

BASIC SEA SAFETY

FOR PACIFIC ISLAND MARINERS

A TRAINING STRATEGY AND CURRICULUM



TRAINER'S GUIDE



SECRETARIAT OF THE PACIFIC COMMUNITY



GOVERNMENT OF TAIWAN/ROC

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PART A GENERAL INFORMATION

1. Introduction

This Trainer's Guide has been designed to assist trainers who are delivering and assessing the Basic Sea Safety certificate course for mariners in the Pacific region. It is a guide to the learning outcomes that need to be delivered, along with suggested assessment methods and assessment criteria (evidence). It is to be used in conjunction with the Learner's Guide of the Basic Sea Safety course as well as suggested reference materials listed in the Course Information section of this guide.

The Basic Sea Safety course is intended for the crew of small boats, generally less than 15 meters in length and operating in near coastal waters. The content of the course has been modeled on the Safety course developed by the Regional Maritime Programme of the Secretariat of the Pacific Community, but modified to meet the requirements of small-boat crew in Pacific Island countries and territories. Compliance with local regulations should be sought before the course is offered.

The intention is that the resources provide a generic bench mark for Pacific Island countries and territories when delivering the Basic Sea Safety course. While the general learning outcomes need to be adhered to, it is anticipated that delivery will be targeted to concentrate on areas most applicable to the maritime and fishing sector in each country. The wide variety of boats and types of operation in the Pacific Island region means national priorities will be different and that needs to be reflected in the delivery methodology.

2. Programme development

The resources were produced with financial support from the Government of Taiwan/ROC and compiled by Grant Carnie, Manager of Fishing & Maritime Programmes, Australian Fisheries Academy, Adelaide, South Australia.

They were developed through consultation with staff of the Fisheries Training Section, Coastal Fisheries Programme, Secretariat of the Pacific Community and regional experts on sea safety training. Resources from Australia and New Zealand as well as SPC training materials were used as a guideline to developing materials that were relevant to small-boat operators in the Pacific Island region.

The intention of the programme development is that it should remain dynamic – in other words, reviews should be continuous and ongoing and reflect the requirements of each country and alterations made to meet the evolutionary nature of the small-boat maritime and fishing industry in the region.

PART B COURSE INFORMATION

1. Course name

Basic Sea Safety

2. Prerequisites

There are generally no prerequisites for completing the Basic Sea Safety course. Refer to local regulations for any country-specific requirements.

3. Course duration

Three days (at the discretion of the course provider).

4. Assessment

Assessment methods are suggested in the document for each element of competence, however assessors may feel other combinations are also appropriate. Wherever possible, practical demonstration and assessment should be used although this is subject to available resources. With oral and written assessments (when practical assessment is not appropriate or possible), a decision needs to be made in regard to the language or other difficulties a candidate may encounter. An Assessment Guidelines section is included in this Trainer's Guide. It provides a more comprehensive outline of the skills and knowledge a candidate should be able to demonstrate or describe when being assessed and follows the learning outcomes of the course.

Assessment should be conducted separately for each course section as it is completed and the result recorded. This will allow for flexibility in delivery and give a person initially unsuccessful or absent the opportunity to be reassessed only on the section they have not completed. Where an outside institution is used (such as the Red Cross or St John for the Basic First Aid component), assessment may be judged completed by a certificate or statement of completion issued by that institution. It is suggested a holistic assessment, orally and/or written, at the successful completion of all course components could be used and then a certificate issued.

5. Recognition of Prior Learning (RPL)

RPL is an integral part of any competency-based system of training and assessment and should be used where appropriate to assess competence during the Basic Sea Safety course. This will most likely occur where a person can demonstrate they have a current first aid certificate covering the learning outcomes of the Basic First Aid component.

6. Resources

The resources required to successfully deliver appropriate training and assessment for the Basic Sea Safety course are varied and successful delivery can be accomplished without some resources. However, the Basic Sea Safety course is very much a hands-on course and every effort will need to be made to simulate real conditions.

Ideally, the training provider will have access to an area to launch a life raft and conduct a fire drill and will be able to access a vessel familiar to the candidates so that much of the training and assessment can be very practically focussed. For economical and geographical reasons, this is not always possible, however the most successful results will require the greatest practical focus possible.

Resources that may be used include:

- Classroom with desks
- Overhead projector
- Overhead transparencies for the Basic Sea Safety course
- Whiteboard
- TV and video
- Appropriate training videos
- Approved life raft, life-buoy and life jackets
- Hydrostatic release
- Rescue quoit
- Life raft equipment for display
- Life jacket accessories - whistle, salt water activated light
- Pyrotechnics (hand-held, parachute and smoke flares)
- Fire extinguishers (CO₂, dry chemical powder, foam)
- Fire blanket
- Student learning resource manual (Basic Sea Safety course Learner's Guide)
- Bamboo marker floats (dan flags) for demonstrating stability principles
- Models or drawings of small boats, showing various parts of the boat
- GPS
- VHF
- EPIRB (121.5/243)

Recommended trainer's reference material:

- *Australian Boating Manual* by Captain Dick Gandy
- *Safety in Small Craft* by Mike Scanlan
- *FAD Fishing Skills Workshops, SPC Module 2, "Safety at Sea and Small Boat FAD Fishing"*

PART C LEARNING OUTCOMES AND ASSESSMENT CRITERIA

1. BASIC FIRST AID

Learning Outcome	Method of Assessment	Assessment Criteria (Evidence)
1.1 Know about the First Aid Kit <ul style="list-style-type: none"> • What it contains • Where it is kept on board 	<ol style="list-style-type: none"> 1. Oral and/or written 2. Practical demonstration 	Able to explain and describe <ul style="list-style-type: none"> • the content of a First Aid Kit • where the First Aid Kit is kept on board his/her vessel
1.2 Able to stop bleeding and apply a dressing and/or bandage	<ol style="list-style-type: none"> 1. Practical demonstration 	Able to demonstrate how to <ul style="list-style-type: none"> • stop bleeding • apply a dressing or bandage to a wound
1.3 Able to apply EAR (Expired Air Resuscitation) and CPR (Cardio Pulmonary Resuscitation)	<ol style="list-style-type: none"> 1. Practical demonstration (using a CPR mannequin) 	Able to correctly demonstrate how to <ul style="list-style-type: none"> • place a patient in the recovery position • find a pulse • apply EAR • apply CPR

2. EMERGENCY SITUATIONS

Learning Outcome	Method of Assessment	Assessment Criteria (Evidence)
2.1 Know the main causes of emergencies (other than fire or abandoning the vessel) that may occur at sea	<ol style="list-style-type: none"> 1. Oral and/or written 	List or describe six main causes of emergencies (other than fire or abandoning the vessel) that can occur at sea
2.2 Know possible actions a crew member should take to prevent emergencies occurring and possible actions if they do occur	<ol style="list-style-type: none"> 1. Oral and/or written 2. Practical demonstration 	List or describe, or practically demonstrate (if practical), the actions a crew member should take to prevent such emergencies occurring and the actions to take if such emergencies occur
2.3 Know man overboard procedures	<ol style="list-style-type: none"> 1. Oral and/or written 2. Practical demonstration 	Able to explain and describe (with diagrams if applicable) or practically demonstrate a knowledge of the procedures to be followed by the crew of a vessel in a man overboard situation

PART C LEARNING OUTCOMES AND ASSESSMENT CRITERIA

3. ESSENTIAL SAFETY EQUIPMENT

Learning Outcome	Method of Assessment	Assessment Criteria (Evidence)
3.1 Know the essential safety items or equipment that should be carried on small boats	1. Oral and/or written	List or describe eight safety items or equipment that should be carried on small boats at all times
3.2 Understand the characteristics and stowage of a life jacket and how to put on a life jacket	1. Oral and/or written 2. Practical demonstration	Able to explain and describe and/or practically demonstrate a knowledge of <ul style="list-style-type: none"> • The characteristics of a life jacket • Correct stowage of a lifejacket • The correct method of putting on a life jacket and how to enter the water wearing a life jacket
3.3 Understand the characteristics and stowage of a life buoy, the accessories that may be attached to a life buoy and how to use a life buoy	1. Oral and/or written 2. Practical demonstration	Able to explain and describe and/or practically demonstrate a knowledge of <ul style="list-style-type: none"> • The characteristics of a life buoy • Correct stowage of a life buoy • Buoyant line and self igniting light that can be attached to a life buoy • The correct use of a life buoy in an emergency

PART C LEARNING OUTCOMES AND ASSESSMENT CRITERIA

4. SURVIVAL AT SEA

Learning Outcome	Method of Assessment	Assessment Criteria (Evidence)
4.1 Understand and identify the important parts of an inflatable life raft, the correct stowage of the life raft and the use of an hydrostatic release unit	1. Oral and/or written 2. Practical demonstration	Able to explain and describe and/or practically demonstrate a knowledge of <ul style="list-style-type: none"> • The important parts of a life raft • Correct stowage of a life raft • The workings of a hydrostatic release unit
4.2 Understand preparations to abandon the boat, how to launch a life raft, how to board a life raft and how to right a life raft	1. Oral and/or written 2. Practical demonstration	Able to explain and describe and/or practically demonstrate a knowledge of <ul style="list-style-type: none"> • Crew preparations to abandon the boat • The procedures to launch a life raft • The procedures to board a life raft • The procedures to right a life raft
4.3 Understand the survival procedures that should be adopted in a life raft or any other survival craft	1. Oral and/or written 2. Practical demonstration	Able to explain and describe and/or practically demonstrate a knowledge of the procedures that should be adopted in <ul style="list-style-type: none"> • Rescuing someone with the use of the rescue quito • First entering the life raft • Enhancing survival in the life raft
4.4 Understand what hypothermia is and methods to slow it down	1. Oral and/or written 2. Practical demonstration	Able to explain and describe and/or practically demonstrate a knowledge of <ul style="list-style-type: none"> • What hypothermia is and its symptoms • How to protect against hypothermia • How to treat hypothermia • Minimising loss of body heat in the water

PART C LEARNING OUTCOMES AND ASSESSMENT CRITERIA

5. INTERNATIONAL DISTRESS SIGNALS

Learning Outcome	Method of Assessment	Assessment Criteria (Evidence)
5.1 Know the most common pyrotechnics used at sea and how to use them	<ol style="list-style-type: none"> 1. Oral and/or written 2. Practical demonstration 	<p>Able to explain and describe and/or practically demonstrate a knowledge of</p> <ul style="list-style-type: none"> • Three common pyrotechnics used at sea • How to correctly operate each pyrotechnic and the situation in which to use each one
5.2 Understand internationally recognised means of indicating distress	<ol style="list-style-type: none"> 1. Oral and/or written 	<p>Able to explain and describe eight internationally recognised distress signals (to include at least one from each group – sight, sound, pyrotechnics, radio)</p>

6. COMMUNICATIONS IN AN EMERGENCY

Learning Outcome	Method of Assessment	Assessment Criteria (Evidence)
6.1 Can use a VHF and MF/HF (SSB) radio to transmit a distress (Mayday) message	<ol style="list-style-type: none"> 1. Oral and/or written 2. Practical demonstration 	<p>Able to explain and describe and/or practically demonstrate a knowledge of</p> <ul style="list-style-type: none"> • Turning a VHF radio and MF/HF (SSB) on and selecting the correct channel or frequency to transmit a distress message on each • The transmitting range of each (day & night) • Turn on the GPS and obtain a position to send • Transmitting a correct distress message (Mayday) and under which circumstances it may be transmitted
6.2 Understand the basic principles of an EPIRB (121.5 & 406) and how to correctly operate one	<ol style="list-style-type: none"> 1. Oral and/or written 2. Practical demonstration 	<p>Able to explain and describe and/or practically demonstrate a knowledge of</p> <ul style="list-style-type: none"> • Basic principles of 121.5 and 406 EPIRBs • How to correctly operate one • What to do if it is accidentally switched on

PART C LEARNING OUTCOMES AND ASSESSMENT CRITERIA

7. FIRE PREVENTION AND CONTROL

Learning Outcome	Method of Assessment	Assessment Criteria (Evidence)
7.1 Understand the principles of the fire triangle and how a fire can be extinguished	1. Oral and/or written	Able to explain and describe <ul style="list-style-type: none"> • The three components that make up the fire triangle • The principles in extinguishing a fire
7.2 Know common causes of fires on boats	1. Oral and/or written	Able to explain and describe <ul style="list-style-type: none"> • Five causes of fires on boats and ways to prevent fires on board
7.3 Understand the dangers of electricity in and around fires	1. Oral and/or written	Able to explain and describe the dangers of electricity in and around fires
7.4 Know the common fire fighting equipment on board small boats and how to fight a fire using this equipment	1. Oral and/or written 2. Practical demonstration	Able to explain and describe and/or practically demonstrate a knowledge of <ul style="list-style-type: none"> • Types of fire fighting equipment that can be found on a small boat and how to use each one • Which extinguishing agent is dangerous with electrical fires
7.5 Understand the basic principles of fire fighting and the safety precautions when fighting a fire	1. Oral and/or written 2. Practical demonstration	Able to explain and describe and/or practically demonstrate a knowledge of <ul style="list-style-type: none"> • The procedures when discovering a fire • Safety precautions to observe when fighting a fire and after the fire is extinguished
7.6 Understand the dangers of LPG (liquefied petroleum gas) and the safety precautions that need to be observed	1. Oral and/or written	Able to explain and describe <ul style="list-style-type: none"> • The characteristics of LPG • Safety precautions in the use and storage of LPG

PART C LEARNING OUTCOMES AND ASSESSMENT CRITERIA

8. GENERAL DECK SAFETY

Learning Outcome	Method of Assessment	Assessment Criteria (Evidence)
8.1 Know the danger areas, general dangers and bad work practices when working on a boat and precautions to take	1. Oral and/or written	Able to explain and describe <ul style="list-style-type: none">• Ten danger areas, general dangers and bad work practices to be aware of on board a boat• Precautions to take when working on a boat to avoid these danger areas, general dangers and bad work practices
8.2 Understand the precautions required to maintain the stability of the boat, particularly in bad weather	1. Oral and/or written	Able to explain and describe <ul style="list-style-type: none">• What can make a boat unstable and lead to it capsizing and/or sinking• Precautions to take, in bad weather to maintain the stability of a boat• Precautions to take when loading a boat in order to maintain its stability

PART D ASSESSMENT GUIDELINES

The following assessment guidelines are to be used in conjunction with the Learning Outcomes and Assessment Criteria given in Part C of this manual. These guidelines provide the trainer with a more comprehensive outline of the skills or knowledge a candidate should be able to list, describe or demonstrate when being assessed.

Learning Outcome	Assessment Criteria (evidence)
1.1, 1.2, 1.3	Refer to St Johns or Red Cross for details
2.1	1. List should include six of the following <ul style="list-style-type: none"> • Out of fuel • Lost sight of land • Vessel swamped • Vessel instability • Vessel leaking • Vessel overloaded • Engine failure • Sudden change of weather • Grounding on a reef • Collision with another vessel • Loss of steering at sea • Loss of propeller at sea • Capsize
2.2	1. The actions a crew member should take if an emergency occurs are <ul style="list-style-type: none"> • inform the skipper immediately • if the skipper is unable to take action use emergency communication procedures to make contact with another vessel or a shore-based facility 2. The crew member should have a basic understanding of some procedures to prevent emergencies occurring and, if the emergency occurs, to try lessening or fixing the problem
2.3	1. When demonstrating, listing or describing man overboard procedures the following should be included <ul style="list-style-type: none"> • shout “man overboard” • person on the helm turn wheel hard towards the side the person went overboard and hit “Man Over Board (MOB)” or “mark” button on the GPS, if the vessel has one • throw a life buoy or any other floatation device towards person in the water • keep person overboard in sight at all times • use spotlight if needed • a method to retrieve person from the water • if someone needs to enter the water to aid in recovery they must wear a lifejacket and be attached to the boat with a safety line
3.1	1. The list should include eight of the following <ul style="list-style-type: none"> • Engine tools and spares • Spare fuel • Ground anchor and rope, sea anchor • Alternative propulsion (e.g. oars, sail, spare outboard) • Compass • Signaling device (e.g. flares, radio, mirror, torch) • Flotation device (e.g. lifejacket, life buoy, life raft, carly raft) • Water in container • Food • First aid kit • Knife • Bailing device • Shade

PART D ASSESSMENT GUIDELINES

Learning Outcome	Assessment Criteria (evidence)
3.2	<ol style="list-style-type: none"> 1. Able to explain the characteristics and stowage of a lifejacket <ul style="list-style-type: none"> • Strips of retro reflective tape for spotlight vision • May have accessories attached such as a whistle and a salt water activated light • Slightly tilts person's head back and keeps mouth and nose clear of water • An unconscious person will be turned into this safe position • One for each person on board • Stowed where it is quick and easy to access, and out of the sun 2. Able to practically demonstrate the correct way to put the life jacket on (in under a minute) and the proper method for jumping into the water
3.3	<ol style="list-style-type: none"> 1. Able to explain the characteristics and stowage of a life buoy <ul style="list-style-type: none"> • Strips of retro reflective tape for spotlight vision • Fitted with four handholds • May have accessories attached such as a whistle, a salt water activated light and a buoyant line of at least 15 meters in length • Should be stowed near the steering and/or work areas (on either side on larger vessels) and ideally in a float free bracket 2. Able to practically demonstrate the correct way to throw the life buoy (upwind of person in the water if possible) and the methods for using it in the water (either pass head and arms through it or passing an arm through a handhold)
4.1	<ol style="list-style-type: none"> 1. Able to describe characteristics and identify eight important parts from either an inflated life raft or a drawing/photograph <ul style="list-style-type: none"> • Contained in a fiberglass canister or valise • Upper and lower buoyancy chambers • Painter and inflation line • Strips of retro reflective tape • Exterior and interior light • Lifeline all round • Water (stability) pockets underneath • Water catchment pocket and interior tube • Boarding ladder • Canopy and entrance flap • Look out opening • Sea anchor • Emergency pack inside (name at least six items) • Gas cylinder for inflating 2. Able to describe the correct stowage of a life raft, reason for having a hydrostatic release unit and how it works <ul style="list-style-type: none"> • The canister pack is stowed on deck in a cradle near the vessel's side, clear of encumbrances and is secured by lashings which ideally should incorporate a hydrostatic release • The valise pack, not being waterproof, needs to be given sheltered stowage • A hydrostatic release allows the life raft to float free if the vessel sinks before it can be launched. • Water pressure activates the hydrostatic release at approximately 3 meters depth, releasing the lashing holding the life raft container in its cradle and allows the life raft to float free. Must explain about the weak link to free the inflated life raft from the sinking boat.

PART D ASSESSMENT GUIDELINES

Learning Outcome	Assessment Criteria (evidence)
4.2	<ol style="list-style-type: none"> 1. Able to describe crew preparations to abandon a boat <ul style="list-style-type: none"> • Send out distress signal (Mayday) and activate EPIRB • Life jacket on • Extra clothing • Drink as much water as possible • If time, take extra water, food and other items that may assist survival 2. Able to practically demonstrate (if life raft available), otherwise describe <ul style="list-style-type: none"> • Procedure to launch the life raft <ul style="list-style-type: none"> ⇒remove lashings ⇒check painter is secured to a strong point on the boat ⇒ensure all clear (no debris, people or obstructions) ⇒throw life raft overboard, pull out all the painter, give it a hard tug and when inflated pull alongside the boat • Procedure to board the life raft <ul style="list-style-type: none"> ⇒remove shoes and any sharp objects ⇒ideally climb in directly from the boat without getting wet ⇒if unable to bring life raft alongside, jump correctly into the water, then swim to the entrance and climb aboard • Procedure to right a life raft <ul style="list-style-type: none"> ⇒turn the life raft so the gas bottle is down wind ⇒climb onto the inverted floor of the life raft ⇒climb onto the gas bottle, hold the righting strap and lean back, making use of the wind
4.3	<ol style="list-style-type: none"> 1. Able to practically demonstrate (or describe) how to rescue someone using the rescue quoit contained in the life raft 2. Able to describe what to do when first entering a life raft including <ul style="list-style-type: none"> • Cut painter, look for other survivors, paddle away from sinking vessel • Seat crew evenly around the perimeter of the life raft • Put out sea anchor • If cold weather inflate floor, if warm weather leave floor deflated and ventilate by opening entrance • Everyone to take sea sickness tablets (to lessen dehydration) • Treat any injured or sick survivors 3. Able to describe procedures to enhance survival in a life raft or other survival craft and include some, or all, of the following <ul style="list-style-type: none"> • Read instruction card, inspect equipment • Someone (skipper if available) in charge • Seasickness tablets (to prevent dehydration) • Check sea anchor attachment for wear • Keep survival craft dry by baling out water • Keep buoyancy chambers topped up with air using pumping bellows (let out air if hot weather causes chambers to expand) • Don't drink sea water or urine • Collect water if it rains • Post lookouts, look out for rescuers and other boats • Use pyrotechnics correctly (see section on pyrotechnics) • Don't drink water for first 24 hours, ration food and water sensibly • Only eat fish and birds if enough water to compensate for salty food • Watch for sharks • Keep busy and maintain a positive attitude

PART D ASSESSMENT GUIDELINES

Learning Outcome	Assessment Criteria (evidence)
4.4	<ol style="list-style-type: none"> 1. Able to describe what hypothermia is and the symptoms <ul style="list-style-type: none"> • Lowering of the core body temperature • Places of greatest heat loss: head, neck, sides of chest, groin • Understand hypothermia can still occur in warmer climates like the Pacific Island waters • Exhaustion, shivering, slow mental and physical reactions • Poor sense of touch, slurred speech • As it gets more severe – muscles become more rigid, pulse slows, heartbeat is erratic, shivering ceases, unconsciousness occurs 2. Able to describe how to protect against, or lessen, hypothermia <ul style="list-style-type: none"> • Warm and windproof clothing • Adopt HELP or HUDDLE positions if in the water • Don't swim around, exhaustion increases likelihood of hypothermia 3. Able to practically demonstrate the HELP and HUDDLE positions 4. Able to describe procedures to treat hypothermia <ul style="list-style-type: none"> • Raise body temperature <u>slowly</u>, remove wet clothing, keep warm • Huddle under covers with victim to transfer body warmth • Don't rub victim vigorously, or move unnecessarily • Warm drinks, not hot, <u>no alcohol</u>
5.1	<ol style="list-style-type: none"> 1. Able to name three common pyrotechnics used at sea for distress signals, when to use each one and some characteristics <ul style="list-style-type: none"> • Parachute flare – used to attract attention over longer distances (20 miles at night, less in the day), fire at angle when a low cloud base • Hand flare – used for guiding rescuers to exact location, use when rescuers are visible (range 10 miles at night, less in the day) • Smoke flare (orange) – can be floating or handheld, used in the daytime for pinpointing position • All can be used when wet, and emit smoke or brilliant continuous red light for 30 to 50 seconds 2. Able to demonstrate practically, or describe, knowledge of how to operate all three flares <ul style="list-style-type: none"> • Where to find instructions • Firing procedure • Hold downwind for handheld and smoke flares
5.2	<ol style="list-style-type: none"> 1. Can list, and describe, eight internationally recognised distress signals, including one from each group – sight, sound, pyrotechnics, radio <ul style="list-style-type: none"> <u>Sight</u> <ul style="list-style-type: none"> • Flames from a burning object • A square object above or below a round object • Slow and repeated raising and lowering of the arms outstretched • International code flags N and C <u>Sound</u> <ul style="list-style-type: none"> • Explosive sound (like a gun) fired at intervals of about a minute • Continuous sounding of a fog signaling device (whistle, horn etc) <u>Pyrotechnics</u> <ul style="list-style-type: none"> • Hand held flare • Parachute flare • Orange smoke flare (daytime) <u>Radio</u> <ul style="list-style-type: none"> • Mayday on a VHF or MF/HF radio • EPIRB

PART D ASSESSMENT GUIDELINES

Learning Outcome	Assessment Criteria (evidence)
6.1	<ol style="list-style-type: none"> 1. Able to demonstrate practically how to operate a VHF and a MF/HF (one or both – which ever is relevant to the candidates) <ul style="list-style-type: none"> • Turn on a VHF radio and select the emergency Channel 16 • Turn on an MF/HF (SSB) radio and select the emergency frequencies in the 2, 4 and 6 Mhz bands (2182, 4125, 6215) and tune the radio to each frequency 2. Able to explain the range differences between the two types of radios 3. Able to demonstrate how to switch on a GPS and take a latitude and longitude from it to give as part of a distress message 4. Able to describe under which circumstances a distress message can be sent and demonstrate (by simulation) sending one – to include <ul style="list-style-type: none"> • Mayday Mayday Mayday • Vessel's name • Position • Problem • Other useful information (people on board, weather)
6.2	<ol style="list-style-type: none"> 1. Able to give a brief explanation of the principles of how an EPIRB works <ul style="list-style-type: none"> • Transmits a signal to either a satellite system or airplane • Difference between a 121.5/243 Mhz and 406Mhz EPIRB • Why it works best in the water • The battery will give a signal for about 48 hrs 2. Can demonstrate how to check if the battery is still operational and how to activate the EPIRB (simulation only) 3. Understands the dangers of accidentally, or deliberately, turning on an EPIRB, that a search and rescue will occur and to turn it off immediately and notify the nearest authorities if this happens
7.1	<ol style="list-style-type: none"> 1. Able to describe the three sides of a fire triangle: fuel, heat, oxygen 2. Able to describe how to extinguish a fire and give an example of each one <ul style="list-style-type: none"> • Removing the fuel (turn fuel off, turn gas off, move unburnt material away from the fire) • Cooling (applying water to a fire) • Starving of oxygen (smother with sand, a fire blanket, or foam from a fire extinguisher)
7.2	<ol style="list-style-type: none"> 1. Able to describe at least five causes of fires on boats and ways to prevent these fires occurring <ul style="list-style-type: none"> <u>Engine Room</u> <ul style="list-style-type: none"> • Poor housekeeping • Oil leaks • Hot surfaces • Defective exhaust lagging • Auto ignition (e.g. oil dripping onto a hot surface) • Faulty electrical wiring <u>Accommodation</u> <ul style="list-style-type: none"> • Combustible materials (e.g. magazines, clothes) • Smoking <u>Galley</u> <ul style="list-style-type: none"> • Oil or gas stoves • Hot surfaces, ovens, frying pans, flues

PART D ASSESSMENT GUIDELINES

Learning Outcome	Assessment Criteria (evidence)
7.3	1. Understand, and explain, that electricity can cause a fire through spark and ignition and is dangerous if the fire is attacked with water <ul style="list-style-type: none"> • If electricity is in the vicinity of a fire it must be turned off • Once the electricity has been switched off the extinguisher appropriate to the class of fire is then used • If the electricity can't be switched off don't use water or a foam (blue) extinguisher to fight the fire
7.4	1. Able to describe three types of fire fighting equipment that are found on boats and can be used to extinguish a fire <ul style="list-style-type: none"> • Water (bucket or pump). Not to be used if there is electricity on or near the fire and don't use on an oil fire because it can cause the fire to spread • Fire extinguisher – there are various types, but don't use a foam (blue) extinguisher on fire with electricity in the vicinity • Clothes or blankets that are wetted first or a fire blanket – used to smother a small fire (e.g. burning cooking oil) 2. Able to practically demonstrate the operating procedures for fighting a fire including using water, an extinguisher and a cloth or blanket
7.5	1. Able to describe the procedures on discovering a fire, safety precautions to observe when fighting a fire, and how to ensure the fire is out <ul style="list-style-type: none"> • Raise the alarm immediately • Tackle the fire quickly with whatever means available while it may be small • Never tackle a larger fire alone • If able to, stop engines, shut off fuel and close hatches and doors to the affected area • Work as a team with other crew • Shake an extinguisher before use in case the extinguishing material has settled at the bottom of the extinguisher • Follow the principles of the fire triangle. Cool, smother, remove fuel • Don't use water or foam (blue) extinguishers on fires if there may be electricity in the vicinity • Don't use water on burning liquid, it will spread the fire • Plan an escape route when fighting a fire • Don't allow yourself or others to be asphyxiated or burnt • After the fire has been put out turn over any rubbish from the fire and wet it thoroughly • Don't open an enclosed area that contains a fire until sure it is out and the area has cooled down. Cool down around the area with water if unsure • Beware of, and understand, re-ignition
7.6	1. Able to describe the characteristics of LPG, how to store it and safety precautions when fighting a gas fire <ul style="list-style-type: none"> • Should be stored on deck in an upright position, with adequate ventilation, away from direct sunlight and with correct fittings • Turn off when not in use and always turn off before attacking a gas fire • Cool the bottle with water. Throw over the side if in doubt, it can explode if it gets too hot

PART D ASSESSMENT GUIDELINES

Learning Outcome	Assessment Criteria (evidence)
8.1	<ol style="list-style-type: none"> 1. Able to list ten potential danger areas, general dangers and bad work practices on board a boat and precautions to take to minimise these dangers (to include from the following) <ul style="list-style-type: none"> • Electrical equipment • Winches and line haulers • Inadequate lashings, loose items not tied down or stored at sea • Slippery decks • No railings, or parts of the railing missing • Open hatches • Using knives incorrectly , not storing in a safe place when not being used and doing other work while carrying them • Mooring lines and lifting lines breaking under strain (stand clear) • Weakened wires and ropes • Worn blocks and shackles • Standing in the bight of a rope • Incorrect handling of rope on a capstan • Teeth and spikes when handling fish • Entering confined or enclosed spaces that have been closed for a long time • Not wearing appropriate safety gear (e.g. gloves, hard hat) • Doors not latched open or shut
8.2	<ol style="list-style-type: none"> 1. Able to explain what can make a boat unstable or able to sink <ul style="list-style-type: none"> • Weight too high on the boat or unevenly distributed • Too much water on the deck (free surface effect) 2. Able to list some precautions to take in bad weather to maintain a boat's stability <ul style="list-style-type: none"> • Tie all loose equipment down or store it away securely • Scuppers (freeing ports) clear so deck water can escape • Hatches and doors securely fastened • Heavy items low in the boat 3. Understand that carrying more weight than the boat was designed for is dangerous <ul style="list-style-type: none"> • Cargo (fish or general) should be correctly stored so that it can't move • Extra cargo (fish) is dangerous and can make a boat unstable

INTRODUCTION

The Delivery Guidelines are designed to be used as an aid to the lecturer when delivering the Basic Sea Course. They are not hard and fast rules about the delivery methodology and lecturers will need to adjust delivery to suit the particular group of students the course is aimed towards and with regard to the resources that are available to use as teaching aids.

1. BASIC FIRST AID

Basic First Aid will generally be delivered by St John's, Red Cross or other qualified people or institutions who will have their own delivery methodology.

2. EMERGENCY SITUATIONS

2.1 Know the main causes of emergencies (other than fire or abandoning the vessel) that may occur at sea

2.2 Know possible actions a crew member should take to prevent such emergencies occurring and actions to take if they do occur

Materials

OHT 2.1

Lecturer Notes

1. Run the session as a general discussion and break the class into smaller groups. Have each group come up with emergencies that can occur, preventive measures that can be taken to prevent such emergencies and actions that can be taken if emergencies do occur

IMPORTANT

- Emphasize**
- ◆ The role of human error in emergency situations
 - ◆ The importance of preparation to prevent emergencies occurring
 - ◆ Crew should inform skipper immediately when emergencies occur

2. A general list of emergencies that can occur should contain the following

Emergencies	Prevention	Actions if they occur
Out of fuel	Take adequate fuel to sea Take more than required for intended distance to travel	Radio for assistance Use alternate propulsion source (e.g. sails, oars)
Lost sight of land	Have navigation skills	Head towards direction last saw land
Vessel swamped	Don't overload Beware of bad weather	Discard extra cargo or fish Bail or pump water out
Vessel instability	Load boat correctly Keep weight low in the boat	Re arrange weight Clear scuppers
Vessel leaking	Check boat in port and repair	Temporary repairs at sea Continuous baling or pumping
Vessel overloaded	Don't overload	Remove extra load
Engine failure	Service engine regularly Have spares and tools	Attempt to repair Radio for assistance Use alternate propulsion
Sudden change of weather	Check weather forecast before going to sea	Head for port Heave to
Grounding on a reef	Keep a good lookout Know the area	Attempt to get off Radio for assistance
Collision with another vessel	Keep a good lookout	Repair damage Assist each other
Loss of steering at sea	Check steering gear regularly	Rig a jury rudder system
Loss of propeller at sea	Check propeller regularly	Radio for assistance Use alternate propulsion

2.3 Know man overboard procedures

Materials

OHT 2.3

Lecturer Notes

1. Use discussion and ask the group to list the procedures they would follow if a person fell overboard from their boat. Show the OHT to see how it compares with their thoughts.
2. The list should include
 - Shout “man overboard”
 - person on the helm turn wheel hard towards the side the person went overboard and hit “man overboard” or “mark” button on GPS if the vessel has one
 - throw a life buoy or any other floatation device towards person in the water
 - keep person overboard in sight at all times
 - use spotlight if needed
 - a method to retrieve person from the water
 - if someone needs to enter the water to aid in recovery they must wear a life jacket and be attached to the boat with a safety line at all times

IMPORTANT

- Emphasize**
- ◆ The reason for turning the wheel to side the person fell overboard is to prevent hitting them with the propeller
 - ◆ That every situation is different, but generally approach the person into the wind and sea so the boat can be controlled at a lower speed
 - ◆ That if someone needs to go into the water to assist they must wear a lifejacket and be attached by a lifeline to the boat at all times. They don't want two people in trouble!
- Discuss**
- ◆ methods that could be used to retrieve the person

3. ESSENTIAL SAFETY EQUIPMENT

3.1 Know the essential safety items or equipment that should be carried on small boats

Materials

OHT 3.1

Any of the items shown on the OHT that may be available

Lecturer Notes

1. Run the session as a general discussion and break the class into smaller groups. Get each group to compile a list of safety items and equipment they see as essential, show OHT 3.1 and see how it compares with their list.
2. The list should include at least the following
 - Engine tools and spares
 - Spare fuel
 - Ground anchor and rope, sea anchor
 - Alternative propulsion (e.g. oars, sail, spare outboard)
 - Compass
 - Signaling device (e.g. flares, radio, mirror, torch)
 - Floatation device (e.g. lifejacket, life buoy, life raft, carly raft)
 - Water in container
 - Food
 - First aid kit
 - Knife
 - Bailing device
 - Shade

IMPORTANT

- Emphasize** ♦ There are cheaper alternatives available if some of the safety equipment is too expensive. Basic safety at sea for small boats does not mean spending big money.
- Discuss** ♦ alternatives (e.g. floatation device can be made from longline floats)
- Emphasize** ♦ telling somebody where you are going, who is going, and what time you plan to return
♦ the meaning of “always fish with a friend”
♦ checking all the safetv items are on board before departure

3.2 Understand the characteristics and stowage of a life jacket and how to put on a life jacket

3.3 Understand the characteristics and stowage of a life buoy, the accessories that may be attached to a life buoy and how to use a life buoy

Materials

An approved life jacket and life buoy for demonstration
Whistle and saltwater-activated light if available

Lecturer Notes

1. Use a life jacket for demonstration and discuss its basic characteristics.
Explain that a properly designed life jacket will tilt the person's head back and keep their nose and mouth clear of the water. It will also turn a person who may be unconscious into this safe position.
Have a student demonstrate how to put the lifejacket on correctly. Point out any deficiencies that they may demonstrate, particularly in tying it up tightly.
Show the correct method of entering the water, feet first and grasping the lifejacket firmly at the collar to prevent it sliding up on impact with the water and injuring the wearer.
Have the group correctly put on the jacket and enter the water.

IMPORTANT

- Emphasize**
- ◆ that the life jacket must be very firmly secured, as it will loosen in the water
 - ◆ the jacket must be in an easily accessible place on the boat so that it can be put on quickly in an emergency
 - ◆ it must be taken out of the manufacturer's wrapping as it will sweat and possibly rot
 - ◆ it should be stored out of the sun
 - ◆ it must be on the boat, not at home! It won't save your life there.
- Discuss**
- ◆ the use of accessories if appropriate (whistle and saltwater activated light)

2. Use a life buoy for demonstration and discuss its basic characteristics.
Discuss where it should be stored on board a boat. Have the group nominate where they would stow it on their boat. Discuss the importance of it being accessible to work stations.
Have the group demonstrate how they would use the life buoy in the water.
Point out that, if possible, the life buoy should be thrown upwind of the person in the water so that it will come past them

IMPORTANT

- Emphasize**
- ◆ anything that is buoyant can be used to throw to a person overboard if the boat doesn't have a lifebuoy or it is too far to reach quickly. A plastic bottle or longline float will support someone in the water.

4. SURVIVAL AT SEA

4.1 Understand and identify the important parts of an inflatable life raft, the correct stowage of the life raft and the use of an hydrostatic release unit.

Materials

A life raft (valise or canister type), if available

An hydrostatic release, if available

OHT 4.1.1

OHT 4.1.2

OHT 4.1.3

OHT 4.1.4

Lecturer Notes

1. Use OHT 4.1.1 (or an inflated life raft if available) to show to the group the important parts of a life raft.
In particular, point out:
 - Upper and lower buoyancy chambers and explain the life raft is designed to still float if one is chamber is punctured
 - Sea anchor
 - Entrance and boarding ladder or rung
 - Painter and inflation line
 - Water stability pockets
 - Rain catchment pocket and tube
 - Look/observation opening
 - Equipment pack
 - Arch supporting the canopy
 - Topping up valves and pressure release valves
2. Use OHT 4.1.2 and OHT 4.1.3 to briefly discuss the items found inside the life raft and their use
3. Discuss correct stowage on board
 - Canister-type stowed on deck in a cradle near the vessel's side, free of encumbrances and secured by lashings which ideally should incorporate a hydrostatic release unit
 - A valise-type should be stowed out of the weather but in a readily accessible place in case of an emergency
4. Use an hydrostatic release unit or OHT 4.1.4 to discuss the principle of the hydrostatic release and how to incorporate one in the securing mechanism of the raft in its cradle.

IMPORTANT

- Emphasize**
- ◆ the importance of the weak link in the hydrostatic release unit set-up
 - ◆ that the liferaft mustn't be secured with other lashings, otherwise it will not be released by the hydrostatic release
 - ◆ that the area on and around the liferaft and its cradle needs to be clear
 - ◆ that in hot weather air may need to be expelled from the buoyancy chambers

4.2 Understand preparations to abandon the boat, how to launch a life raft, how to board a life raft and how to right a life raft

Materials

A life raft, if available

OHT 4.2.1

OHT 4.2.2

Lecturer Notes

1. Get the group to discuss what they would do once a decision has been made to abandon the boat and before launching the life raft.
 - Make sure a distress message has been sent and the EPIRB (if available) has been activated and will be taken into the life raft
 - Put on their life jacket
 - Take extra clothing – it can easily be discarded if not required
 - Drink as much water as possible – this lengthens the time they can wait before drinking the supply of water in the life raft. Particularly important in dry weather.
 - If time, gather extra water, food and any other items that may be useful

IMPORTANT

Discuss ♦ what a grab bag is and how its contents may be life-saving

Emphasize ♦ if an EPIRB has been activated it must be transferred to a liferaft if abandoning the boat. It's no use attached to the boat you have left!

2. Show the procedure to launch a life raft, using OHT 4.2.1 to describe the steps
 - Remove lashings
 - Check, and double check, that the painter is secure. A life raft that floats away before being activated is no use to anyone!
 - Ensure all is clear over the side – no debris (particularly burning material if the boat is on fire), people in the water below the launch position, or objects protruding from the boat that may damage the raft.
 - Throw overboard, pull out all the slack painter line until it goes tight, give it a sharp tug and when inflated pull it alongside if able to.
3. Discuss the procedure to board a life raft
 - Remove shoes and any sharp objects that may damage the life raft.
 - Climb directly into the life raft if possible, as this will keep everyone dry. If not possible jump, into the water, swim to the life raft and climb aboard
 - Once everyone is aboard, cut the painter, paddle away using the paddles supplied and when clear of the sinking boat, stream the sea anchor.
4. Use OHT 4.2.2 to describe how to right an upturned life raft.

IMPORTANT

Emphasize ♦ importance of positioning the upturned liferaft with the righting position (gas bottle) downwind. so that the wind assists in turning it upright

If at all possible, a practical demonstration and assessment should take place.
4.3 Understand the survival procedures that should be adopted in a life raft or any other survival craft

Materials

Rescue quoit and buoyant line

OHT 4.3.1

OHT 4.3.2

Lecturer Notes

1. Describe how to use the rescue quoit and, if possible, include demonstration and assessment in the life raft practical session

IMPORTANT

- Emphasize**
- ◆ first option should be to throw it out to the person in the water if they are conscious and able to help themselves
 - ◆ if someone needs to go to rescue an unconscious person they should place it over their upper arm, swim to the person to be rescued making sure they are attached by the line to the survival craft, grasp the person by clothing or lifejacket at the back of the neck and wait to be hauled back

2. Discuss with the group the procedures on first entering a life raft
 - Cut painter and paddle away from the sinking boat
 - Put out sea anchor
 - Seat crew evenly around the perimeter of the life raft so that the life raft is stable and less likely to capsize
 - Everyone to take sea sickness tablets immediately and then as per instruction sheet
 - Treat any injured or sick survivors

IMPORTANT

- Emphasize** ◆ everyone to take seasick tablets. Life rafts are very volatile in their movements and even people not prone to seasickness are likely to be sick, causing a greater possibility of dehydration.
- Discuss** ◆ the procedures in hot and cold climates regarding the double floor

3. Break the group into smaller groups and get each group to discuss and list the procedures they think will enhance the chances of survival in a life raft or survival craft. Once the groups have reformed, get each to report and then use OHT 4.3.2 to discuss and compare their procedures.

The list should include at least some of the following:

- Read instruction card, inspect equipment
- Someone (skipper, if available) in charge
- Seasickness tablets (to prevent dehydration)
- Check sea anchor attachment for wear
- Keep survival craft dry by baling out water
- Keep buoyancy chambers topped up with air using pumping bellows (let out air in hot weather as heat causes chambers to expand)
- Don't drink sea water or urine
- Collect water if it rains
- Post lookouts, look out for rescuers and other boats
- Use pyrotechnics correctly (see section on pyrotechnics)
- Don't drink water for first 24 hours, ration food and water sensibly
- Only eat fish and birds if enough water to compensate for salty food
- Watch for sharks
- Keep busy and maintain a positive attitude

4.4 Understand what hypothermia is and methods to slow it down

Materials

OHT 4.4.1

OHT 4.4.2

Lecturer Notes

1. Discuss with the group what hypothermia is and what the symptoms are so they can recognise it in a survivor
 - Lowering of the core body temperature –normally at 37⁰ Celsius.
 - Explain the extremities (head, neck, sides of chest, groin) are the areas of greatest heat loss
 - Sign of hypothermia can include exhaustion, shivering, slow mental and physical reactions, poor sense of touch, slurred vision.
 - As it gets more severe the muscles start to get more rigid, pulse slows, the heartbeat is erratic, shivering stops and unconsciousness can occur

IMPORTANT

Emphasize ♦ hypothermia, though less likely in the warmer waters of the Pacific Island countries, can still occur, particularly if a person is fatigued. This is likely if the person doesn't have a floatation device and needs to keep moving to stay afloat

2. Discuss with the group ways to treat someone with hypothermia
 - Raise body temperature slowly
 - Get under covers with inflicted person so as to transfer your body heat
 - Don't rub the victim vigorously, or move them unnecessarily

- Give warm, not hot drinks, and no alcohol
3. Use OHT 4.4.1 and OHT 4.4.2 to show two methods of lessening the chances of hypothermia (HELP and HUDDLE positions) while in the water.

5. DISTRESS SIGNALS

5.1 Know the most common pyrotechnics used at sea and how to use them

Materials

Parachute flares, hand-held flares, hand-held or floating smoke flares

Lecturer Notes

1. Discuss with the group the three main types of pyrotechnics they are likely to have on board a boat. Explain they show a continuous brilliant red light for about 50 seconds or emit dense orange smoke for about 30 seconds.
 - Parachute or rocket flare
 - Hand-held flare
 - Orange smoke flare (floating or hand-held types)

Pass flares around so that the group are familiar with each one
2. Have the group discuss under which circumstances they would use each one.
 - Parachute flare – to attract attention at a greater distance, would be used in the first instance so that someone within its range (20 miles at night, less in the daytime) may see it and come to the rescue
 - Hand-held flare – to be used when a rescuer (boat or plane) is visible and can then be guided to the boat in distress. Visible to planes for about 10 miles and boats for perhaps 5-6 miles at night, less in the day.
 - Smoke flare – a better pyrotechnic for attracting attention during the day.
3. Discuss, and if possible, practically demonstrate the methods to fire each flare.

IMPORTANT

- | | |
|------------------|---|
| Emphasise | <ul style="list-style-type: none"> ◆ the need for all crew to familiarise themselves with the firing method of the flares on their boat as some flares are different. Instructions are written on the flare. Also to make sure they know where they are kept on board. ◆ that it is recommended to replace flares after three years |
| Discuss | <ul style="list-style-type: none"> ◆ how a parachute flare should be fired at an angle if the cloud base is below 300 metres. |

5.2 Understand internationally recognised means of indicating distress

Materials

OHT 5.2.1

OHT 5.2.2

Any of the distress signals that are available

Lecturer Notes

1. Break the group into smaller groups and have them come up with as many means of attracting attention in a distress situation as possible. In particular, have them concentrate on the following categories. Compare their observations with OHT 5.2.1

Sight

- Flames from a burning object (oil in a drum is an example)
- A square object above or below a round object
- Slow and repeated raising of the arms outstretched
- International code flags N and C (be able to describe the characteristics)

Sound

- Explosive sound (like a gun) fired at intervals of about one minute
- Continuous sounding of a fog-signaling device (whistle, horn etc)

Pyrotechnics

- Hand-held flare
- Parachute flare
- Orange smoke flare (hand-held or floating)

Radio

- Mayday on a VHF or MF/HF radio
- EPIRB

IMPORTANT

Discuss

- ◆ ways that crew may be able to improvise some of the distress signals in an emergency

6. COMMUNICATIONS IN AN EMERGENCY

6.1 Can use a VHF and MF/HF (SSB) radio to transmit a distress (MAYDAY) message

Materials

OHT 6.1.1

OHT 6.1.2

OHT 6.1.3

OHT 6.1.4

OHT 6.1.5

OHT 6.1.6

Either or both radios, if available (an instruction card for the radios to be used)

A GPS, if available

Lecturer Notes

1. Make a decision whether to describe the procedures for either radios, or just VHF. This will depend on the radio commonly used on the trainees' boats.
2. Explain to crew members that under normal circumstances, it is the skipper's responsibility to send a distress message, however everyone aboard should have a basic understanding of the operation of the radio and how to transmit a distress message out.
3. Show OHT 6.1.1 or ideally have a VHF radio for display
 - Explain that the VHF radio is for shorter distances (radio line of sight which is slightly further than a person can see)
 - Explain the higher the transmitting and receiving antennas are situated on the boat, the greater the distance a message will be heard (Show OHT 6.1.2)
 - Explain the frequency to use for a distress message (Channel 16)
4. Show OHT 6.1.3 or ideally have an MF/HF (SSB) radio for display
 - Explain that the MF/HF is for long distances and should be on boats that work further away from coast stations than VHF will reach.
 - Explain that there are a number of frequencies that can be used to send a distress message on MF/HF, the most likely available on their radio will be 2182, 4125, and 6215. They should familiarise themselves with the MF/HF on their boat – some have the frequency displayed (e.g. 2182), others will have a channel number that relates to a particular frequency (Channel Nos. 1 to 10)
 - A rule of thumb is the further the distance the higher the frequency to be used. They should start with the lower frequency (i.e. 2182) and if there is no response try the higher frequencies.
 - MF/HF transmits further at night so they may need to use a lower frequency to avoid unnecessary interference (show OHT 6.1.4)

IMPORTANT

Discuss ♦ the need to retune an MF/HF radio as a different frequency is selected

Emphasise ♦ if they are not sure how to tune an MF/HF to send the message anyway, there is a good possibility they will still be heard

- Using OHT 6.1.5, describe to the group the procedure in sending a distress message.
 - Make sure they understand that a distress message should only be sent if they believe the boat, and their lives, are in danger.
 - If possible, to follow the internationally recognised method and order of the distress message. If they can't remember, say whatever will attract attention, however if a distress is said correctly it can prevent confusion about the problem, position etc.
 - Explain the order should be the distress words Mayday spoken three times, the name of the boat (and number if their boat has one) three times, the word Mayday again once followed again by their boat name, then the problem (e.g. our boat is on fire), their position (from the GPS if they have one), and any other information that may be useful to rescuers (number of people on board, weather)

EXAMPLE OF A DISTRESS MESSAGE

MAYDAY MAYDAY MAYDAY
THIS IS GEMINI GEMINI GEMINI
MAYDAY GEMINI
OUR BOAT IS ON FIRE AND SINKING
WE ARE AT POSITION - 12 DEGREES TWENTY MINUTES SOUTH
175 DEGREES THIRTY MINUTES EAST
FOUR CREW ON BOARD. WEATHER FIFTEEN KNOTS FROM THE
SOUTHEAST. WE REQUIRE URGENT HELP.

IMPORTANT

- Emphasis**
- ◆ The call (MAYDAY) and boat name first
Followed by the Position, the Problem and Other information
 - ◆ They should continue to send the message until someone responds or it is clear that no one is hearing them or they have to abandon the boat
 - ◆ if using an MF/HF (SSB) radio they should try all available frequencies

- Explain to the group the basic principles of a GPS using OHT 6.1.6. Show the group a GPS, if one is available, and discuss how to switch it on and where to read the position.
- Create a fictitious situation (e.g. their boat is holed and sinking) and have each member of the group simulate sending a distress message using their boat as an example. Make sure they give a (fictitious) GPS position correctly

IMPORTANT

- Emphasise**
- ◆ that if they don't have a GPS and are unsure of their position to give a position as best they can (e.g. we are four hours from a particular port)

6.2 Understand the basic principles of an EPIRB (121.5 & 406) and how to correctly operate one

Materials

An EPIRB (either type)

Lecturer Notes

1. Show the EPIRB to the group and see if they know what it is and whether they have one on their boat.
2. Explain that it is an **E**mergency **P**osition **I**ndicating **R**adio **B**eacon that sends out a signal on the frequency of the particular EPIRB the boat has (121.5/243 Mhz or 406 Mhz). This signal can be picked up by one of the satellites orbiting the earth (on 121.5 Mhz or 406 Mhz) that are part of the satellite receiving system or by an airplane within range (up to 200 miles at 10,000 meters of altitude) that has their receiver tuned to 121.5 Mhz (civilian aircraft) or 243 Mhz (military aircraft)
3. The satellite that picks up the signal transmits it, along with the boat's position, to the nearest LUT (Land User Terminal) and the Search and Rescue organisation in the area can begin a search.
4. Discuss the difference between the 121.5/243 and 406 EPIRB

IMPORTANT

- | | |
|------------------|--|
| Discuss | ◆ The nearest Land User Terminal (LUT) in the trainees' area, whether a 121.5/243 will be satisfactory and, if it is, how long before their EPIRB signal to be received |
| Emphasise | ◆ The importance of regularly checking if the battery is still operational. A fully charged battery should last 48 hours once activated.
◆ If an EPIRB is accidentally activated, it should be immediately switched off, and the nearest authorities notified. An expensive search and rescue operation might be mounted otherwise.
◆ That an EPIRB signal works more effectively if the EPIRB is in the water. If possible float it away from the boat or survival craft, making sure it is attached by the cord provided |

5. Have each member of the group demonstrate how to check the state of the battery and how to switch the EPIRB on (**simulated only!**)

7. FIRE PREVENTION AND CONTROL

7.1. Understands the principles of the fire triangle and how a fire can be extinguished

Materials

OHT 7.1

Lecturer Notes

1. Show OHT 7.1 and explain the fire triangle to the group.
2. Explain that to extinguish a fire you need to eliminate at least one side of the triangle and there are three methods to do that.
 - Remove the fuel
 - Cool the fire down
 - Starve the fire of oxygen

Have the group discuss various ways of accomplishing each of the methods

- Remove the fuel (e.g. turn fuel or gas off, move unburnt material away from the fire)
- Cool the fire down (e.g. applying water to the fire)
- Starve the fire of oxygen (e.g. smothering with a blanket, covering with sand, use of a foam extinguisher)

IMPORTANT

- | | |
|------------------|--|
| Emphasise | ◆ The importance of eliminating more than one side of the triangle if possible. If only one side is attempted, it may not have completely been eliminated and re-ignition may occur. |
| Discuss | ◆ What re-ignition is |

7.2 Know common causes of fires on boats

Materials

OHT 7.2.1

OHT 7.2.2

Lecturer Notes

1. Break the group into smaller groups and discuss what they see as common causes of fire on boats. Get them to break their list up into the engine room, the accommodation, and the galley. Show OHT 7.2.1 and OHT 7.2.2 and compare with the findings of each group
2. Have a group discussion on procedures that crew can do to lessen these causes occurring.

7.3. Understand the dangers of electricity in and around fires

Lecturer notes

1. Explain the dangers of
 - Electricity starting a fire on a boat, generally through faulty wiring which allows a spark to ignite a fire
 - Fighting a fire where electricity is involved. If at all possible, turn the source of electricity off, and then attack the fire.

IMPORTANT

Emphasise ♦ that water is a conductor (carrier) of electricity, so if there is any doubt about electricity(240 Volt) being involved in a fire, don't use water or a water based extinguisher (foam). You could be electrocuted.

7.4 Know the common fire fighting equipment on board small boats and how to fight a fire using this equipment

Materials

Fire extinguishers (Dry Chemical Powder, Foam, CO₂)

OHT 7.4.1

OHT 7.4.2

OHT 7.4.3

Lecturer Notes

1. Get the group to discuss what they believe are fire extinguishing items or equipment available to fight a fire on board small boats.
2. Discuss the use of water to fight fires. Explain that it is readily available and can be dispensed by a pump or a bucket.
3. Ask the group to name any hand-held fire extinguishers they are familiar with. Use OHT 7.4.1, OHT 7.4.2 and OHT 7.4.3 to briefly explain the three main types of extinguishers that may be found on a small boat. Explain the dangers of a foam extinguisher on a fire with electricity in the vicinity. Explain the dangers of the CO₂, that it starves the area of oxygen and may be fatal to anyone caught inside.
4. Explain the use of a purpose-made fire blanket, how it smothers or starves a fire of oxygen and get the group to discuss what may be available on their boat that could improvise as a fire blanket.

IMPORTANT

Emphasise ♦ That clothes or blankets used shouldn't be polyester or anything highly flammable, and to wet the item before smothering the fire

If possible, have the group demonstrate the use of some of the extinguishing agents on small, contained fires.

7.5 Understand the basic principles of fire fighting and the safety precautions when fighting a fire

Materials

OHT 7.5.1

OHT 7.5.2

Lecturer Notes

1. Have the group break into smaller groups and come up with procedures they believe should be followed when discovering a fire and the safety precautions that should be observed when fighting a fire. Show OHT 7.5.1 and compare the findings of each group with that list.
 - Raise the alarm immediately
 - Tackle the fire quickly with whatever means available while it may be small
 - Never tackle a larger fire alone
 - If able to, stop engines, shut off fuel and close hatches and doors to the affected area
 - Work as a team with other crew
 - Shake an extinguisher before use in case the extinguishing material has settled at the bottom of the extinguisher
 - Follow the principles of the fire triangle. Cool, smother, remove fuel
 - Don't use water or foam (blue) extinguishers on fires if there may be electricity in the vicinity
 - Don't use water on burning liquid, it will spread the fire
 - Plan an escape route when fighting a fire
 - Don't allow yourself or others to be asphyxiated or burnt
2. Discuss with the group, using OHT 7.5.2, the procedures to follow once the fire is out and to ensure it stays out.
 - After the fire has been put out, turn over any rubbish from the fire and wet it thoroughly
 - Don't open an enclosed area that contains a fire until sure it is out and the area has cooled down. Cool down around the area with water if unsure
 - Beware of, and understand, re-ignition

IMPORTANT

Emphasise ♦ the dangers of opening an enclosed area that has had a fire. The sudden influx of oxygen will re-ignite the fire.

Discuss ♦ ways that re-ignition can occur

7.6 Understand the dangers of LPG (Liquefied Petroleum Gas) and the safety precautions that need to be observed

Lecturer Notes

1. Explain the dangers of LPG and how it should be stored on board.
 - It is very volatile and when mixed with air can be highly explosive
 - It is heavier than air so that any leakage will accumulate in the low part of the boat unbeknown to the crew. A spark and the fire triangle is complete and a fire begins.
 - Should be stored on deck in an upright position, have adequate ventilation, away from the direct sunlight and correct fittings should always be used to prevent leakage.
 - Turn the bottle off when not in use.
2. Have the group discuss where and how LPG, if carried on their boat, is stored
3. Explain when fighting a LPG fire to make every attempt to turn off the bottle before attacking it with an extinguisher. If it continues to emit gas the fire is being constantly replenished with the fuel side of the fire triangle

IMPORTANT

Emphasise ♦ that it is important to cool a bottle that has a fire in or around it. If in doubt, throw the bottle over the side as it can explode if it gets too hot

8. GENERAL DECK SAFETY

8.1 Know the danger areas, general dangers and bad work practices when working on a boat and precautions to take

Materials

OHT 8.1.1

OHT 8.1.2

Lecturer Notes

1. Have the group break into smaller groups and come up with a list of potential danger areas, general dangers and bad work practices they believe exist on a boat. Use OHT 8.1.1 and OHT 8.1.2 to compare with their findings.
 - Electrical equipment
 - Winches and line haulers
 - Inadequate lashings, loose items not tied down or stored at sea
 - Slippery decks
 - No railings, or parts of the railing missing
 - Open hatches
 - Using knives incorrectly , not storing in a safe place when not being used and doing other work while carrying them
 - Mooring lines and lifting lines breaking under strain (stand clear)
 - Weakened wires and ropes
 - Worn blocks and shackles
 - Standing in the bight of a rope
 - Incorrect handling of rope on a capstan
 - Teeth and spikes when handling fish
 - Entering confined or enclosed spaces that have been closed for a long time
 - Not wearing appropriate safety gear (e.g. gloves, hard hat)
 - Doors not latched open or shut
2. Have a general discussion on precautions that should be taken to minimise these dangers and bad work practices.

IMPORTANT

- Emphasise**
- ◆ the importance of taking particular care in bad weather – accidents are far more likely to happen when the boat is pitching and rolling
 - ◆ it is the crew's responsibility to continually check equipment for wear and to take care when moving around and working on board. It is you that can be placed in danger!

8.2 Understand the precautions required to maintain the stability of the boat, particularly in bad weather

Materials

A marker buoy with flagpole to demonstrate stability

Lecturer Notes

1. Explain (simply and briefly) the general principle of stability. Use a marker buoy with flag pole as a demonstration. Put it in the water and ask the group why it floats and doesn't fall over and if pulled over, once let go it returns to its upright position. Then attach weights higher up on the buoy and demonstrate that it gets to the point where the buoy won't return to the upright.
Explain that a boat is no different. It needs weight to be kept low to be stable (the ability to return to the upright position when heeled over)
2. Get the group to discuss how this relates to their boat.
Make sure they understand that a boat becomes unstable if weight is put too high on their boat or is unevenly distributed.
3. Explain that if too much fish (or cargo) is carried the reserve buoyancy is eventually lost and a boat can sink. Demonstrate by putting a container that floats in water and then adding weights.

IMPORTANT

- Emphasise**
- ◆ that water on the deck in bad weather is a lot of extra weight up high and can make a boat unstable. It is important that scuppers (freeing ports) are kept free so the water can quickly leave the deck.
 - ◆ all items and equipment must be tied down, and hatches, doors etc kept closed in bad weather to maintain a stable boat
 - ◆ heavy items should be kept low in the boat
 - ◆ a boat is designed to carry a certain amount of fish (or cargo) and it is dangerous to overload