



# Radio School

Ship 1610 School of the Boat







# Single Side Band (SSB)



- HF radio – ship mounted
- Large, expensive
- Requires operator (not ham) license, ship license
- Range – to 10,000 miles, but inconsistent
- For oceangoing vessels





# Land Mobile Radio



- Systems
  - Citizens Band (CB)
  - Family Services Radio (FRS)
  - General Mobile Radio Service (GMRS)
  - Ham Radio
- CB primary use is truckers, etc.
- Equipment is less expensive
- USCG does not monitor
- Getting a distress call through – does not have a standard distress frequency
- Not recommended





# Cell Phone

- Various services with differing coverage.
- Only contacts point to point.
- Not monitored by USCG.
- 911 might not be directed to nearest jurisdiction.





# Satellite Phone

- Iridium Satellite Network.
- Mobile phone.
- Requires subscription.
- Same disadvantages as cellphone.





# SPOT

- Globalstar Satellite Network
- Features
  - Emergency notifications
  - Location tracking to website
  - Text messaging
- Requires registration and subscription





# EPIRB / PLB

- Types
  - Emergency Position-Indicating Radio Beacon
  - Personal Locator Beacon
- Features
  - GPS position
  - 406 MHz Satellite Distress Signal
  - 121.5 MHz Analog Homing Signal
- Requires Registration







# Other Marine Communication Services

- DSC (Digital Selective Calling)
  - A distress button, which automatically sends a digital distress signal identifying the calling vessel, location, and the nature of the emergency.
  - The ability to call another vessel using a unique identifier known as a Maritime Mobile Service Identity (MMSI). The actual voice communication then takes place on a different channel specified by the caller.
- AIS (Automatic Identification System)
  - Transceiver obtains its position and transmits (with other details about the ship MMSI, cargo, draught, destination and some others) to nearby ships.
  - Integrates location data with chart plotter to provide situational awareness





# Phonetic Alphabet

The phonetic alphabet is used over the radio when expressing abbreviations, acronyms, or easily misunderstood words. Instead of pronouncing letters as you might have learned in school, such as “Aay, Bee, Cee, Dee,” and so forth, each letter of the alphabet is spoken in a particular way as listed below..

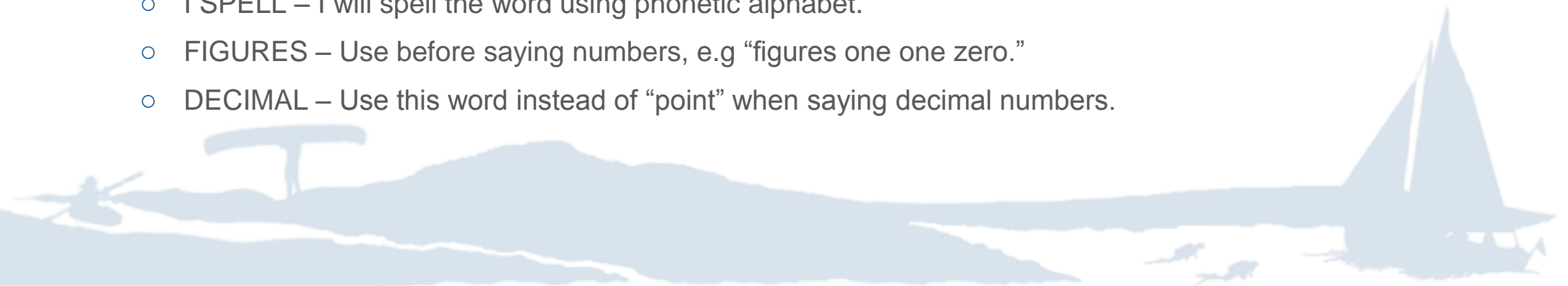
- Alfa
- Bravo
- Charlie
- Delta
- Echo
- Foxtrot
- Golf
- Hotel
- India
- Juliet
- Kilo
- Lima
- Mike
- November
- Oscar
- Papa
- Quebec
- Romeo
- Sierra
- Tango
- Uniform
- Victor
- Whiskey
- X-Ray
- Yankee
- Zebra
- Zero
- One
- Two
- Tree
- Fo-war
- Fife
- Six
- Seven
- Eight
- Niner





# Pro-Words

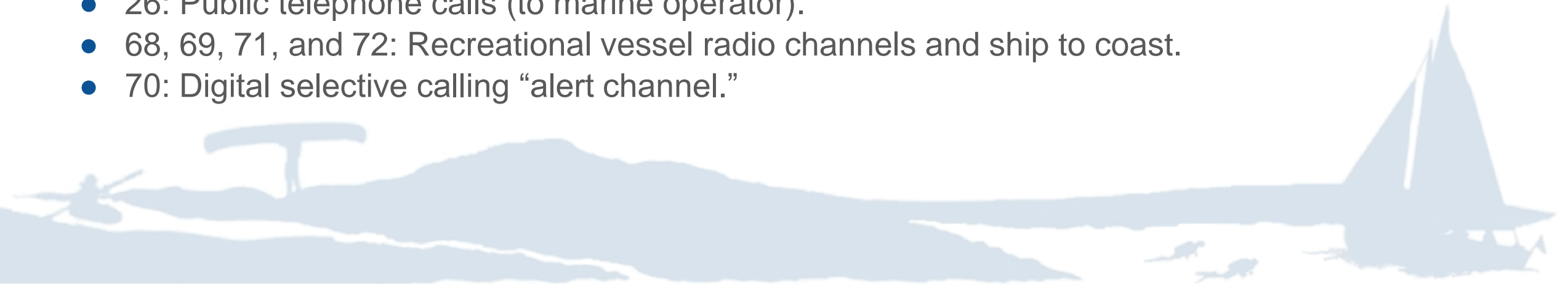
- Some words or phrases are special in radio communication.
  - OVER – I am finished talking and I am listening for your turn to talk.
  - OUT – The transmission is over.
  - AFFIRMATIVE – Yes
  - NEGATIVE – No
  - WILCO – Will comply.
  - ROGER – I understand.
  - SAY AGAIN – I did not understand your last, please repeat.
  - I SPELL – I will spell the word using phonetic alphabet.
  - FIGURES – Use before saying numbers, e.g “figures one one zero.”
  - DECIMAL – Use this word instead of “point” when saying decimal numbers.





# VHF Radio Channel Assignments

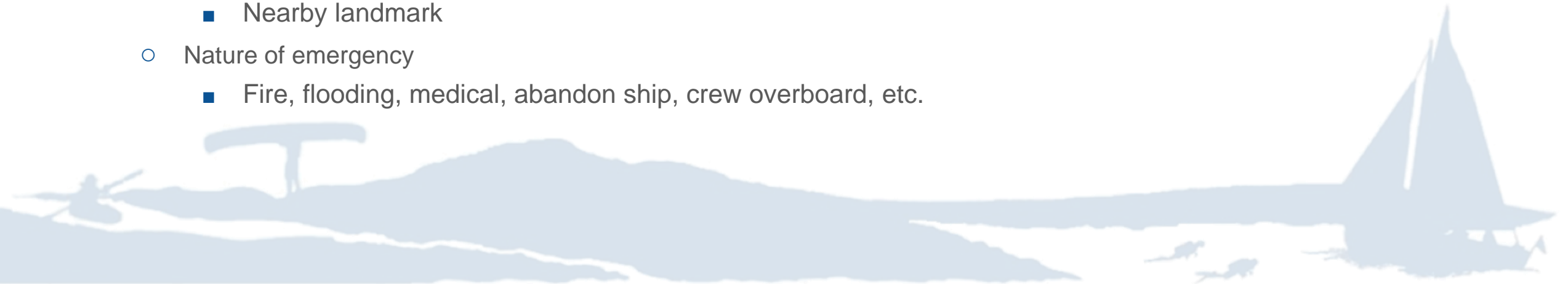
- 9: Communications between vessels (commercial and recreational), and ship to coast (calling channel in designated USCG Districts).
- 13: Bridges, locks, and harbors.
- 16: Distress and safety calls to Coast Guard and others, and to initiate calls to other vessels; often called the “hailing” channel. When hailing, contact the other vessel, quickly agree to another channel (68, 69, 71, and 72), and then switch to that channel to continue conversation.
- 22A: Communications between the Coast Guard and the maritime public, both recreational and commercial. Severe weather warnings, hazards to navigation, and other safety warnings are broadcast on this channel.
- 26: Public telephone calls (to marine operator).
- 68, 69, 71, and 72: Recreational vessel radio channels and ship to coast.
- 70: Digital selective calling “alert channel.”





# Emergency Call Review

- Types of Calls
  - Mayday: Distress - Loss of life, serious illness or injury, or loss of the vessel is possible.
  - Pan Pan: Urgent - situation that is urgent, but for the time being, does not pose an immediate danger to anyone's life or to the vessel itself.
  - Sécurité: Safety Information - Used to report hazard to navigation, buoy off station, extreme weather, etc.
- Important Info
  - Name of boat
    - “Sailing Vessel Quo Vadis”
  - Location
    - GPS latitude/longitude
    - Nearby landmark
  - Nature of emergency
    - Fire, flooding, medical, abandon ship, crew overboard, etc.





# Mayday

- To declare Mayday
  - MAYDAY x 3
  - THIS IS (Ship Identification) x 3
- Continue with message
  - MAYDAY
  - NAME, CALLSIGN, MMSI
  - POSITION
  - NATURE OF PROBLEM
  - TYPE OF ASSISTANCE REQUIRED
  - NUMBER OF PEOPLE ONBOARD
  - “OUT”

Keep this notice near your VHF DSC Radio

VESSEL NAME _____	<b>MAYDAY</b>	MMSI NUMBER _____
		CALL SIGN _____

**ONLY TO BE USED IN THE CASE OF GRAVE AND IMMINENT DANGER TO A VESSEL OR PERSONS, SUCH AS FIRE, SINKING, MAN OVERBOARD etc.**

1. Ensure radio is switched on.
2. Open cover over RED distress button.
3. Press RED distress button ONCE and release.
4. Select nature of distress. (Fire, Sinking, MOB etc.)  
If omitted an Undesignated Distress will be transmitted.
5. Press and hold RED distress button for 5 seconds to send the alert.
6. Wait no more than 15 seconds for the acknowledgement (shown on screen) and send the following voice message on Channel 16 on high power.

**MAYDAY, MAYDAY, MAYDAY**

**THIS IS** \_\_\_\_\_  
(NAME OF VESSEL SPOKEN THREE TIMES)

**CALL SIGN** \_\_\_\_\_ **MMSI** \_\_\_\_\_

**MAYDAY** \_\_\_\_\_  
(NAME OF VESSEL SPOKEN ONCE)

**CALL SIGN** \_\_\_\_\_ **MMSI** \_\_\_\_\_

**MY POSITION IS** \_\_\_\_\_  
(BY LAT. & LONG. OR BEARING AND DISTANCE FROM A CHARTED OBJECT)

**WE** \_\_\_\_\_  
(STATE NATURE OF DISTRESS IE. SINKING, FIRE, MAN OVERBOARD ETC.)

**I REQUIRE IMMEDIATE ASSISTANCE**

**WE HAVE** \_\_\_\_\_ **PERSONS ON BOARD**

**ANY OTHER INFORMATION** \_\_\_\_\_ *ie. TYPE OF VESSEL, HULL COLOUR, ETC.*

**OVER**

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# Pan Pan (Pronounced “*Pahn Pahn*”)

- To declare Pan-Pan
    - PAN-PAN x 3
    - ALL STATIONS x 3 (or a specific station)
    - THIS IS (Ship Identification) x 3
  - Continue with message
    - PAN PAN
    - NAME, CALLSIGN, MMSI
    - POSITION
    - NATURE OF PROBLEM, TYPE OF ASSISTANCE REQUIRED, IF ANY
    - “OUT”
  - It is also correct to use "pan-pan" as a preface if relaying a "mayday" call from another station that is out of range of the station they are trying to contact.
- Nautical Examples
    - Fouled propeller
    - Out of fuel
    - Small extinguished fire
    - Unsure of position
    - Crew overboard recovery
    - Overdue vessel
    - Imminent collision
    - Medical assistance





# Sécurité (Pronounced “*Se-cur-i-tay*”)

- Procedure for the call is:
  - SÉCURITÉ x 3
  - ALL STATIONS x 3
  - THIS IS (Ship Identification) x 3
- Without a break, continue on to the safety message:
  - SÉCURITÉ
  - NAME, CALLSIGN, MMSI
  - POSITION
  - NATURE OF SAFETY MESSAGE
  - ADVICE/OTHER INFORMATION
  - “OUT”

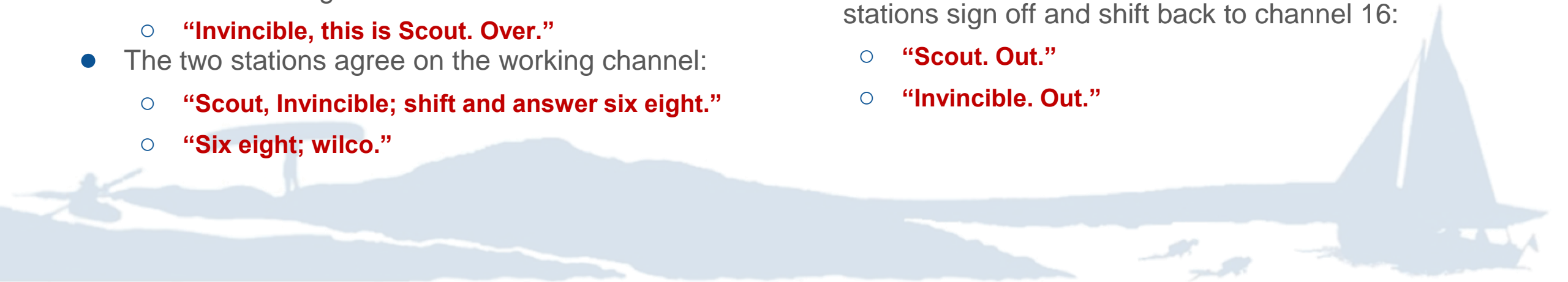






# Routine Calls - Example

- All calls are initiated on channel 16, then both stations shift to a working frequency to transact their business.
- Check to be sure that the calling and desired working channels are free of traffic.
- Place the call, being sure to identify who you are calling and who is making the call:
  - **“Scout, Scout, Scout. This is Invincible. Over.”**
  - If not immediately answered, the call may be repeated. If there is no answer within 30 seconds, two minutes must elapse before calling again.
- The vessel being called answers:
  - **“Invincible, this is Scout. Over.”**
- The two stations agree on the working channel:
  - **“Scout, Invincible; shift and answer six eight.”**
  - **“Six eight; wilco.”**
- Both stations now shift to channel 68.
- The called station speaks next:
  - **“Invincible. Scout. Over.”**
  - This identifies the stations now on channel 68.
- The vessel that originated the call now identifies itself and the conversation proceeds:
  - **“Scout. Invincible.”** (The message now follows.)
- Each vessel’s radio operator takes turn speaking. Each message ends with “over” to let the other party know that a reply is desired.
- When the business has been concluded, both stations sign off and shift back to channel 16:
  - **“Scout. Out.”**
  - **“Invincible. Out.”**





# Making DSC Distress Call

1. Lift the red spring loaded DISTRESS cover and press the DISTRESS key. The DISTRESS ALERT menu will appear on the display.
2. Press and hold the DISTRESS key. The radio's display will count down (3-2-1) and then transmit the distress alert.
3. When the distress alert is sent, the radio watches for transmission on CH16 and CH70 until an ack is received.
4. If no ack is received, the distress call is repeated in 4 minute intervals until ack is received.
5. When a DSC distress acknowledgement is received, a distress alarm sounds and CH16 is automatically selected. The display shows the MMSI of the ship responding to your distress.
6. Press the PTT button and state your vessel name, number of persons onboard, and distress situation, then say "over" and wait for a reply from the acknowledging ship

```
!DISTRESS ALERT!  
Nature of:Undesignated  
Position: 33° 37.120N  
          118° 09.580W  
POS Time: 10:00  
          Time for 3 sec  
NATURE POS/TM QUIT
```

```
!DISTRESS ALERT!  
Nature of:Undesignated  
Position: 33° 37.120N  
          118° 09.580W  
POS Time: 10:00  
          Time for 3 sec
```

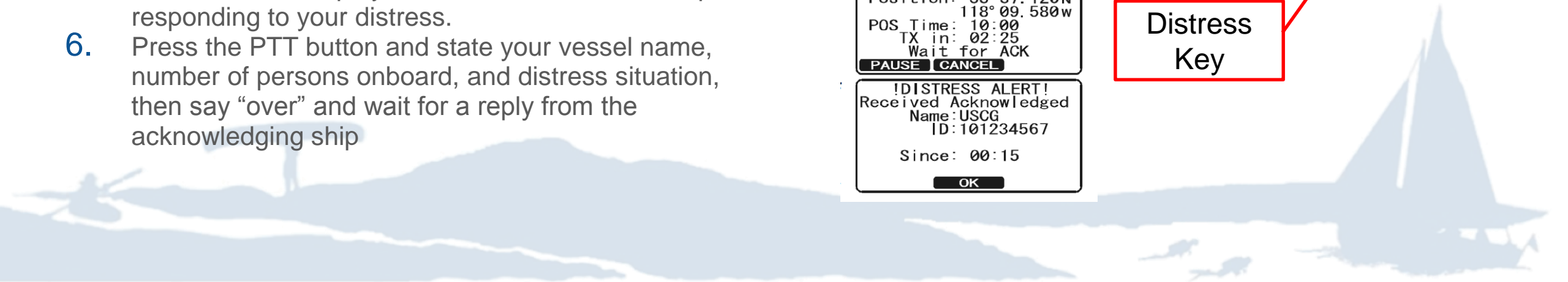
```
!DISTRESS ALERT!  
Nature of:Undesignated  
Position: 33° 37.120N  
          118° 09.580W  
POS Time: 10:00  
          Transmitting
```

```
!DISTRESS ALERT!  
Nature of:Undesignated  
Position: 33° 37.120N  
          118° 09.580W  
POS Time: 10:00  
TX in: 02:25  
Wait for ACK  
PAUSE CANCEL
```

```
!DISTRESS ALERT!  
Received Acknowledged  
Name:USCG  
ID:101234567  
Since: 00:15  
OK
```



Distress Key





# Receiving a DSC Distress Call

If you happen to receive a DSC Distress Alert, you should take the following actions:

1. Secure the radio alarm. This is typically done by pressing any button on your radio.
2. Immediately switch to the appropriate voice frequency. In the case of VHF, Channel 16. Many radios today will do this automatically.
3. Write down the MMSI and position information being shown on your radio's display.
4. Now here is the hard part! Don't do anything, Just Listen!
5. Wait for 5 minutes for either the Coast Guard or a Coast Station to respond.
6. If you do not hear an acknowledgement by any other station, you should attempt to contact the Coast Guard or other authority having jurisdiction and relay the MMSI and position information to them.
7. If no one responds to the vessel in distress, you should contact the vessel and proceed to their location to assist if you are able to do so.

On most marine radios, the DSC Distress Alarm Signal consists of the continuous alternate transmission of two audio tones of different pitch for a period of at least thirty seconds but not to exceed one minute. The sound of this tone is similar to that used by some ambulances.

