STCW
Personal
Survival
Techniques
(Basic Sea Survival)
This area is a TRAINING ENVIRONMENT and therefore comes with risks!

Please be aware that you will come into contact with:
- Stairs
- Water
- Darkness
- Training equipment
- Other hazards!

This is an essential part of your training with us.

If you have **ANY** concerns, please see your instructor immediately!
I have known the sea too long to have any respect for its decency

Joseph Conrad
The Aim of this Course

To give you the **ESSENTIAL**
education and training in
Personal Survival Techniques to
enable you to **SURVIVE** at sea
in the event of your ship’s
abandonment

Your survival starts from
**THE MOMENT YOU FIRST STEP**
**ABoard!**

Maurice & Maralyn Bailey 1973
(117 Days Adrift)
Outcomes

By the end of this course, you should:

1. Know the main types of maritime emergencies
2. Know the survival equipment used
3. Understand the principles of survival
4. Know how to abandon ship
5. Know how to survive in the water
6. Know how to use a survival craft
Outcome 1

Main Types of Maritime Emergency
Emergency

Defined as “a serious, unexpected, and often dangerous situation requiring immediate action”.
(Oxford English Dictionary)
Examples of collision include hitting –

- Another vessel
- Floating object – iceberg, container
- A dock, wall or offshore installation (oil or gas rig, wind turbine etc)
Fire

Probably the only time a ship may be abandoned even though it is not sinking
Foundering

Ingress of water from above

Leaking, damaged or missing hatches and unsealed deck openings can lead to loss of vessel
Flooding

Ingress of water from below

Usually as a result of –

• Collision
• Grounding
• Stranding
• Hull failure
• Explosion
Outcome 2

Survival Equipment used in a Maritime Emergency
Personal Protective Clothing & Equipment

Lifejacket –
• Helps you to float
• Keeps your airway clear of the water
• Minimises risk of drowning
• Minimises exertion & exhaustion

A buoyancy aid is not a life jacket!
Personal Floatation Devices - PFDs
(Lifejackets)

SOLAS approved lifejacket spec –

• Self righting within 5 secs
• Keep mouth 12cm above water
• Easy to put on
• Must retain 95% buoyancy over 24hr period
• Have a whistle, light, retro-reflective tape and a rescue loop*
Lifejacket Stowage

Stowed:
• In crew cabins
• On deck in dedicated lockers*
• On the bridge

Not normally stowed in passenger’s cabins
Safety Plan
Outcome 5

Survival in the Water during a Maritime Emergency
Part 1
Entering the Water

If you *have to* enter the water –

• Inflate lifejacket
• If possible, enter slowly*
• Check water for obstructions
• Pinch your nose
• Hold down your lifejacket firmly
• Keep feet together
• Look straight ahead
• Step or jump clear

LO: 4.3
H.E.L.P.*
Heat Escape Lessening Position

- Heat loss up to 26-30 times faster in water
- 50% + heat lost via head
- Pull hood (if available) over head
- Fit spray visor if fitted
- Lay on back (semi-foetal)
- Cross arms and legs
- Keep back to the waves and spray
- Remain calm – avoid exertion
HUDDLE

• For 2 or more swimmers
• Reduces heat loss
• Less chance of losing others
• More conspicuous
• 360° visibility
• Helps protect vulnerable
• Improves morale
Huddle – with Casualty
Swimming in a Group

- Swim on your back
- Minimise movement
- Keep upper arms still
- Use short forearm strokes
- Wrap legs around the person in front
- Tow casualty
Outcome 6

Using a Survival Craft during a Maritime Emergency
Part 1
Launching a Liferaft Manually - 1

- Prepare to launch to leeward* (except fire)
- If necessary, move the liferaft from its stowage (small craft only)
- Check water for obstructions
- Secure painter to strong point
- Undo the quick release hook
- Launch raft overboard
• Pull the painter out of the canister
• When it stops coming out freely, give it a sharp tug
• As soon as it inflates, shorten up the painter
• Secure the raft close to the vessel, near a boarding position
• If inverted, turn it over - from the deck
• Put any extra gear into the raft
Dry Boarding

• Try to board “dry”

• **Do not** inflate lifejacket

• Strongest in first to help others

• If possible, step in, don’t jump

• Move to back of raft

• Don’t jump onto others
Life raft – Initial Actions*

**CUT** - the painter

**STREAM** - the drogue

**CLOSE** - the entrance

**MAINTAIN** ......
Your Turn!
Outcome 2

Survival Equipment used in a Maritime Emergency Part 2
Inflatable Lifejacket

- Complies with ordinary lifejacket requirements
- Has min 2 separate compartments
- Inflates automatically upon immersion
- Can be inflated manually
- Can be inflated by mouth
- If 1 compartment fails, will still meet specification
Immersion Suit

• Must be able to be donned within 2 minutes
• May require a PFD
• If PFD not required, must have a whistle and light
• Location – dedicated lockers in crew areas
• Only issued for some crew
Thermal Protective Aid (TPA)

- Can be worn over clothing & lifejacket
- Covers the whole body except the face
- One size fits all
- Easily donned in survival craft
- Can be removed in the water in less than 2 minutes
- Function properly throughout an air temperature range -30°C to +20°C.
- Location – in survival craft or grab bag
Lifebuoy

• May come with light or line attached, or both

• Location – on outer decks near exits
Lifeboats - Open

- Passenger vessels - sufficient lifeboats for everyone on board
- Cargo vessels – twice the capacity for everyone on board
Lifeboat – Partially Enclosed

LO: 2.1
Lifeboat – Totally enclosed, self-righting, davit launched

- Max 3 minute boarding time (cargo vessels)
- Diesel engine
- Minimum speed 6 knots
- Minimum duration 24 hours
Lifeboat - Freefall

- Intended for rapid deployment
- Mandatory for tankers and bulk carriers
- Minimum specification same as for standard enclosed lifeboat
- Must be able to release from within
Lifeboat – for Tankers

• Designed for launching into burning oil

• Water sprinkling system to protect from flames

• Personnel sealed from outside environment

• Internal air supply system
Rescue Craft

- Minimum speed 6 knots
- Minimum duration 4 hours
- Used to rescue MOBs
- Attend other vessels in distress

LO: 2.1
Liferaft

- Built to last minimum 30 days at sea
- Survive a drop of 18m minimum
- Withstand repeated boarding from 4.5m height
- Canopy inflates automatically
- Minimum capacity 6 persons
- Maximum capacity 150 persons
- Tested by approved service engineer annually
Liferaft - Stowage

- On-deck stowage in canister
- Sits in purpose made cradle
- Located in a “ready to launch” position
- Secured in place by a quick release mechanism
- Can be released “automatically”
Davit Launched Liferaft

- Used on passenger ships
- Stowed in canisters on deck
- Launched using a small crane (davit)
Marine Evacuation System (MES)

- Quick deployment
- Mass evacuation in minimum time
- Replacing traditional systems
- Light weight and space saving
- Proven in Force 6 and 3 metre seas.
Outcome 3

Principles of Survival during a Maritime Emergency
Value of Training & Drills

- Attend training sessions (drills) regularly
- Know your vessel – escape routes, muster stations
- Know what equipment is available, where it's located, how it works
- Helps overcome your fear and anxiety by regular familiarization
- Gives others (passengers) reassurance through your ability

Your survival starts when you **first** step onboard!
The Need to be Ready

- An emergency could happen at **any** time
- Be prepared for the worst
- A safety briefing is mandatory within 24 hours of boarding*
- Check the muster list for your duties
  - Details actions to be taken in an emergency
  - Lists crew members responsibilities*
  - Located in crew only areas

**LO: 3.3**
Outcome 4

How to Abandon Ship during a Maritime Emergency
Standard Emergency Signals

• General Alarm (SOLAS) = 7 short and 1 long blast on ships whistle

• Abandon ship = a verbal order by the Captain only*

• Fire and emergency = continuous blast (more than 10 seconds) of ships whistle and / or continuous ringing of general alarm

• Man overboard = 3 long blasts on ships whistle (Morse code “O”)
Actions - Called to Abandon Ship Station

• Dress warmly
• Put on survival suit if available
• Put on your lifejacket
• Go to your muster station
• Prepare survival craft for use
• Gather extra supplies (grab bag?)
• Take anti-sickness pills
• Remain calm
Your Duty to Passengers

• It is the duty of the crew to –
• Muster passengers
• Carry out a roll call
• Check their lifejackets
• Give help and guidance
• Keep them calm
• Get them into the survival craft
• Give reassurance
• Remain calm yourself
• Maintain control
Extra Supplies

• Extra clothing and blankets
• Extra TPAs, plastic bags
• Signaling / communication equipment (hand-held VHF radio, flares, torches)
• EPIRB & SART
• Extra medical supplies
• Bottled water / food (cans, vacuum packs, chocolate, sweets, soft drinks)
• Any additional useful items....
Personal Survival Kit / Grab Bag

- Personal medication
- Sunblock, hat
- Spectacles / sun glasses
- Passport, ID, documents, money
- Mobile phone
Abandon Ship!

- Abandoning ship is the LAST RESORT!
- The best survival craft may be the vessel you are abandoning

Mary Celeste 1872
Hydrostatic Release Unit – (HRU)

- Prevents loss of raft with sinking ship
- Water pressure activated
- Releases raft at 4 meter depth (max)
- Weak link releases painter at 2.2kN (± 0.4kN)
- Replace after 2 years
Launching a Davit Liferaft

- Davit hook attached to raft lifting eye
- Canister hoisted clear of obstructions
- Painter secured to strong point
- Canister maneuvered over side
- Raft inflated
- Raft moved to boarding position
- Personnel board liferaft
- Painter cut
- Check below for obstructions
- Raft lowered into water
- Released from the raft
Abandoning Ship - Complications

Unable to launch the survival craft due to -

• Lack of time
• Absence of correct personnel
• Severe listing or trim
• Mechanical failure
• Absence of lighting
• Burning oil on water
Outcome 5

Survival in the Water during a Maritime Emergency Part 2
Cold Water Shock

Sudden immersion in cold water causes –

• Adrenalin rush
• Heart rate and blood pressure shoot up
• Blood vessels can rupture
• High risk of stroke or cardiac arrest
• Breathing rate rapidly increases – hyperventilation
• High risk of drowning
How Long Have I Got?

Life expectancy in water in “normal” clothing.

<table>
<thead>
<tr>
<th>Water Temperature</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.0–15.5 degrees C (70–60 degrees F)</td>
<td>12 hours</td>
</tr>
<tr>
<td>15.5–10.0 degrees C (60–50 degrees F)</td>
<td>6 hours</td>
</tr>
<tr>
<td>10.0–4.5 degrees C (50–40 degrees F)</td>
<td>1 hour</td>
</tr>
<tr>
<td>4.5 degrees C (40 degrees F) and below</td>
<td>less than 1 hour</td>
</tr>
</tbody>
</table>

Note: Wearing an antiexposure suit may increase these times up to a maximum of 24 hours.

Figure 16-7. Life expectancy times for immersion in water.
Make Yourself Shock-proof

The first 2 - 3 minutes are critical!
• Avoid falling or jumping in
• Enter water slowly
• Wear clothing with waterproofs
• Use a hood
• Wear an inflated lifejacket
• Try to hold onto a buoyant object
• Keep still to reduce loss of buoyant air
Shark Attack

- If swimming, stay in a group
- Keep a lookout
- Wear clothing including shoes
- Avoid urinating, defecating, vomiting

If attack imminent -
- Splash and yell into water to frighten it
- Hit shark in eye or gills
- If in a raft, keep quiet

LO: 4.3, 4.5
Survival in Burning Sea

- Discard lifejacket (unless deflated) and any item that is buoyant etc.
- Swim as far as possible under water
- Before surfacing, push surface oil clear
- Face downwind before breathing in
- Submerge feet first and continue until clear
Survival in Oil

• Keep head high as possible
• Remove lifejacket and use as a raft
• Secure lifejacket to wrist
Outcome 6

Using a Survival Craft during a Maritime Emergency
Part 2
Life raft – Initial Actions*

**CUT** - the painter
**STREAM** - the drogue
**CLOSE** - the entrance
**MAINTAIN** ......
Maintain....

Discipline and Moral

• Establish a strong leader
• Assign tasks
• Appoint lookout(s)
• Pick up survivors
• Cluster other craft / establish communication
• Collect all “weapons”
• Be positive
• Believe you will survive

Earnest Shackleton – A Good Egg!
Maintain.... The Integrity of the Life raft

• Open survival pack
• Bail out
• Deal with leaks
• Close the canopy
• Keep it pumped up
• Deploy SART or Radar Reflector
• Check EPIRB is switched on
Maintain....
Health and Wellbeing

- Keep warm and dry
- Give medical assistance
- Take anti-sickness tablets
- No rations for 24 hours
- Collect rainwater
Survival Craft Equipment

Practical Demonstration

LO: 2.3, 6.5
EPIRB
Emergency Position Indicating Radio Beacon

• When activated, transmits distress message on 406 MHz to satellite*
• Can be used globally
• Can be used to “home-in” on (121.5 MHz)
• May have built in GPS
• Transmits for 48 hours
• Must be taken into survival craft
• Tie on and tow behind raft*

LO: 6.6
Radar SART
Search and Rescue Transponder

• Alerting and homing device
• Activated by X-band (3cm – 9GHz) radar
• On standby mode for 96 hours
• Appears on other vessels radar screens
• Must be taken into survival craft*
• Do not mount with radar reflector

LO: 6.6
AIS SART
Automatic Identification System - Search and Rescue Transmitter*

- Similar to Radar SART but –
- Transmits distress alarm via VHF
- Alarm sounds on all vessels within VHF range
- Transmits Lat / Long position every minute
- Appears on chart plotter screens
Visual Distress Signals

- Flares*
- Smoke*
- Mirror
- Signalling Torch

LO: 6.6
Flares

**Parachute / Rocket**
- Distress alerting
- 300m height
- Min 40sec burn

**Handheld**
- Pinpoint position
- Hold downwind
- Min 60sec burn
Smoke

Floating smoke canister -

- Distress alert or pinpoint position
- Min 3 minute burn
- Daylight only
Visual Distress Signals*

- Torch / Signalling Lamp
- Mirror / Heliograph
Hand – Held VHF Radio

• Designed for rescue craft
• Drop resistant
• Submersion resistant
• 8 hour battery life

LO: 6.7
Dangers to Survival and Precautions to Take
Longer Term Survival

- Exposure to the elements
- Physical health
- Water
- Food
- Psychological issues

José Salvador Alvarenga
Seasickness

Danger -
• Leads to fluid loss
• Exhaustion and loss of will to survive
• Contagious
• Unpleasant for others

Remedy -
• Replace fluid if plentiful
• Prevent eating
• Give anti-seasick pills
• Use sick bag
• Rest
• Clean up after “spills”
• Keep warm, allow fresh air*
Cold Weather Ailments

- Hypothermia
- Frostbite
- Immersion (Trench) foot
Hypothermia

Heat loss is 25 - 30 times greater in water than in air, so -

• Extra clothing - layers
• Hat / hood
• Sit on your lifejacket
• Keep dry
• Keep out of the wind
• Huddle together
• Reduce activity
• Keep blood circulating
• Use a TPA
Hypothermia - Treatment

- Remove wet clothing if possible and dry off
- Put casualty in a TPA, wrap in plastic or sleeping bag
- Allow to re-warm slowly
- Warm drinks if conscious

**Do not** -
- Give alcohol
- Artificially rewarm
- Handle roughly
Hot Weather Ailments

- Sunburn
- Heat Exhaustion
- Heat stroke
Fresh Water

Loss of Water
• Urine
• Vomit
• Bleeding
• Breath
• Sweat

Loss Prevention
• Reduce intake
• Seasick Pills
• First aid
• Rest
• Keep cool

DANGER! - Do not drink sea water or urine!
Fresh Water

**Problem**
- Survival time without fresh water about 7 days
- Minimum daily survival ration 0.5 litre per day*
- Life raft total ration 1.5 litre per person
  *Not in a SOLAS B pack

**Solution**
- No water for first 24 hours
- Conserve and ration
- Collect as soon as possible

LO: 4.5
Other Sources of Water

Fish eyes and spinal fluid

Turtle blood
Food

• You can survive for several weeks without food
• Each person only has 10,000 kilo Joules (2,400 k cals) of food rations in a SOLAS A survival pack
• Avoid protein in diet (Fish meat)
Psychological Issues

- Maintain morale
- Be positive
- **Believe** you will survive

The Raft of the Medusa 1816
You Will Survive!

You are only a survivor when you step back on dry land!
Written Assessment

16 Questions. Pass mark 11. Time: 30 mins

Mark the correct answer like this:

A ● C D

To change your answer, put a large X through the wrong answer and mark the correct answer as normal:

A X C ●

Black pen if possible!