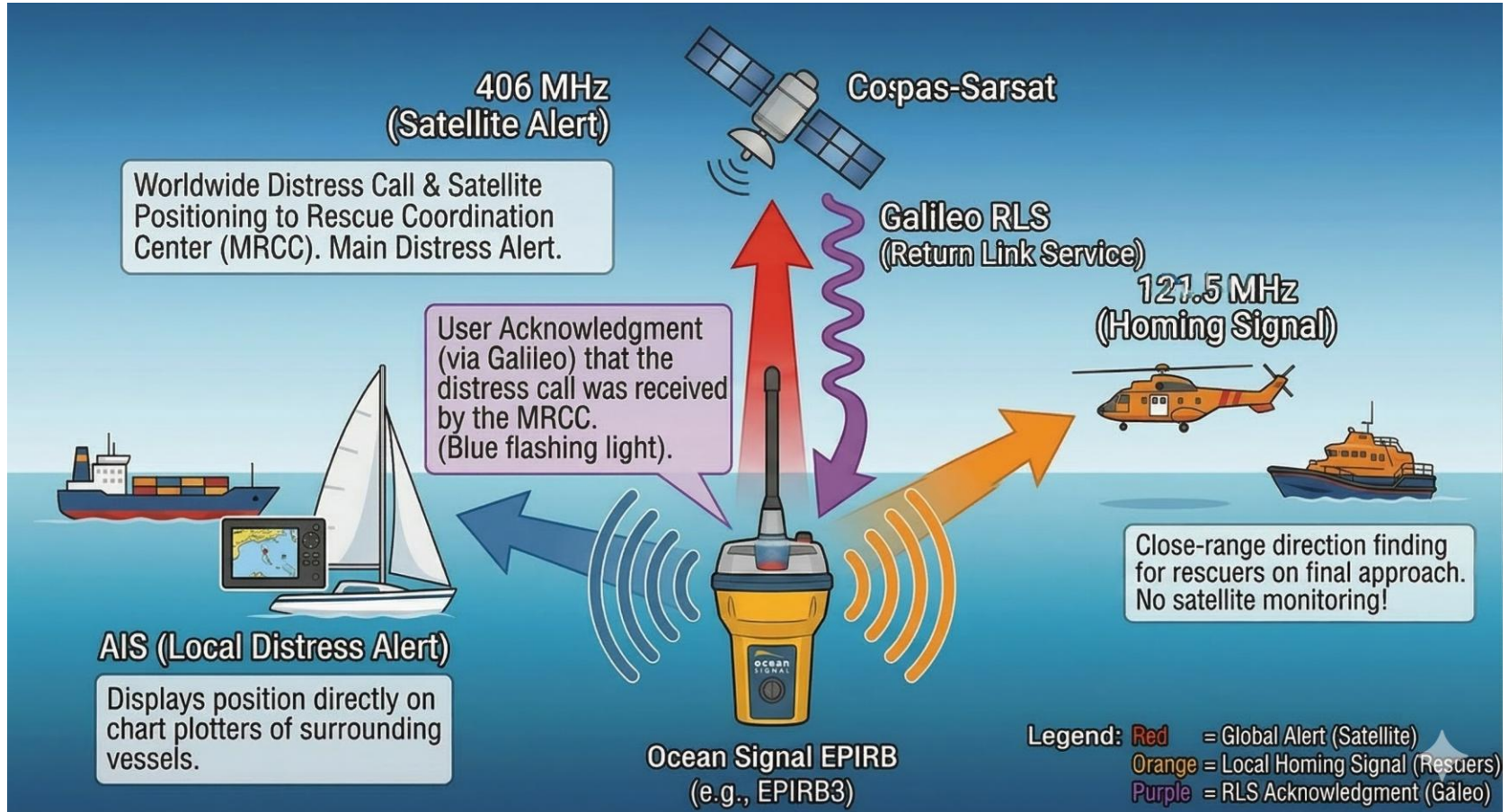


406 MHz E.P.I.R.B

Emergency Position Indicating Radio Beacon



Uses the **COSPAS/SARSAT**
military satellites to
pin-point the casualty



E.P.I.R.B - SUMMARY



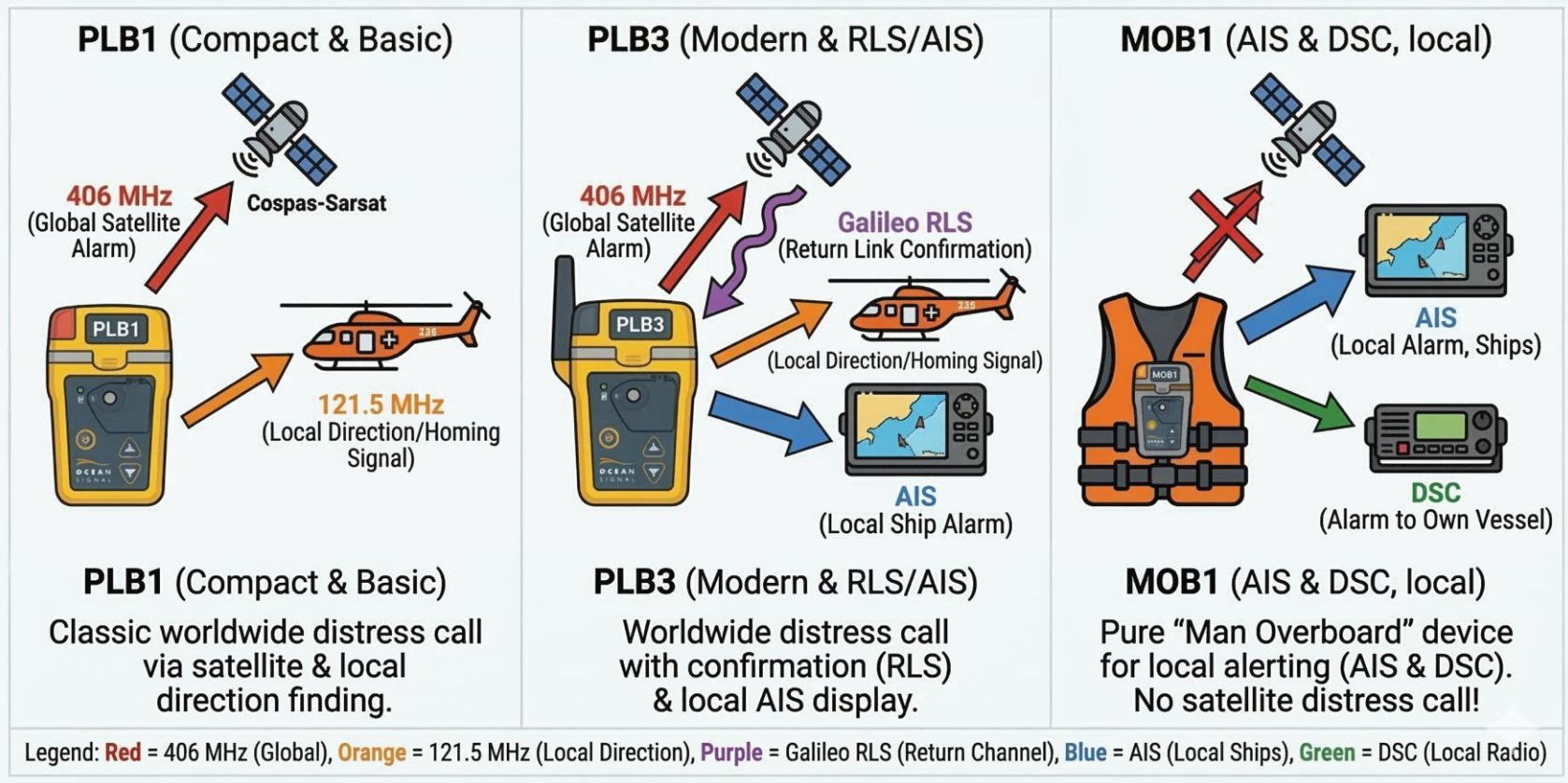
ALL EPIRBs MUST BE REGISTERED
WITH THE NATIONAL EPIRB
REGISTRY AT THE FLAG STATE
UK: HMCG Fallmouth

If it is switched on accidentally:

**SWITCH IT OFF AS SOON AS POSSIBLE & CALL THE
NEAREST COASTGUARD**

PLBs

Ocean Signal PLB Models & Operational Modes (Comparison)



Sea Survival Training



www.seefunk.net/sea-survival-training

MRCC

Maritime Rescue Coordination Center



SART

SEARCH AND RESCUE TRANSPONDER

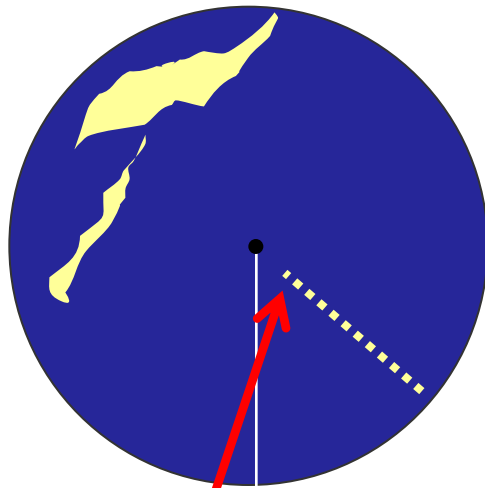
Responds with its own signal when “interrogated” by a Radar beam



SEARCH AND RESCUE TRANSPONDER

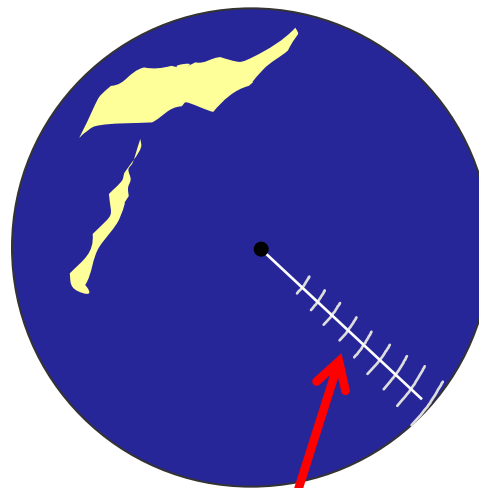
North Up Display

1. Up to 12 dots are displayed on the radar screen



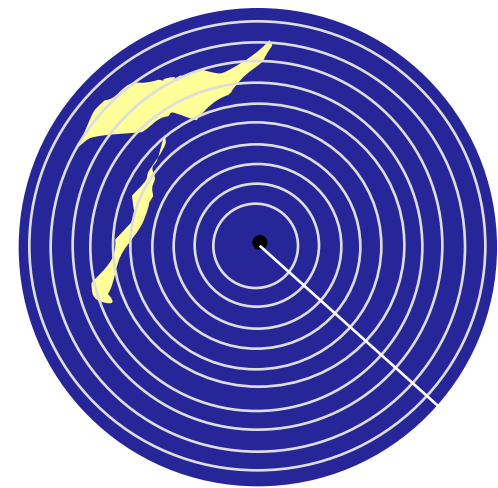
casualty

2. As the rescue vessel gets closer the dots change to arcs

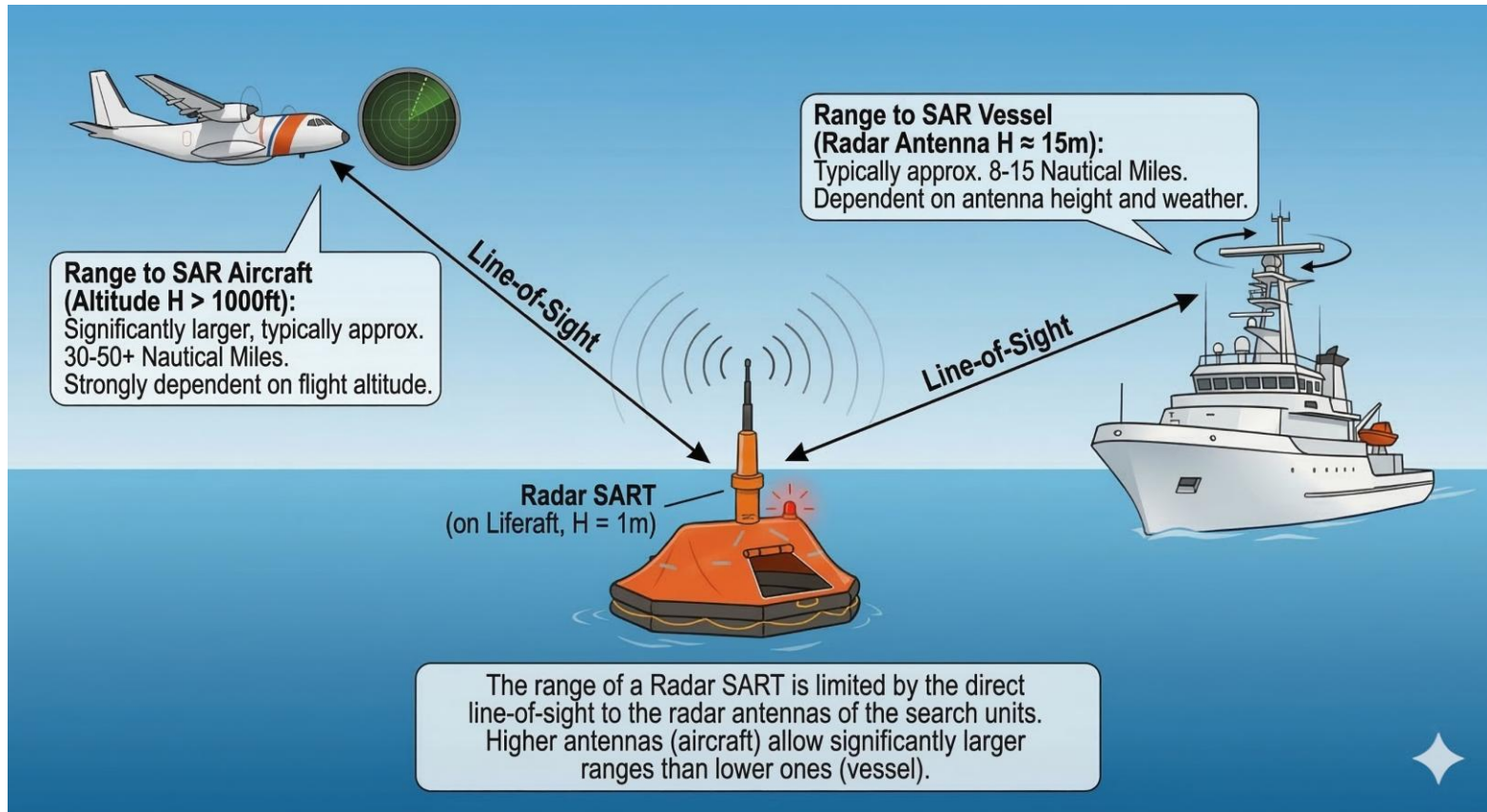


heading marker

3. Concentric circles are shown when very close to the casualty



SART RANGES



AIS SART

Displays position of casualty on chart plotter



Differences between AIS and RADAR SART

Merkmal	Radar SART (Der Klassiker)	AIS SART (Der Moderne)
Technologie	9 GHz (X-Band Radar) Transponder	VHF (UKW) Sender mit integriertem GPS
Funktionsweise	"Antwortet" passiv auf Radarstrahlen von Schiffen/Flugzeugen	Sendet aktiv und regelmäßig die eigene GPS-Position aus
Anzeige beim Retter	12 Punkte (oder Bögen) auf dem Radarschirm	Symbol (Kreis mit X) auf dem Kartenplotter/ECDIS
Information	Nur Richtung und grobe Entfernung (visuell auf dem Radar)	Exakte GPS-Position, Kurs, Entfernung und Text-ID
Wetterempfindlichkeit	Kann bei starkem Regen/Wellen (Rain/Sea Clutter) auf dem Radar untergehen	Sehr robust, wetterunabhängige Übertragung
Reichweite (Schiff zu Schiff)	ca. 5 - 10 Seemeilen (Sichtlinie)	ca. 5 - 10+ Seemeilen (oft etwas besser als Radar)
Reichweite (SAR-Flugzeug)	Sehr hoch (30 - 50 Seemeilen) – leichter zu orten für Flugzeuge	Hoch, aber Flugzeuge benötigen spezielle AIS-Empfänger
Hauptvorteil	Funktioniert mit jedem X-Band Radar (auf fast jedem Schiff vorhanden)	Liefert eine präzise Position ("Geh genau dorthin")

NAVTEX

Dedicated TEXT equipment which receives

- 1) Weather forecasts & gale warnings
- 2) Navigational warnings
- 3) Details of distress messages

Range approx 300 miles

English language 518 KHz

National language 490 KHz – 2 frequency sets



NAVTEX - Message

PAN PAN - PAN PAN - PAN PAN

MRCC FORT DE FRANCE REPORTS

OVERDUE REGARDING THE SAILLING VESSEL "PASADENA" CALL SIGN BMH37Q

LEFT CABO VERDE ARROUND THE 20 OF DECEMBER TO ANTIGUA AND BARBUDA AND NOT ARRIVED YET.

COLOR OF HULL : WHITE

LENGTH: 12.20 METERS

FLAG: AUSTRALIA

TWOKOUT, TO ASSIST IF POSSIBLE AND TO TAKE CONTACT AND REPORT ANY INFORMATION
TO MRCC FORT DE FRANCE COORDINATING THIS OPERATION

THIS IS MRCC FORT DE FRANCE

PHONE : +596 596 70 92 92

TELEX : (42) 912008

FAX : 596 596 63 24 50

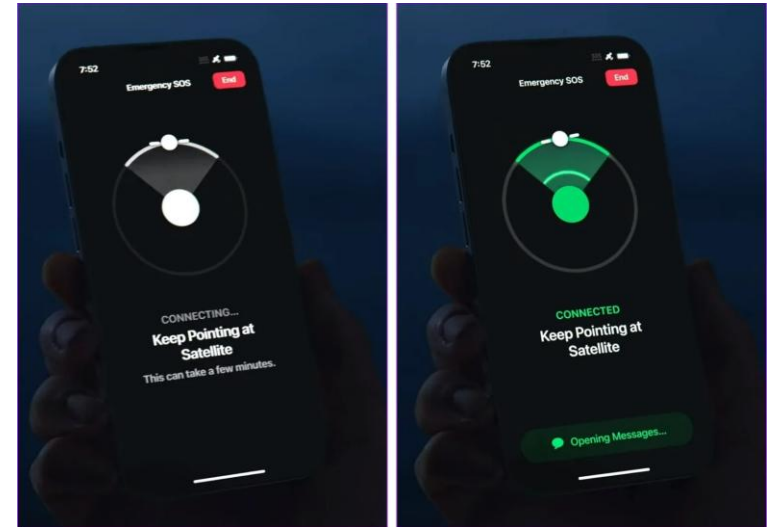
INM C : 422 799 024

MAIL: ANTILLES AT MRCCFR.EU

MOBILE PHONES

What you say **CAN'T** be heard by all

NOT SO GOOD for **DISTRESS**



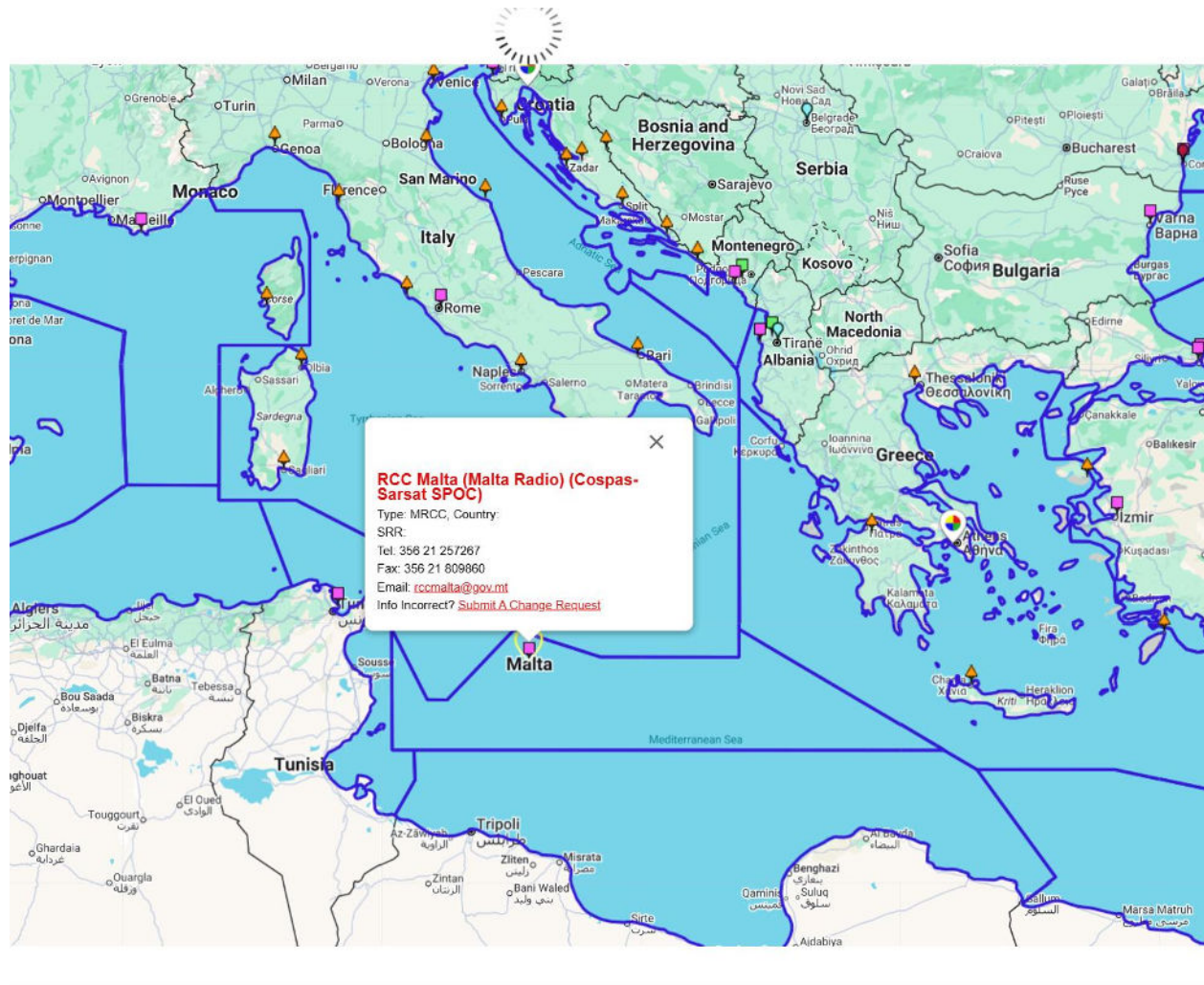
- Limited by range and battery state
- a good backup

SAR Contacts www.sarcontact.info

- Greece: Hellenic Coast Guard Kurzwahl 108 oder 112
- Italy: Emergenza in mare 1530
- Croatia: MRCC Riejka Kurzwahl 195 oder +385 9155
- Slovenia: 080 18 00 (Modra Stevilka)
- Malta: Malta Radio +356 21 456 767



SAR Contacts www.sarcontact.info



URGENCY

PAN PAN

For an urgent message concerning the safety of life or a vessel when immediate assistance is NOT justified

i.e. steering problems & engine trouble



URGENCY MESSAGE

Pan-Pan, Pan-Pan, Pan-Pan

All Stations, All Stations, All Stations

This is M/Y Nogo, Nogo, Nogo

Call sign M6CVA MMSI 235899985

Position 3 miles south of Dodman Point

Have engine failure and require a tow

Nine metres in length

Four people on Board

Over



URGENT MEDICAL HELP



PAN PAN



CALL ADDRESSED TO NEAREST
COASTGUARD OR '**ALL STATIONS**'
FOR URGENT
MEDICAL ASSISTANCE or **ADVICE**

SPOKEN MESSAGE REQUESTING URGENT MEDICAL ADVICE

Pan-Pan, Pan-Pan, Pan-Pan

Thames CG, Thames CG, Thames CG

This is S/Y Dab, Dab, Dab

Call sign M4GHQ MMSI 235899983

My position 51°44'.71N 001°04'.32E

I have an injured crew member and request
urgent medical advice.

Over

URGENCY

DISTRESS RELAY



An URGENCY alert is used to relay a Distress call and message -> **when the problem is someone else's !!**

DISTRESS RELAY

RELAY IMMEDIATELY

- Person stranded by tide
- Person repeatedly raising and lowering arms
- Vessel suffering a catastrophic explosion
- Aircraft entering the water

RELAY AFTER WAITING 5 MINUTES

- For vessels who have sent a DSC Distress alert but NOT received an acknowledgement from a Ship or Rescue Co-ordination centre

RELAY FOR PERSON WITH NO RADIO

Mayday Relay, Mayday Relay, Mayday Relay

All Stations, All Stations, All Stations

This is Spy, Spy, Spy

Call sign 2NJY8 MMSI 235899987

Mayday - stranded person at base of cliff

Approximate position 50°12'.4N 02°15'.7W

Rising tide and partially

Immersed in water

He requires immediate assistance

Over



RELAY FOR MAYDAY MESSAGE RECEIVED FOLLOWING DSC DISTRESS ALERT

Mayday Relay, Mayday Relay, Mayday Relay

All Stations, All Stations, All Stations

This is Spy, Spy, Spy

Call sign 2NJY MMSI 235899987

Mayday M/Y Jazz Call sign 2VCX3 MMSI 234000679

His position is 50°12'.4N 002°15'.7W

Holed and sinking

He requires immediate assistance

Three persons on board

They have a life-raft.

Over



TIME FOR TALKING



SAFETY - SECURITÉ

The DIGITAL Alert is used for:

1. Gale Warnings
2. Strong Wind Warnings
3. Urgent Navigational Warnings

Announcement **ONLY**
on Ch16

MESSAGE broadcast on a
WORKING channel



ANNOUNCEMENT FOR A ROUTINE MARITIME SAFETY INFORMATION BROADCAST

All Stations, All Stations, All Stations

This is Solent CG, Solent CG, Solent CG

For my routine Maritime Safety Information
Broadcast for the Solent & Portland areas

Listen Channel 86 for vessels east of the Isle of
Wight and west of The Needles.

Listen Channel 23 for vessels in the Solent.

SAFETY

HM COASTGUARD MARITIME SAFETY INFO

A broadcast every **3 hrs** for
12 areas around the UK & NI

New forecast every 6 hrs

Solent & Portland area

0130, 0430, **0730**, 1030,
1330, 1630, **1930**, 2230.

Full information 0730 & 1930

(Navigational warnings,
shipping

& inshore waters forecast)



Downloads unter
www.seefunk.net/seminar/

Vielen Dank für euer Feedback

