Setrac College of Offshore Training

Personal Safety & Social Responsibility

Trainee Handout

TRAINEE MANUAL

PST

PREFACE

The Primary aim of P.S.T. course is to train the seafarers, when a ship is threatened by any natural forces, to combat these forces as to save the life of people and the ship. Therefore the purpose of P.S.T. course is as below:

In line with the international convention on the "SAFETY OF LIFE AT SEA – 1974 and the convention on STANDARD OF TRAINING CERTIFICATION AND WATCHKEEPING – 1978" which recommended that all seafarers to equip with survival techniques.

A merchant ship complement consists of competent crew as necessary to fight any emergency situations on board most efficiently keeping in view the safety of self and others who are fighting the situation under their command.

Based on the duties and responsibility assigned to each member of the crew and same being carried out faithfully, within command of the ship, such controls help to ensure the effectiveness of the organization in carrying out either plan o for action of different type of situation. The master of the vessel who have the major control functions of the ship is assisted by his subordinates.

The need to training and maintenance of all fire fighting appliances and life saving appliances (FFA & LSA) is greatly emphasized.Effectiveness and efficiency of any emergency operation is achieved to its maximum only when every body follows the master list instruction and carryout faithfully.

As everybody knows that, a trained person can think so many ways and means to achieve his goal by way of initiative . It clearly indicates that all seafarers have to undergo a short of training/modular courses to produce better results.

Therefore the importance of training / courses is :-

a. To update all seafarers with the day to day advanced technology to react in correct manner during any emergency situation.
b. To achieve a more rapid transfer of information and skill regarding new developments in maritime technology to seafarers.
c. To adopt appropriate measures to his own safety and safety of others by use of survival equipments in a correct way by his proper and timely action and initiative thereby prevent emergencies.

TIME TABLE

Period	Day 1	Day 2	Day 3	
1 **0830** **to** **1000**	• Introduction Safety & Survival	Emergency radio equipment (Lecture and Demonstrations) EPIRB,SART, Portable Radio in Survival Craft	Personal Life-saving appliances	**SURVIVAL DRILL IN SWIMMING POOL**
2 **1010** **To** **1140**	• Emergency situations • Evacuation	Emergency radio equipment (Lecture and Demonstrations)	Personal Life-saving appliances Survival at sea	
3 **1140** **To** **1240**	Survival Craft and Rescue boats	Helicopter assistance	Personal Life-saving appliances	
4 **1240** **to** **1340**	Survival Craft and Rescue boats	Sea Survival -Dangers to survivors -Best use of survival craft facilities	Assessment	

Index

1.

PRINCIPLES OF SURVIVALS AT SEA

Regular training of all personnel in life boat and life raft drills and its equipment's which prepare them for any emergency and knowledge of actions to be taken when called to survival craft stations to get them ready at shortest possible time and to prepare them in all respect without any delay, when required to abandon the ship oiling, oil platform by way of lowering the survival craft in water, taking the survival craft around the ship, look for survivors around the ship must be told to the survivors especially during practical drills including all safety rules.

There is no suitable for practical experience in lifeboat in a rough sea can be very hazardous operation. Therefore boat drill and life raft drills should be carried out in a professional manner so as to ensure that everyone on board can gain experience in the launching and handling of lifeboats. Each lifeboat should be launched with its assigned crew abroad and maneuvered in the water at least once every three months times making every one familiar with the procedure.

1. Principles of survival includes the following points:

    a. Valve of training and drills
    b. Need to be ready for emergency
    c. Action to be taken when called to survival craft station.
    d. Actions to be taken when required to abandon ship.
    e. Action to be taken in the water.
    f. Action to be taken when abroad survival craft.
    g. Main dangers to survivors when the water.

2. Special duties assigned to each crew member as directed in the muster list must be carried out faithfully.
3. Knowledge of all types of life saving appliances normally carried on board ship including its equipment's.
4. Knowledge of various types of devices used for launching survival craft.
5. Method of launching survival craft in rough weather.
6. Use of painter, sea anchor, steering oar, and wave oil.
7. Radio devices carried in survival craft including APIRB, SART etc
8. Use of first aid kit effects of hypothermia and its prevention.
9. Use of protective clothing, shelter cover or exposure cover.
10. Method of starting and operating lifeboat engine.
11. Use for rescue boat emergency radio EPIRB SART and pyrotechnics immersion suits, thermal protective aids and other devices.
12. How to handle a life boat in rough weather including steering, towing and beaching.
13. Knowledge of Helicopter pick up.
14. How to rig the breeches buoy and knowledge of various type of signals.
15. Will power to live or to survive.

Chapter 2.

LIFE SAVING APPLIANCES LIFE BOATS

A. LIFEBOAT

In official terminology, it is a boat which sustain the life of people from the time of Abandon Ship until the rescue come. Properly constructed and shall be of such form and proportions that they have ample stability in a sea way and sufficient free boat when loaded with their full complement of persons and equipment. All lifeboats shall have rigid hulls and shall be capable of maintaining positive stability when in an upright position in clam water and loaded with their full complement of persons and equipment.

All ships carries lifeboats and life rafts for the purpose of safety of personnel out at sea until help arrives. On abandoning ship boats should be pulled or driven clear or of the stricken vessel. These boats are of special design and construction such as opened lifeboats partially enclosed lifeboats, partially enclosed self righting lifeboats, self righting totally enclosed lifeboats, free fall self righting totally enclosed lifeboats, totally enclosed self lowering self righting (fir protected) and water sprinkler system with air support system , and rescue boats are manned whenever there is great threat to life and property of the vessel. These boats are fitted on with internal buoyancy tanks or compartments sufficient to float if the boat is flooded and open to the sea.

All life boats shall be sufficient strength to enable them to be safely lowered them into the water when loaded with their full complement of persons and equipment and be capable of being launched and towed when the ship is making head way at speed of 5 knots in clam water. Its hull and rigid canopy shall be fire retardant or non combustible.Seating shall be provided on the thwart, benches or fixed chairs fitted as low as practicable in the lifeboat. Each lifeboat shall be of sufficient strength to withstand when loaded with its full complement of persons and equipment and with when applicable skates or fenders in position, and in lateral impact against the ship side at an impact velocity of at least 3.5 m/s. and also a drop into the water from a height if at least 3 meters.

The vertical distance between the floor surface and interior of the boat shall not be less than 1.3 m for a lifeboat permitted to accommodate 21 persons or less and 1.7 m for 24 persons and more. No lifeboat shall be approved to accommodate more than 150 persons having an average mass of 75 kg and all wearing lifejackets that can be seated in a normal position

without interfering with the means of propulsion or the operation of any of the life boat's equipment.

LIFE BOAT ENGINE

The engine shall be provided with either a manual starting system or power starting system, with two independent rechargeable energy sources of power for radio and search light. The engine shall start at an ambient temperature of 15degree C or at different temperature capable of operating for not less than 5 minutes after starting from cold upon the lifeboat out of water. The speed of lifeboat when loaded with its full complement and equipment shall be at least 6 knots when towing a 25 persons life raft loaded with its full complement of persons and equipment's. The engine should be air cooling or water cooling system.

Starting Engine

1. Check that there is sufficient fuel in the full tank or pre check the oil level and there should not be water in the fuel , if water is there open the bottom of screw plug and drain out the water from the fuel tank, when oil starting flowing down then screw down the plug.
2. Connect or open the fuel supply by opening the fuel supply lever, check the dip stick lubricating oil level at two points i.e. engine and the gear box.
3. Prim the full system if necessary.
4. Check that the gear lever is in neutral position.
5. Turn throttle control level to almost vertical on fast position.
6. Move the decompression level towards the fly wheel and fit starting handle.
7. Now turn handle slowly from 3 to 20 turns to prime combustion chamber and lubricating system.
8. Crank the engine really fast and when speed is obtained return the decompression lever, to the fire position , but continue to crank until the engine fires.
9. Must remove starting handle and reduce engine speed as required.
10. Or push in the choke gradually until the engine is running smoothly.
11. Must remove starting handle and reduce engine speed as required.
12. Or push in the choke gradually until the engine is running smoothly.
13. If the engine running smoothly and cooling water discharge is steady, put the helm over in the required direction and engage the gear lever Ahead or Astern. Adjust speed with the throttle control.
14. In case of rescue boat, outboard engine, never run or never test or outboard engine out of water. The reason is the impeller is a tight fit and will rip in seconds if operated dry.
15. After starting the engine check oil pressure gauge to check the flow of oil.

Stopping Engine

1. To stop the engine turn throttle control anti-clock wise and hold it until the engine stops or if fitted pull the remote stopping control.

2. Close the fuel supply lever.

Note : To ensure a fuel supply free of sediment and continuous running in an emergency lifeboat and rescue boat fuel tanks should be thoroughly cleaned out annually.

DESALTING APPARATUS

Contents of the `Permute' sea desalting kit (Approved by D.O.T)

2 cardboard container.

1 storage bag of rubberized fabric with securing cord.

1 storage bag of rubberized fabric with filter pad drinking tube, plug and lanyard, chemical charges each containing 4 cubes.

After removing the contents of the pack, a metal plug is inserted in the purifier bag outset tube. The bas is then filled with sea water to the level indicated and one chemical charge of 4 cubes is added. The content are kneaded for 5 minutes and then shaken occasionally during a period of 30 minutes. The reaction between the chemical charge and dissolved salts in the water is then complete, and clear drinking water can be squeeze through the outer tube into the mouth or into a container. Residual solids and salts are retained by the filter pad in the purifier bag, these deposits are rinsed from the bag before the next desalting operation. Full instructions are printed on the storage bag.

B. LIFEJACKETS

Every lifejacket must have a proper workmanship (orange in color) and highly visible in colour). A lifejacket is made of non inflaming material and so designed that :

a. It can be worn or don within a period of 1 minute without any help or assistance after demonstration
b. From 1st July1986 should be worn one way only but old types of life jacket which is still carried on board ship's are being worm inside out or both way and cannot be donned incorrectly.
c. Capable of turning the wearer to safe floating position in still water within 5 second and support the head so that the mouth shall be not less than 120 mm (6 inches) above the water.
d. Unaffected by oil or oil products and it will not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 sec

e. Be fitted with a strong loop to facilitate towing or rescue a man.
f. Be fitted with an approved plastic whistle attached by a lanyard.
g. It allow the wear to jump from a height of at least 4.5 m into the water.
h. It turn the body of an unconscious man around over his back to an angle of 20° from vertical and keeps his face 120 mm clear of water.
i. It shall allow the person wearing it to swim and board a survival craft.
j. Be fitted with a light of 0.75 candla power for 8 hrs or 50 flashes per minutes upto 2 hours and can be connected or disconnected.
k. A lifejacket which depends on inflation for buoyancy shall have not less than 2 separate compartment.
l. It shall inflate automatically or immersion or be capable of being inflated by month.
m. It shall be marked with it serial number, its trade marks : M.O.T. or D.O.T. stamp and the word FRONT is to be printed on both sides of the lifejacket . A child lifejacket which support upto 32 kgs of weight is marked as child, and 32 kgs and upward which support the weight is marked adult. Children lifejacket should be marked child.
n. 5% extra carried on passenger ships and cargo ships should be stored on deck near embarkation deck or at muster stations.
o. Every ship must carry an approved type of lifejacket for evry person on board. Unless these can be adapted by children a ship must also carry a sufficient number of lifejackets which are suitable for children.
p. Be fitted with a retro reflective tapes or material.

Note: It is important to understand that lifejackets are issued to every individual person on board the ship which support him in water until rescue comes.

HOW TO JUMP INTO THE WATER WITH LIFEJACKET ON

As far as possible avoid jumping into the water. Try to board a survival craft without getting wet or getting into the water, by ladder, ropes, nets, lifeline, water hoses etc. Lifeboats and davit launching life rafts are boarded from the embarkation deck. If due to any reason, it becomes necessary to jump, you do so from a height of not more than 4.5 m to 6 m. Make sure that the tapes of the lifejacket must be tight. You must jump only clear of propellers i.e stern or bow on a higher side only. Before jumping make sure that there are no obstructions in your way and that you are not jumping on to a boat or on the canopy of a lifeboat, life raft or any such flotation.

Sea around if any lifeboat or life raft is nearer to you. Draw their attention by calling lifeboat or life raft or using whistle, then look parallel to the horizon, hold down your lifejacket by one hand and block your nose with other, keep your feet together and never jump head on dive, jump feet first , and swim clear of the ship or swim nearest to your boat or life raft or board it. Do not try to swim much longer distance. Try to attract attention by lowing whistle provided in your lifejacket or swim back stroke and wait to pick you by rescue boat. If life

boat or life raft is not seen then you must swim at least 100m, clear of the vessel, you will be picked up by the rescue boat in course of time.

C. IMMERSION SUITS

1. IMO general requirements for immersion suits.

a. The immersion suit shall be constructed with waterproof rubberised material such that:

i. It can be unpacked and donned without any assistance within 2 minutes taking into account any associated clothing, a lifejacket if the immersion suit is to be worn in conjunction with a lifejacket.

ii. It will not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 seconds.

iii. It will cover the whole body with exception of the face, hands shall also be covered unless permanently attached gloves are provided.

iv. It is provided with arrangements to minimize or reduce free air in the legs of the suit.

b. An immersion suit which also complies with the requirements for a lifejacket may be classifieds lifejacket.

c. An immersion suit shall permit the person wearing it, and also wearing a lifejacket, it the immersion suit is to be worn with a lifejacket, then the person should be able to:

i. Climb up and down a vertical ladder at least 5m (16.25ft) in length.

ii. Perform normal duties during abandonment.

iii. Jump from a height of not less than 4.5 (14.9 ft) into the water without damaging or dislodging the immersion suit, or being injured, and .

iv. Swim a short distance through the water and board a survival craft.

d. An immersion suit which has buoyancy and is designed to be worn without lifejacket shall be fitted with a light and a whistle.

e. If the immersion suit is to be worn in conjunction with a lifejacket, the lifejacket shall be worn over the immersion suit. A person wearing such an immersion shall be able to don lifejacket without assistance.

D. THERMAL PROTECTIVE AIDS

Thermal protective aids are made of water proof low convective, insulating material . These will be required for all persons in open lifeboats who have not been equipped with immersion suits. These are light weight strong plastic bag or suits with arms which cover the whole of the body, with the exception of the face. They are highly visible in colour and easy donned. Their function is to reduce both convective and evaporative heat loss from the wearer's body. They can be removed in the water in 2 minutes, if the wearer finds it difficult to swim. They provide thermal insulation to the body in temperature ranging from 20° to 30°C.

E. INFLATABLE LIFE RAFTS

The inflatable life raft is made of rubberized material coated with synthetic fabric and it shall have even number of buoyancy tunes. They may be circular in shape, oblong or hexagon shape, usually double buoyancy tube and both shall be independent of each other. If any one of the tube damage than the other shall be capable of supporting all the persons the raft is certified to carry.

Construction must in included a canopy of double layer of highly visible in colour will protect the occupants against exposure and shall have a means of catching rains, from which there is a tube leading into the raft for collecting of rain water. Both the inside and outside of the canopy have a lamp , powered by separate sea water activated batteries, burns at a 4 luminous candela power for at least 12 hours. The outside lamp could be fixed or flashing. The power can be saved during day light by disconnecting the batteries. Even life raft includes double floor, double layers of canopy, double buoyancy tubes and a number of pockets which will fill with water, when the raft is launched, together with gas bottle give stability to the raft in a sea way.

Every lift raft shall be so constructed as to be capable of withstand exposure of 30 days afloat in all sea climate is dropped in the water from its stowage height of 18 meters, there will be no damage to the life raft, and its equipment. If the life raft is to be stowed at a satisfactorily drop tested from at least from that height.

The floating life raft shall be collapsible of withstanding repeated jumps on it from a height of at least 4.5 meters above on its floor with and without the canopy erected. The life raft and its fittings shall be constructed as to enable it to be towed at a speed of 2 knots in calm water when loaded with its full complement and with one of its sea anchor streamed. The life raft shall have double layers of canopy to protect, the occupant from exposure which is automatically set in place when the life raft is launched and water borne.

The sub-division of the buoyancy of the compartment and the means of inflation are to be such that if only half of the compartment is inflated, the raft will still support its approved complement of survivors. The gas used for inflation of the raft must not be injurious to the occupants. Inflation is to occur automatically by the pulling of the painter attached with gas bottle device. Means must be provided topping up the buoyancy compartments and must be capable of operating through the temperature range, ranging from –30°C to +65°C . The raft must be stowed so that it is readily available in an emergency, inflate and break free from ship if ship sinks, no extra lashings shell used to secure the raft in its stowage position. They must be fitted with an automatic release mechanism know as hydrostatic release unit (HRU) . The life raft maybe contained in GRP containers or valises. They are kept or stored on cradle

or ramps specially built onboard ships on the ships side and its painter must be secured to a strong point onboard ship with week-ink attached to H.R.U.

Retro reflecting tapes must be fitted on the top side as well as bottom of the life raft. The raft inflated with CO2 gas and some extra gas at the ratio of 3.5 gm nitrogen gas at the rate of per person capacity of the life raft is added which act as an anti freeze agent. The gas contained in the gas cylinder is depend on the size and type of life raft which is from 6 kg weight to 8.5 kgs weight. The gas is non inflammable and non toxic, through it can cause asphyxiation in case of gas leak. Should the life raft capsize or inflated upside down it is capable of being easily righted up by one or two persons, by means of righting strap is provide facing towards the windward side. The raft is provided with one or two opening. Every opening is fitted with a ladder or boarding ramp to enable survivors in the water to climb abroad the raft. The total weight of the life raft with its container should not exceed 185 kgs in cargo ships. Life raft carried in merchant ships are from 12 persons 20 & 25 persons capacity. 6 persons capacity life raft are only supplied in such types of ships where the place of work is 150 meter and more from the stem or stern. If the distance from stem or stern is 150 meters and more on forward and aft then 6 persons capacity life raft are provided on both sides to those persons working there and they don't have enough time to reach their embarkation stations and also they will get their life jackets from these places.

The life raft are packed in its GRP (Glass Fiber Reinforced Plastic) containers or canvas made valises is placed abroad ship. The end of the raft painter must be made fast a strong point on the ship. It sometimes happens that on tugging the painter to activate the gas bottle for inflation of raft only half the raft inflates. This is probably due to that fact that some life rafts have two gas bottles, therefore give the painter another tug which will most probably activate the second gas bottle and inflate the raft completely.

Remember that life raft must never be inflated on deck because it might get damage by friction or chaffing or by any sharp objects.

They should be thrown overboard before inflation when ordered abandon ship davit launched life rafts must be swing out outboard and then be inflated and boarded at the embarkation deck level.

Launching of life raft

Preparations must be made before launching a life raft such as :

a. Removing all obstacle railing etc.

b. Rig the boarding ladder.
c. Make sure that its painter must be secured to a strong point or if it is brought launching positions, its painter must be secured before throwing the life raft over board.
d. Throw the life raft over board.
e. Pull all the slacks of the painter and gives hard tug or pull, it with inflate within the period of 20 to 30 seconds time and one minute in between 5°c to 20° c 3 minute in 0° to 30° c.
f. If the life raft inflate upside down, it can right up by one or two persons facing windward as per the size of the life raft. 12 persons and below one person and 13 and above 2 persons are required to right up the life raft.

Instructions of immediate action in a life raft

Upon entering the life raft, the instructions on survival card, concerning immediate action should be read carefully by the in-charge or any senior survivor to the other survivors. The instructions should be written in one of the official languages of the country or in appropriate language and or in English. After all the occupants have boarded the life raft the leader should do the following.

a. Pull all the slacks of the painter towards the ship and cut the painter and get clear off the ship to a safer distance.
b. Look for any survivor in water if any and pick them up and get away from the ships side as soon as possible with the help of paddles and sea anchor . If the sea is rough 2nd sea anchor can be used which is kept in the emergency pack.
c. Close up all entrance flaps of the life raft if the sea if rough or cold winds are blowing.
d. Ensure sea anchor streamed when clear of the ship's side.
e. Read survivor instructions.

F. LIFEBUOYS:

An approved lifebuoy shall be capable of floating in fresh water at least 24 hrs with ½ kgs of iron suspended from it and must be constructed of solid cork, synthetic material or other equivalent . Its inner diameter is 400 mm or 16 inches and the external diameter is 32 inches or 80mm shall bepaited a highly orange visible colour. The major axis of the section shall be 6 inches or 15 cm and the minor axis shall be 4 inches or 10 cm . With 4 equal distance bucketed to 9.5 mm of buoyant rope must be seized round the outside edge.

1. Lifebuoys must be readily available on both side of the ship and at least one near the stern of the ship.
2. One on each side of the ship at mid ship point, must have a buoyant line of length equal to twice the dropping height or 30 meters of 8 mm dia whichever is the greater lifebuoys must be fitted with light maker functioning for 2 hours flashing or continuous.

3. While two lifebuoys shall be provided with self activating light and orange smoke signal and be capable of quick release from the navigating bridge in case any person fall overboard, burning period of light is 2 hours and for smoke 15 minutes.
4. Each lifebuoy shall be marked in block capital letters the name of the ship and port of registry on which it is carried.
5. Have a mass of not less than 2.5 kg 3, 3.5, 4, 4.5 , 5, 5.5 and not more than 6 kgs.
6. Lifebouy attached with light and smoke marker should not be less that 4 kg of weight and upward.
7. Be fitted with 4 grabline not less than 9.5 mm in dia 4 time the outer diameter and the grabline shall be secured at 4 equidistant points around the outer circumstances of the lifebuoy to form four equal loop not less than 60 cm each.
8. Light should not be less that 2 candla power all round or 50 flashes per minutes.
9. Buoyant lines 30 m length non kinking, 9 mm dia and breaking strength of not less than on Kn force.
10. Can be dropped from a stowage height or 30 meters and it should retain its shape.
11. Be of a highly visible orange colour.
12. It should not be adversely affected by oil or any oil products.
13. Life buoy should not be painted in any other colour except these required for ceremonial use.
14. A lifebuoy should be of circular shape and is made of

a. Polyarenthene or synthetic material
b. Cork
c. Copake or balasa wood
d. Thermacol in cased or covered in plastic cover etc.

Chapter 3

EMERGENCY PROCEDURES

GENERAL EMERGENCY ALARM SIGNAL

It is an only signal for summoning crew and passengers when ever any emergency occur, to their muster station. It consists of seven and more short blast followed by one long blast on the ship's whistle or siren and additionally on an electrically operated bell or kiaston or other equivalent warming system. Emergency signal, which shall be powered by the ship main power supply or the emergency source of electrical power in case the ship's power supply fail. The system shall be capable of operating from the navigating bridge except for the ship's whistle, also from other strategic points. It shall be audible throughout at the working places engine room and all the accommodation.On hearing the emergency signal, all persons must go to their muster stations as per the must list. They must put on their warm clothing or water proof clothing or extra clothing including head cover cap, pullover and collect their life jacket or donning their lifejackets and have a good drink of water, and swing into action to save the ship, by way of controlling the situation and preparation of all life saving appliances.

THE MUSTER LIST

The muster list shall be prepared by the master of the vessel before the ship proceeds to sea, and format of the muster list for a passenger ship must be approved by the government and it must be kept revised at all times as necessary if more than 25% o the crew changes.

The muster list shall specify :

1. The muster list shall show all the special assigned to the different members of the crew against their name and rank to ensure that :

a. Closing of water tight doors, fire doors, valves, scuppers, vent pipes side scuttles, sky lights, port holes cowless and other similar opening.
b. Equipping survival craft by way of such as extra food, biscuits, sugar cubes, tinned milk, tinned fruits, fresh fruits and milk products, extra water, extra fuel and blankets etc.
c. Name of key persons and
d. Substitutes of key persons, incase any one of the key persons who may become disabled, taking into account different types of emergencies may call for personnel with variety of skills.
e. Mustering of passengers and donning of lifejackets correctly and that they are suitable clad.
f. The general preparation of life saving appliances, such as lifeboats and life rafts to their embarkation deck.

2. The muster list shall show all the special duties for fighting the fire having ragard to the ship's fire control plans, such as managing of fire parties, fire fighting equipment etc.
3. Carrying of emergency radio EPIRB, SART, as detection equipment.
4. Ship's pyrotechnics (12 numbers from the bridge)
5. Sounding of an emergency signal.
6. The order of abandon ship by the master of the vessel, copies of the must list must be posted in conspicuous places, including the navigating bridge, crew accommodation and engine room.

And in passenger ships the list shall show the location of passenger muster stations. Usually these will be the public rooms, so as to protect passengers from the weather. In such places illustrations and instructions are to be posted including passenger cabins, at muster stations and other passenger spaces, informing them of their muster stations and how to done lifejackets. general emergency signals, their lifeboats and life raft station, abandonship signal and essential action to be taken in an emergency. They may be issued with a card and cards are also posted at individual cabin or berth.

EMERGENCY STATIONS

Everyone think that they will never have to abandon ship and most people never have to but emergency do occur when they are least expected. It is absolutely essential to know what to do and how to do it. For that essential knowledge of LSA and F.F.A. equipment's the must, the vessel you have joined. So that in an emergency you are about to use one quickly and effectively. Make a habit of always taking a long drink of fresh water whenever the signal for boat drill, abandonment drill or emergency station is sounded. You must read the muster list on joining your vessel and must be responsible in the event of having to abandonment or in the event of fire, and if such any other duties are allocated to you in the must list such as to carry EPIRB. SART , Emergency Radio, extra provisions, water fuel, blankets etc.On hearing the emergency signal, every person will go to their muster station as per the muster list.

The Boats crew will do the following and prepare their lifeboats and life rafts and bring them to the embarkation deck, and do the following :

a. Remove the guard rail.
b. Two persons will go inside the lifeboat and remove the boat cover etc.
c. Pass the toggle painter forward from inner side of the sling and rapport plug shipped Lifeline clear falls clear, rudder shipped (Some boats have two plugs one forward and one aft and some boats have only one plug).
d. Have all the crew and passengers mustered and lifejacket checked.
e. Check all lifeboat equipment to ensure that they are properly secured and ready use.
f. Test the engine both head and stern for a period of not less than 3 minutes.
g. Report to the bridge and if permission given, then let go the gripes and lower the board to the embarkation deck.
h. Before it will become necessary to abandon ship, to have some extra gear put in the boat such as emergency radio EPIRB, SART, blankets, tinned food, biscuits, notebooks, pencils, extra torches, waterproof watch, batteries (cell) and bulbs, palm and needles,

ship's pyrotechnics, extra water, extra fuel, boat charts etc. Never jump in hurry if left onboard or lower your lifeboat or life raft if possible. Remember that your ship is number one lifeboat. The ship's damage control and fire fighting organization should be efficient to overcome any emergency. For that you have been trained by frequent drill sand training programs from time to time to make the best possible of the ship's equipment's Many lives have been lost by premature and unnecessary abandonment of ship's.

Never jump without lifejacket. Always try to keep dry and board the lifeboat or life raft. Do not try to swim unnecessarily, it uses vital energy and assist hypothermia to set in. If you are in the water try to board your lifeboat or life raft. Wet clothes are better than no clothing, wring out top layer of wet clothing and put it on again as quickly as possible.

Chapter 4

ABONDON SHIP PROCEDURES

ABANDON SHIP SIGNAL There is no statutory ABANDON SHIP SIGNAL. It is likely to be given verbally and through a public address system by the Master of the vessel only. It may be different from ship to ship and company to company. Before giving abandonment order, fire fighting damage control party, wheel house, engine room, radio room, must be called off and final report made by each lifeboat, to the bridge. Then the master of the vessel give the order, to man the boats and clear the ship's side and danger area to a safer distance about 0.25 nautical miles.

ABANDON SHIP :

When all our efforts to save the stricken vessel prove to be unsuccessful, the ship will be abandoned. But never leave your vessel until it leaves you. Your ship is the safest lifeboat. Never jump in panic. Good organization and training will help to ensure that available time is used to its best effect and that abandoning the vessel is carried out in as safe a manner as possible and without panic, maintaining complete discipline , silence, strict adherence to orders and immediately controlling any evidence of panic, using force if necessary. All members of he crew and passengers will be required to exercise self control, courage and usefulness. Failure to observe all these facts may result in unnecessary loss of life. Public address system should be fully utilized.

The last person to abandon the vessel will be the master and those who engage in controlling the fire, radio officer, chief engineer and that no one left on board. Before leaving the vessel all machinery should be stopped and water tight doors and hatches should be tightly closed.

When ordered to man the boats and life rafts, should be lowered with as many people abroad as possible and try to lower all life boat and life raft and should then quickly clear the ship side and lie off ready to embark the remaining complement from the water if any. This will avoid a dangerous waiting period alongside the vessel . Except in rough weather the life boats and life rafts should be secure together and towed well clear of the wreck area by a motor lifeboat, and rescue boat should go around the wreck area to pick up any survivors if any in the water, swimmers should group themselves together and support each other till the rescue boat come to pick up swimmers must move away from the ship as quickly as possible since when it founders to avoid violent local section.

REMEMBER

1. NO SHIP IS TO BE ABANDONED.EXCEPT BY ORDR OF THE MASTER.
2. As apart from the general emergency alarm signal, the maser of the vessel will designate a special signal for ABANDON SHIP.
3. There is to be a separate signal for the practices of boat and fire drills . The letter “B” is commonly used.
4. There is to be a special signal for `Fire Station’ and the rapid ringing of a gong or electric bell is commonly used.

Chapter 5

SEA SURVIVAL

1. Search for survivors and rescue them as soon as possible by way of maneuvering the life boat or rescue boat. In the case of life raft throw them the rubber ring or rescue quit.
2. Never try to swim for off distance, bring the lifeboat, rescue boat or life raft closed to the survivors.
3. Never try to swim in the sea in case of feeling warm or hot, only just take a dip with rescue ring, as life boat or life raft is very prone to wind and they may drift away from you.
4. Stream the sea anchor to avoid leeway or drifting your boat or life raft. Use sea anchor and or paddles for maneuvering the life raft away from the wreck. Heave up to the sea anchor, there is a spare sea anchor in the life raft emergency pack.
5. Check for nay leakage , if any repair the raft. Repair kit is supplied in the emergency pack and after repair top up the raft with bellow. Leak stoppers are provided for temporary repair. Patch damage as detailed on emergency repair kit.
6. Join other life raft and lifeboats together with the longest line possible to prevent snatching minimum 10 meters.
7. Bale out raft and mop up with sponge, salt free sponge for collecting up due or condensation, it should be collected before sun rise.
8. Wring out all wet clothing and keep as dry as possible. It is better to have wet clothing on the body than no clothing on it.
9. Adjust entrances as per the weather condition.
10. Inflate floor with bellow to insulate you from the cold sea and vice versa. Do not over inflate as flow has no outlet escaping of air.
11. Issue sea sickness tablets to every one and sea sickness bag. It is a remedy to prevent a person from dehydration and seasickness bag.
12. Treat injured make them comfortable and as warm as you can with clothing or hugging them or cuddling them.
13. Read the instructions in the first aid kit before treating them.
14. No water or food for the first 24 hours to any one except, sick persons or injured. Water and food can be given to them as required or the person who have, had lot of bleeding or dehydration by way of vomiting.
15. Put trust worthy person as in-charge of good and water.
16. Try to stay put nearer the position of the wreck. This will help rescuers looking for survivors.
17. Arrange duties or watches as lookout inside and outside the lifeboat and life raft. In cold ½ an hour and normal weather 2 hours duty. Protect the lookout against exposure to hot or cold weather.
18. One or two man can right up the capsized raft by standing on the gas cylinder and heaving back on the righting strap facing windward and two or three men can right up the open, capsized lifeboat by holding the keep grab line.
19. Top up the raft with bellows as the gas contracts at night when it is colder. But during the day the gas will expand and probably blow off through the escape valve. Do not worry about this as these valves are safety valves.
20. Keep a log for recording every day happening.

21. Water: There are three liter of fresh water in lifeboat and one and a half liters in life raft for each person, half liter per day per person. No water during the first 24 hours as your body is already full of water, and if water is issued on the first day it will go as waste in the form of sweat and urine. Water should be given at sunrise mid-day and sunset. Do not cut down this ration. If you do, you will weaken yourself. Only when you are down to the last cans, should you save for the following day at the rate of ¼ liter a day.

22. Sources of water

a. Raid water
b. Due or condensation
c. Snow
d. Desalting apparatus

23. **Do Not**

a. Do not drink urine
b. Do not drink sea water
c. Do not dilute fresh water with sea water
d. Do not drink alcohol.
e. Do not smoke
f. Do not chew or suck ice, first melt it and then drink it.
g. Try and increase your water ration by way of collection rain water. Drink as much as you can and save the cans water. Drink rain water first as it will not keep fresh for longer.
h. If no water at all keep button in the mouth, it will keep your mouth moist and take slow and long breath through nose.

24. A food ration totaling not less than 10,000 (Kj) Killojules, kept in air tight and water tight tinfoil packing. The ration shall be readily divisible into four one day proportion per person. Food ration should be given at morning and evening only. Do not cut down this ration. It should be only when you are on the last day then save one cube for the following day.
25. In case of tropical area deflate the flower to help cooling during the day time but inflate it again at night as tropical nights can be cold. Keep your clothes or canopy wet during day. Rinse them out before sunset and get the raft as dry as possible before sunset. Avoid sunburn for direct exposure to the sun. Do not swim and do not leave your raft, it may drift away fast.
26. Distribute crews evenly and bunch together for warmth in case of cold and be at ease in case of warm climate.
27. Rig emergency transmitter abroad, and switch on EPIRB and SART. Once they are switches on should not be switched off.
28. Watch for frost bite and hypothermia.
29. Collect useful floatsam and some time, we have to look for EPIRB , SART or emergency radio also, in case if we are not able to carry them in the lifeboat.
30. Take charge of weapons or any sharp objects.
31. Take charge of all pyrotechnics.
32. In case of very cold, the cloths are wet, then close both the entrance of the life raft. People wearing wet clothing will soon find that air becomes saturated and no further cooling of their bodies occurs. Heat balance is achieved after 20 to 25 minutes time.
33. Take any unoccupied survival craft in tow and use them for store, sleeping accommodation and as back up raft for use, in future emergency.

34. Do not massage frost bite, keep feet dry, as possible, keep moving fingers and toes, move ankles and knees, clench fingers and stretch limbs, wrinkle face and nose, ear with hands. This keep the blood circulating. Put feet up for at least 5 minutes in every hour, keep weather cover closed except for small opening to ensure ventilation.
35. You have survived so far. Do not get panic, help each other by way of self moral. Have confidence in yourself and to have ability to stay alive to have will power to stay alive. You must make yourself fit in all climatic condition, whether you are in lifeboat or life raft . Try to find out ways and means to survive , by way of your leadership qualities.

How to survive in a life raft

a. Identify person's incharge of the life raft.
b. Post of lookout .
c. Open equipment pack
d. Issue anti-sea sickness medicine and sea sickness bags.
e. Dry life raft floor and inflate floor if appropriate.
f. Maneuver towards other life rafts, secure life rafts together and distribute survivors and equipment between survival craft as required.
g. Administer first aid if appropriate.
h. Arrange watches and duties.
i. Check life raft for correct operation and any damage and repair as required.
j. If CO2 is leaking into the life raft's ventilate the life raft by opening up entrance flaps, and detect the leak, repair it and top of life raft by topping of pump.
k. Check functioning of canopy lights and if possible disconnects power during day time.
l. Prepare and use detection equipment such as SART, EPIRB including radio equipment.
m. Gather up any useful floating objects.
n. Protect against heat, cold and wet conditions.
o. Decided on food and water ration.
p. Make proper use of available pyrotechnics.
q. Prepare action for:
i. arrival of rescue units
ii. Being taken in tow
iii. Rescue by helicopter
iv. Landing
v. Beaching

RADAR REFLECTOR

A radar scanner is only as effective as reflector which turns it signal. Therefore for a reflector a signal, the reflector must be visible to the scanner.

Large high sided ships such as VLCC's particularly when they are proceeding light, will have a large are ahead which is screened from the saner, by the bows. Moreover they will probably

be proceeding ahead at a fast speed. Obviously then unless an object is seen by the scanner will ahead of the hsp or it may not be seen at all. But the time it is sighted by the look out man (if needed it is sighted) it may be to late for the ship to after course, should it be on a collision course with a small boat or life raft.

It is therefore essential that a radar reflector is mounted as high as possible. A minimum height of 4 m (13ft) above sea level will give an effective coverage over a minimum radius of 5 miles. The reflector should if at all possible, never be mounted any lower than this. It should be mounted in as near a vertical position as possible and should not be masked by an metal part of the superstructure (metal masts will not create enough shadow to cause concern).

Some life rafts now include radar reflective strips in their canopies.

One life raft, life boats and sailing yachts which are not provided with a radar reflector, the only alternative is to keep the sails or canopy wet with sea water. However, the actual effectiveness of a wet sail or canopy is very dubious while the continued effort required would mean that it could only be carried out when a vessel was sighted.

SHARKS

If there is shark infested area then the people should group together (not lash each other) facing outwards. Retain all clothing especially on legs and feet . Keep quite and as stationary as possible and only move to keep the shark in sight. Bind bleeding , wounds and if necessary to move to do so with rhythmic strokes. Getting into an oil patch will help you, but our best defense is to get into the boat or life raft, if this is possible. Never try to temper with shark or whale or trial your hand in the water from the boat or life raft.

Hydrostatic release unit (HRU)

The lashing or securing strap of a life raft container on deck must be secured by an automatic release mechanism. This usually takes the form of a hydrostatic release.

RATIONS FOR LIFE BOATS AND LIFE RAFTS (KHJ) KILO JOULES

Totally food ration for reach person not less than 10,000 KJ (kilo Joules) is kept in an airtight pack, capable of being opened with wet or cold hands and stowed in water tight containers per person. The ration shall be readily divisible into four equal one day portion per person and 3 litters of fresh water per person at the rate of ½ liter per day per person in lifeboat and ½ liters of fresh water per person in the life raft at the rate of ½ liter per person per day is supplied. No food and water to the issued for the first 24 hours to any person except or injured or dehydrate persons after abandoning the vessel or ship. In lifeboats and raft, one third of the water may be replaced by desalting apparatus capable of producing fresh water within 2 days or 48 hours. No food or water is carried in rescue boats.

Equipment of inflatable life rafts : Solas A Pack

1. buoyant rescue quit at least 30 meters of buoyant line.
2. Two sponges, one salt free for collecting condensation.
3. One safety knife with a buoyant handle for 12 persons or below and 2 safety knifes 13 person and above.
4. One buoyant bailer, for 12 person or below and two buoyant bailer 13 persons and above.
5. Two sea anchors, one permanently attached. Second sea anchor can be secured in case of rough weather.
6. Two buoyant paddles.
7. One rust proof graduated drinking vessel.
8. One survival instruction manual/card
9. Instructions for immediate action
10. A puncture repair kits a toping of pump or bellows.
11. One first aid kit in water proof casing
12. One plastic whistle
13. One water proof electric torch
14. One radar reflector or one (SART)
15. One day light signaling mirror or heliograph
16. One set of fishing tackle
17. One set of life saving signals
18. Size anti sea sickness tablets and sea sickness bag for each p

Chapter 6

SEARCH AND RESCUE TO SURVIVAL

It is a stark fact that life saving search and rescue (SAR) a featured subject in safety of life at sea and at any moment , become a matter of vital concern to any mariner. A disaster at sea can result in your being cast away either in a lifeboat or life raft with your ultimate fate dependent on outside assistance.

The effectiveness and efficiency of the search and rescue services are well known but no matter how dedicated their efforts, their work will be useless if you can survive as a cast ways until you are located. However to meet the short term needs of the survivor the life boat and life rafts are equipped with the requirement, for few days, such as water, food, first aid kit, signaling equipment and even survival instructions are in the life boats or life rafts, but the signaling equipment and even survival instructions are in the life boats or life rafts, but the range of possible survival situation in infinite. The odds in your favor will be vastly improved if you acquire survival information and techniques before any emergency arises.

1. Breathing through the nose to minimize saliva evaporation.
2. Talking only when necessary.
3. Water drinking in the cool of the morning, mid day and evening in small sips.
4. Using sea water at day time to we clothes to reduce heating but cloth should dry before sunset as nights are very cold.
5. New swim unnecessarily.
6. Use your signaling devices whenever required but carefully and reasonably. Remember in location, signaling, you may never have a second chance to make good first impression successful search and rescue depend on survival. You need the knowledge and skill from which justified self confidence and self belief arise, for they give you the best chance of surviving, and you need to acquire them before any emergency occurs.

POINTS TO BEAR IN MIND BEFORE JUMPING:

If there is no survival craft available it may be preferable to abandon ship from the bow or weather side in order to get clear of the ship side with more certainly.

1. Have your lifejacket well secured and hold it down by crossing the arms over the chest blocking of the nose with one hand.
2. Make sure that every thing clear in the water, such as any floating object etc.
3. Draw attention of the life boat or life raft if any nearby with whistle.
4. Never dive, keep your feet together, look straight ahead and cross legs while jumping.

5. Swim on your back stroke. Try to board the life boat or life raft as soon as possible. Never swim for longer periods.
6. Never jump more than 4.5 to 6 meters height.
7. As far as possible, avoid jumping into water. Try to board survival craft without getting into the water by ladders, life line, water hose and scramble nets or available means.

Chapter 7

TRAINING DRILLS & MAINTANANCE

1. On bard training In the use of ship's Life Saving Appliances, Fire Fighting Appliances including survival craft equipment's lifeboat radio, life boat engine and pyrotechnics shall be given as soon as possible to the new crew but not latter then two weeks after a crew member joins the ship.

2. Instructions In the use ship's of the life saving appliances and fire drill including survival crafts lowering / hoisting of boats and launching appliances shall be given as the same interval, in the form of drills, covering all different parts of the ship's life saving system within the period of two months . Such as abandon ship operation, use of inflatable life rafts, davit launching life raft, hydrostatic release gear unit (HRU) problem of hypothermia first aid treatment for hypothermia and other injuries etc.

Records the date when any muster or drills are held such as , details of abandon ship drills and fire drills, and instruction of other LSA, FFA and onboard training including opening and closing of water tight doors, fire doors and other opening shall be recorded in the log book as prescribedby the administration. If a full muster or training drill training is not held at the appointed time, then entry shall be made in the log book stating the reason

3. **Training manual** : Every ship shall carry a training manual which shall contain instruction and information in easily understood languages by all crew members and shall be made available in an appropriate languages in all crew accommodation, recreation room each crew cabin, library and bridge . The ship's training manual may be used for instructional purposes and also as reference material where significant numbers of crew member's are non English speakers. The training manual carrying instructions and information on the life saving appliances provided in the ship are the best book on the best method of survival. The material may be provided in audio visual from poster or as set of notes.

PRACTICE MUSTER AND DRILLS

1. Each member of the crew shall participate in at least one abandon ship drill and one fire drill every month.
2. The drill of the crew shall take place within 24 hours of the ship leaving a part if more than 25% of the crew have not participated in abandon ship and fire drill on board that particular ship in the previous month.
3. On ship engaged on an international voyage which is not a short international voyage muster of passengers shall take place within 14 hours after their embarkation. Passengers shall be given instruction in the use of the lifejackets and how to done them lifejacket, emergency signal and action to be taken on hearing an emergency signal summoning of passenger to the muster stations with general emergency alarm signal to their lifeboat and life raft station and making them aware of the order of abandon ship.

4. On a ship engaged on a short international voyage, if a muster of passengers is not held on departure the attention of all the passengers shall be drawn to the emergency instructions.
5. Each abandon ship drill include
   a. Summoning of the passengers and crew to the muster stations whenever the general emergency alarm signal is sounded and ensuring that they are made aware of the order to abandon shop specified in the muster list.
   b. Reporting to muster station and preparing for the duties described in the muster list to each crew members.
   c. Checking that the passengers and crew are suitably clad.
   d. Checking that the lifejackets are correctly donned.
   e. Lowering of at least one lifeboat where practicable.
   f. Starting and operating each lifeboat engine. These should be done and run the engine ahead and stem for a total period of not less than three minutes.
   g. Operation of davits used for launching survival craft.

6. Different lifeboats should be lowered in compliance with requirements at successive drills.
7. Each lifeboat shall be launched with its assigned operating crew and maneuvered in the water at least once every 3 months during an abandon ship drill. However all such life boats shall be lowered at least once every 3 months and launches at least annually.
8. Rescue boat other than lifeboats shall be launched each month with their assigned crew abroad and maneuvered in the water.
9. If lifeboat and rescue boat launching drills are carried out with ship's making head way at 5 knots shall be practiced in shattered water because of the dangers involved in the water.
10. All emergency lighting system for mustering and abandonment shall be tested at each abandon ship drill. They include embarkation deck, including water area, companion on way alleyways. These lighting system is provided from ship's main source of electric supply or if this system fail then emergency source of electric supply.
11. In all passengers ships abandonment and fire drill shall take place weakly and in cargo ships shall take place every fortnight.
12. Before the ship leaves port to any destination and at all times during the voyage or in the harbour, all LSA and FFA . Shall be in working order and ready for immediate use.

MAINTENANCE

1. <u>All life saving</u> appliances and their components which are subject to excessive wear and tear with the time and use, need to be replaced regularly or whenever required.
2. <u>Weekly inspection</u> : All survival craft, rescue boats and launching appliances should be physically and visually be inspected to ensure that they are ready for use.
3. <u>Lifeboats and rescue</u> boat's engine shall be run ahead and a stern for a total period of not less than 3 minutes.
4. <u>The general emergency</u> alarm system should be tested from all strategic points weekly. Before testing the emergency alarm, crew must be inform about testing the system.
5. <u>Monthly inspection :</u> Inspection of the life saving appliances including lifeboat equipment shall be carried out using the check life ensure that they are complete and in good working order. A report of the inspection shall be entered in the log book.

6. Wire falls of launching appliances:

a. At 30 months wire falls of lifeboats to be turned end to end.

b. At 5 years, wire falls to be renewed, unless this required earlier by their condition.

c. Stainless steel wire falls may be kept for a longer period provided that they are in good condition.

d. If the falls of a lifeboat worn out of up to 11% of the circumstances on or 7 to 11 wire of a signal strand and damage or broken then whole wire falls is required to renew without any delay as the question of safety of the people at the time of launching of the life boat.

7. Periodic Survey : Life raft, inflatable life boats rescue boats, inflatable life jackets, hydrostatic release unit (HRU) EPIRB, SART, must be send for yearly (12 months) intervals survey by the administration to a proper and approved service station to inspect and maintenance to ensure maximum performance in the marine safety field. If there is any delay in servicing then the period may be extended up to 5 months by the administration or however in cases where it appears proper and reasonable, the administration may extent this period to (12+5) = 17 months.

8. Offence: It is an offence for the life saving appliances on any ship to be in defective condition and under the power's contained in section 430 and 431 of the Merchant Shipping Act 1894, a ship may be detained until such defects have been rectified. Additionally, in some cases proceedings may be taken against the owner or company and master if such appliances are not kept at all times fit and ready for use.

Chapter 8

DISTRESS SIGNALS

PYROTECHNICS

All pyrotechnics must be kept in a weather tight container and have a storage life of 3 years with their date marked on them. The out dated pyrotechnics must not dumped or disposed off at sea but should be returned to the manufacturer only.

1. Rocket parachute Flares:

At lest 12 rocket parachute per vessel on bard a passenger ship and cargo ship to be carried and in addition in those required in the lifeboat and life raft under the new 1986 LSA Regulation. Although only 2 are carried in lifeboat and life raft on short international voyages. At the time of firing a rocket parachute flare, it should be fired at angle which obtained an altitude at least of 300 meters. Descend rate 5 meter/sec, burning time at least 40 seconds, totally extinguished at a height of 45 to 50 meters above the sea level.

Luminous intensity not less than 30,000 t0 40,000 candle power and extinguish above the sea at about 45 to 50 meters.

When an observer sea a rocket in a air at time or in low visibility they must take its bearing. Rocket parachute flares draw the attention of ships, ashore people, helicopter, search and rescue plan indicating that survivors are there. Remember rocket parachute flare should not be fire when any helicopter or plan approaching.

Under normal conditions rocket parachute flares can be fired vertically if there is no wind, if a strong wind is blowing they should be fired at some angle about 10-15 degree according to the speed of wind. If fired into the wind the rocket will tend to seek the wind direction and be deflected at a larger angle and will not reach to a required height of 300 meter, this will rescue its chances of visibility.

If low visibility or low could are there rocket may be fired about an angle of 45 degree downward direction. I has approximate range of about 20-25 miles but in very clear visibility it may be seen about 35 miles range, if a plane flying at 3000 feet height.

2. Hand held red flares

These hand held red flares, 6 per lifeboat and life raft are carried in long international voyages, but 3 in number in lifeboat and life raft in short international voyages.

a. Luminous intensity – 1500 candala power.
b. Burning period 55-60 sec.
c. Range of visibility 5-7 miles
d. Hand flares should be held up at lee ward side at arms length.

Buoyant Smoke Signals

2 per life boat and life raft omitted thick orange smoke for a period of not less than 3 to 3.5 to 4 minutes while the signal is floating in calm water. One buoyant smoke flat is carried in solas B pack.

It has low effect in case of strong wind. A very effective day time signal especially when viewed from above approximate range 5 to 7 miles.

Note : Distress signals burning red in colour are also known as red distress signals such a s rocket parachute and hand held red flares.

LIFE SAVING ARRANGEMENTS FOR SRACH AND RESCUE AND DISTRESS CALL:

Most maritime countries of the world provides lifesaving service for persons in distress in their `coastal areas'. One of the biggest factor in providing assistance is that, they maintained a 24 hours radio watch on the international distress frequencies and also a certain classes of ships are also required to keep a watch at sea. For this, ships are fitted with suitable radio equipment of these distress frequencies to provide immediate life saving service for the rescue of people in distress within their reach around the coasts by playing an important part by way of assistance or saving of the life of people.

Provides that the master of vessel shall, so far as he can do so without serious danger of his own vessel, her crew and passengers, render assistance to every person, even if such person be an enemy who is found at sea in danger. If he fails to do so, he is guilty, of a misconduct

behavior. If the master of any ship in distress requisitions any ship that has answered his call. It is the duty of the master of the requisitioned ship to comply with the requisition by continuing to proceed with full speed to the assistance of the vessel, aircraft or person is in distress at sea must be made or written in official log book.

STATUTORY DISTRESS SIGNALS

These are :

1. A gun or other explosive signal fired at intervals of about a minute.
2. A continuous sounding with any fog signaling apparatus.
3. Rocket or shells throwing red stars fired one at a time of short intervals.
4. A signal made by R/T or by radio telephony or radiotelegraphy or by other signaling method consisting of the group (SOS) in the Morse code.
5. The international code signal of distress by NC.
6. A signal consisting of a square flag having above or elbow it a ball or anything resembling a ball.
7. Flames on the vessel burning tar, oil barrel etc.
8. A rocket parachute flares or hand flare showing red light.
9. A smoke signal giving of orange colour smoke.
10. Slowly and repeatedly raising and lowering arms outstretched to each side.
11. The radio auto alarm signal (12 dashes) on 500 KHZ.
12. The radio telephone alarms signal (two tone) on 2182 KHZ.
13. Signal transmitted by EPIRB) emergency positioned indicating radio beacons.
14. A piece of orange colored canvas with either a black square and circle for identification from the air.
15. A dye marker such as in green or orange in colour.

AUTHORITY TO USE DISTRESS SIGNALS

a. No signal of distress should be used by any vessel unless master of the vessel is in serious and imminent danger or that another vessel or aircraft is in serious and imminent danger and cannot be itself send distress signal.
b. Masters are also reminded of the need to cancel or revoke a distress call if the ship is in longer in danger. Failure to do so on such occasion resulted in serious loss of time.

LIFE SAVING AND DISTRESS SIGNALS.

The importance of instantly recognizing all distress signals and being full conversant with their use, together with the procedure for rendering assistance cannot be too strongly empbaszied. Most maritime countries provide life saving service to persons in distress in

their coastal areas. One of the biggest factors in providing assistance is the 24 hours radio watch required to be maintained by vessels of 500 tones gross and upwards. These watches are kept on a frequency of 500 KHz radio telegraphy (R/T) . The watch is to be maintained at all time except when operator is performing other necessary work and to keep a loudspeaker watch. Silent periods are laid down for 15 to 18 and 45 to 48 minutes past each hour of GMT during which the frequency of 500 KHz must not be used except for distress, urgency safety signals. In the case for R/T the silent periods for 2182 KHz are from 00 to 03 and 30 to 33 minutes passed each hours of GMT. During the silent period vessels which do not come under the merchant shipping Radio Rules required to maintain a watch.

When an operator hears a distress call he must answer it . At the same time allowing a sufficient intervals of ships to acknowledge it which are closed to the distressed vessel.. He must then inform his master for all call, weather other ships acknowledge it, and position of those ships. Master may then instruct him to repeat the call on the distress frequency, acknowledge it. These units are able to transmit on 500 and 8364 KHz and to receive on 500 KHz . They are also able to automatically transmit on 500 KHZ, the auto alarm signal 12 dashes of 4 seconds each having on second intervals, all made within a minute followed by SOS set three time, together with a subsequent long dash of 10 to15 sec. So that listeners can take a radio bearing of the transmitter. On 8364 KHz the same signal is automatically keyed with the exception of the auto alarm signal. Coast Radio station who keeps watch on 500 and 2182 KHz and VHF channel 16. A reply call is relayed on 500 KHz and also on 2182 KHz.

The signal must be revoked if assistance is no longer required.

Failure to this may cause unnecessary waste of time and anxiety to the other person, such as search and rescue aircraft airship.

PROCEDURE FOR TRANSMITTING DISTRESS OR URGENT SIGNALS.

Frequencies used are 500 KHz (RT) and 2182 HZ(RT) . Any other frequency may be used. However, timely assistance may be summoned more quickly on that frequency. The (RT) alarm signal is automatically keyed and sends 12 ashes in one minute. This operates the auto alarm of the other ships. If indicates to ships and cost radio station that a distress call is about to be transmitted. It is immediately followed by SOS sent three times and 10 to 15 second long dashes on auto alarms so that operator may take bearing of the R/T distress call, after a period of 2 minutes which follows operators to stand by for an important call or message.

The call consists for SOS sent three times, followed by the word `DE' followed by the ships call sign sent three times. Then follows the message, which consists for the ships name, position nature of distress and assistance required, including in this, for a vessel if drifting, direction of drift, fire flooding ran ground etc. Lastly there should be sent two 10 to 15 second dashes to enable radio bearing to be taken. Other signal, visual and sound should be used in the darkness and poor visibility. On 2182 the R/T alarm signal consists of two tones transmitted alternately and automatically over a period of 30 seconds to one minute should be used. After 2 minutes the R/T distress call should be sent, consisting of the distress signal MAY DAY spoken word three times, followed by the word DE, this is followed by the ship's name and spoken three times. This distress message is then send as per R/T procedure.

EMERGENCY POSITION INDICATING RADIO BEACON (EPIRB)

Emergency position indicating radio beacon is basically a 406 MHz transmitter, operating through the COSPAS, SARASAT search and rescue satellite system . EPIRB is basically meant for safety of life at sea during emergency when activated EPIRB transmits a coded distress signals in the UHF band 406.025 MHz for alerting search and rescue (SAR) authorities via a low power signal at 121.5 MHz and 243.0 MHz in VHF , band as receiving frequency to assist in search and rescue operations. The EPIRB is activated either manually or automatically.

To activate the EPIRB manually pull the locking pin at the top of beacon. When the beacon is put in the water, or released automatically from the sinking ship there by transmission will start automatically and will stop when the beacon is lifted out of the water . Once the EPIRB is switched on it should not be switched off. On all ships other than those operating within VHF range of coast station and equipped with VHF EPIRB has a float free arrangement . This will operate in the 406 MHz and which will allow its location by polar orbiting station of the COSPAS, SARSAT system.

The EPRIB signal will included a short coded message which will give SAR authority an information concerning the type of beacon. It has to be capable of transmitting continuously for a period for not less than 48 hours and have batteries that do not need replacing at more than 5 years storage life. It must be of a highly visible colour, fitted with retro reflecting material and be capable of floating uptight in clam water.

Great care should be taken while handling the EPIRB . False alarms initiated by misuse of any emergency beacons contributed to the biggest signal increase in the type of jobs we were called to and therefore to the cost of the rescue service we provide.

Sometimes what happens of (SARSAT) search and rescue satellite alarms which turned out to be caused by careless or thoughtless use of beacons, jumped from 45 to 52 in 1991. This means we needlessly expanded more than power or hours and search and rescue aircraft/ helicopter flying time than before while we looked for people we thought were in distress. The helicopter and (nimrods) a large long range maritime patrol aircraft, used on search and rescue duties, while most beacons were switched on accidentally by means of carelessly knocked over the beacon while careless handling or while keeping in a cupboard. Be careful as SARSAT equivalent can receive EPIRB of 121.5 and 243 MHz are also used for homing purposes of Civil / search and rescue aircraft . On no account should they be tampered with or apart from authorized test, activates. However, we certainly hope they will not be, and one way of ensuring this is to prevent the transmission of spurious signals. The EPIRB are many makes and different in sizes and makes . An important milestones for use in life rafts, lifeboats as mounted in its brackets on board ship to release itself automatically from a special mounting bracket when the ship submerged to a depth of 1.5 meters to 4 m of depth. A hydrostatic mechanism free the EPIRB enabling it to rise to the surface and become activate.

How to operate the EPIRB

EPIRB can be operated manually or it can be operated by throwing it in the water or if the ship sink. It automatically release by HTRU unit when submerged in water a depth of 1.5 to 4m depth. In the lower bottom part, two screw heads are fitted . As the EPIRB released and float free from the sinking ship, a lithium battery get operated and EPRIB get activated and automatically start transmitting the coded message every 50 to 60 second in interval.

EPRIB can be operated manually also. Remove the safety pin provided in the upper part by putting the cord and remove the auto / on switch to ON to operate the EPRIB . EPIRB can be kept in the lifeboat or in the water. If EPIRB is operated automatic and if it is lifted from the water it will switched off automatically.

EPIRB can be tested by way of the test switch provided in the EPIRB . Press the test switch for one to two second then release it. The red lamp will burn and it started flashes briefly. After a few seconds the 2n^{d} light of the EPRIB will burn and both these two light giving flashes for 14 to 15 seconds, then 2n^{d} lamp will switched off automatically and the last lamp will continue to flash for the duration of the test period of about 75 seconds. EPRIB should be sent every 12 months for servicing of its battery or battery replacement. If cannot send then service period can be extended to 5 months and during this 5 months time servicing should be completed and certificate to be obtained.

SART (SEARCH AND RESCUE RADAR TRANSPONDER) IN LIFEBOAT OR LIFE RAFT)

Enables a survival craft to show up on a search vessels radar display as an easily recognized series of dots. As most vessels of any size carry radar, then the appeal of SART, is that the nearest ship can be used to locate a lifeboat or life raft without the need for special direction finding equipment. The SART transmits on 9.2 GHz and 9.5 GHz and a typical ships radar will transmit a stream og high power pulses on a fixed frequency between 9.2 GHz to 9.5 GHz. It will collect the echoes received or the same frequency and appears on the ships display unit with echoes dotted around which shows the ship itself at the center if the screen and the relative or true bearing of each echoes pulses from the search and sending back 12 series of pulses in responses, which the radar will then display as if they were normal echoes. A series of dots is therefore shown on the display must easier to spot then a signal echo. Direction of echoes depends upon the height of SART antenna set higher above sea level. Therefore ranges of echoes appear between nautical mile to 10 nautical miles . Airborne detection of SARTS at ranges upto 40 nautical miles given an initial search height of 3000 feet.

DISPLAY UNIT SHOWING THE ECHOES RECEIVED FROM A SARTS.

The one shown is located is nautical mile distant at a bearing of 195° SART is designed t be triggered by the 3 cm radar's of searching ships and aircraft's and will cause a serious of dots to appear on their radar screens. The carriage of a radar transponder in survival craft will except it from the requirement to carry radar reflector . When the survival craft SART ECHOS are pick up by the ship's SART at the survival craft will give a blip which can be heard, means you have been detected.

Three two way radio telephones

At least three two way radio telephones are required for voice communication between the present vessel and a rescue boat or survival craft or different survival craft. The use of portable two way radio telephones should be practiced, they should also carried during drills,

in the survival craft an the rescue boats by the incharge itself. Care should be taken not to use them on channel 16 as the channel 16 provides a working channel acceptable locally to the Administration.

SUMMARAIZING THE REQUIREMENTS OF RADIO AND GLOBAL MARITME DISTRESS AND SAFETY SYSTEM (GMDSS)

The portable radio apparatus should, if possible be placed in a survival craft. It is made to withstand a drop into the water and so that in an extreme emergency it can be dropped overboard to be picked up later by a boat. Although it will withstand a drop into water. It may be damaged by striking floating debris and would cause serious injury, if it struck a person in the water. The radio would be out into a survival craft to which a radio officer is assigned. Some one other than the radio officer should be responsible for collecting the portable radio and taking it to the survival craft. The radio officer will be busy with distress message on the ships equipment until the late monument. Eac ated. No transmission should be possible from the EPIRB used for demonstration purposes. All passenger ships and cargo ships of 500 tones gross tonnage (GRT) and upward will required at least 3 portable two way VHF radiotelephone and in addition a radar transponder on each side of the ship, stowed so that they can be rapidly placed in any survival craft other than the additional life raft or lifeboats, that must be carried when the survival craft are more than 100 meter from the stem or stern. Cargo ships of 300 grt ft and upwards but not less than 500 grt will require at least two way VHF radiotelephones and one radar transponder. The requirements for radar transponder may be most by having a transponder stowed in each survival craft, in which case they would replace the radar reflectors required under the existing rules. The radar transponder is triggered by radar pulses in 9 GHz band 3 cm wave length or transmit a signal showing as a raw of dots o the display of the radar which triggered it. An audible or visual signal will indicate to survivors the transponder has been triggered. Distress alerting will be carried out by the ships satellite EPIRB which would be transferred to a survival craft on abandoning the ship.

IN GENERAL : 406.025 MHz EPIRB

i.. The satellite EPIRB should be capable for transmitting a distress alert to a polar or orbiting satellite and be automatically activated after float free.

i. The EPIRB should be of an automotive float free type. The equipment mounting and releasing arrangements should be reliable even under extreme conditions.

ii. Be so designed that the electrical positions are water tight at depth of 10 m for at least 5 min and if water leakage should not affect the performance of the beacon.
iii. If time permits, should be carry to the one of the lifeboats and be capable of manually activated and manually deactivated and be capable of floating upright in calm water and have positive stability.
iv. Be capable of being dropped into the water without damage from a height of 20 m.
v. Be capable of being tested, without using the satellite system to determine that EPIRB is capable of operating properly.
vi. Be capable of highly visible yellow / orange colour and be fitted with retro reflective material and be equipped with a buoyant lanyard of about 10 m suitable for use as a together when floating free.
vii. Be provided with a low light 0.75 candle power by darkness to indicate its position and not affected by sea water or oil and prolonged exposure to sunlight.
viii. The battery should have sufficient capacity to operate the satellite EPIRB for a period of at least 48 hours.
ix. The satellite EPRIB should be so deigned as to operate under any:
a. Ambient temperatures of 20°C
b. Lcing
c. Relative wind speed upto 100 knots.
d. After stowage at temperature between – 30° C to + 65°C.

x. Have local manual activation, remote activation may also be provided from the navigating bridge, while the device is installed in the float free mounting navigating bridge , while the device is installed in the float free mounting.
xi. Be designed to release itself and float free before reaching a depth of 4m at a list or trim or upto 45°
xii. Should have LABELLING for
a. Brief operating instructions.
b. Expiry date of the primary battery used,.
xiii. A unique ship station identity should be made part of all message and once it is switched on should not be switched off.
xiv. Periodic inspection and testing of EPIRB shall at interval not exceeding 12 months and if necessary have their sources of energy replaced . however in cases where it appears proper and resonable the administration may extend this period to 5 months.

USE OF ROCKET LINE THROWING APPLIANCES AND LANDING SIGNALS

Under the safety convention rules life saving stations will reply to a vessels distress signal as followed.

Landing Signals

a. By day with an orange smoke signal or `three thunder lights' fired at minute intervals or, by night with three white stars, fired at minute intervals. These signals indicate that the vessel has been seen and that assistance will be given as soon as possible.

b. In many countries the following signals are used when small boats are landing survivors of wrecked vessels.
By way : a vertical motion of a white flag or the arms and

By night : the vertical motion of white light.

To mean : This is the best place to land.

A second white light may indicate a direction of landing or alternatively, a

green star of `K' in Morse.

c. By day, the horizontal motion of a white flag of the arms extended horizontally.
By night, the horizontal motion of a white light.

To mean landing here is highly dangerous.

Alternatively the letter `S' maybe used in Morse or a red star rocket.

d. To mean: landing here is highly dangerous . A more favorable place lies in the direction indicated.
By day : A white flag is moved horizontally and is then affixed in the

ground. A second white flag is then carried in a certain direction.

By night : A similar procedure is carried out with white lights

Alternatively a white star rocket in a certain direction of `S' in Morse

followed by `L' or `R' to mean alter curse left or right.

LINE THROWING APPLIANCES

To be carried abroad both passenger and cargo ships engaged in long international voyages. The apparatus is a completely self contained unit and the set of four units normally carried by ships to be placed at strategic positions in the vessel. Each unit can be fired independently as required. The unit consists of a plastic body launching, incorporating the handle trigger assembly, and containing the rocket, igniter and 275 m of ready flaked line. The unit is weather proof being sealed at both ends by transparent polythene caps. This enables the date of manufacture, of the rocket and the igniter to be checked without removal of cap. Full pictorial instructions are printed on both sides of the plastic body and can be readily issued by either right or left handed users. When firing a rocket, for tanker or vessel with inflammable spirit. It may be extremely dangerous to fire a rocket across such vessel, due to the liability of flammable of the tanker and fire a rocket only when it has been ascertained that it is safe to do so. When such a risk of ignition exists, the distressed tanker should fire rocket line to the rescuing vessel and hoists code flag `B' at the mast at day time and use a

red light in the same position by night. In poor visibility by sounding the international code group `GU' on the following signaling apparatus.

a. Signal affirmative Green star signal or the vertical motion of a white flat of the arms or a white light at night etc. means rocket line held.

b. To mean – Negative, slack away, a vast hauling or rocket line is not held etc.
Signal : A red star signal or the horizontal motion of a flag or white light at

night, or the arms extended horizontally.

c. When possible, the coast guard will fire a rocket across the ship with a line attached, such as an 8 mm hamp line. If the crew of a ship fire a rocket ashore first, the coast guard will got hold of this rocket line and attached a stronger line to it. When they signal affirmative, a crew should have on their rocket line in order to get this stronger lien abroad.

As soon as either the stronger line or the shore rocket line is held, signal affirmative and then wait for a similar signal from ashore. As soon as it seen heave it on the line, and a tailed block with an endless line reeve through, will be heaved on board. This is called the whip and may be 12 mm fiber rope, jackstay about 24mm dia manila rope be secured to the becket of the tailed block which may be 230 m long rope. Often with another 135 m which can be secured using a special sleeve which the traveler can pass over.

d. As soon as all gear on board, `Make the' tailed block fast at a convenient

position, to a stronger point, as far away from the breaking sea as possible

with a clear working are around it making sure that the whip does not chafe

on any part of the ship.

Cast off the rocket line and give signal affirmative as soon as this is seen the shore party will set the jackstay tight and haul off the breeches buoy to the ship by means of a traveler pulley. The out haul of the whip is called the weather whip and the in haul being known as the lee whip. While this is being done, the officer in-charge should instruct all hands in the procedure for using the buoy. The weight of the body should be taken partly by the elbows on the buoy itself, the person should normally face the ashore and be prepared to bear off with his feel if crossing reefs or finally surmounting cliffs.

e. If a tally board is not sent out the ship with the tailed block or buoy, the offer in-charge must make sure that each person leaving ship is correctly tailed so that he does not finally leave a ship with people still abroad.

The person in the buoy should sit well down and grasp the steadying line. When he is secure, signal affirmative and the coast guard will haul him shore and then return the buoy in the ship. With regard to inured persons, the way in which they are handled will depended on the state of their injuries and in such cases Neil Robertson stretches may be used.

How to use the Line Throwing Apparatus

1. Remove the front cap attach the free end of line to a strong point in the ship and attached second end which is fire proof end to be attached with the projectile loop.
2. Hold handle horizontally top era, allowing unit to naturally assumed and correct firing angle.
3. Remove safety split pin and squeeze trigger lever. When rocket fibers, hold container until line is paid out, and then pass the jackstay gear such as:

a. Attracted messenger lien 8 mm dia Tail traveler, Breeches buoy.
b. Endless lien 12 mm dia.
c. And a jackstay about 24 mm dia manila rope.

4. Rocket and igniters should be replaced every three years, and apparatus after nine years in service on a ship.
5. The length of the container is 330 mm diameter 190 mm and weight 4.6 kgs . The line has a diameter of 5mm and the force which gives 1 kg and acceleration of one meter per second.

Man Overboard Smoke and Light Marker

It is combined day and night marker, safe to use on oil or petrol covered water. It is designed to be attached to a lifebuoy by means of a lanyard about 3.5 meter in length and when released form its position in the water producing dense orange smoke for a period of 15 minutes and two all round water activated light at candela power for a periods of 2 hours. It is kept o both sides of the navigating bridge in the wooden casing and released by pulling toggle or it can also be connected to a bulk head mounted lifebouy an released manually, if any person fall over board. The weight of the lifebouy should not be less than 4 kgs.

The light marker lifebouy is also similar attachment install separate light, mounted on brackets, an released manually produced a light of 2 candela power for a period of 2 hours, used if any persons fall overhead especially at night close to ship side.

The man over board smoke and light marker is carried in all merchant ships and is mounted in such a position that it can be released form its stowage to fall unobstructed into the sea, or can be easily cast into the sea to give a sea mark by day or light for man overboard casualty. The markers are sited on both bridge wings and on both sides in the after part of the ship. Large ships carry additional markers amidships.

Chapter 9

SERACH AND RECUE HELICOPETRS:

The purpose of helicopter is to provide assistance to ships out at sea to pick up casualty or to carry out rescue operations. These can rescue 10 to 18 survivors depending on the type or to carry out rescue operations. These can rescue 10 to 18 survivors depending on the type of machine. They do not normally operate more than 450 nautical miles both way from its base, though some more distance may be increased depending on type of situation, and have VHF radio and perhaps 2182 KHz R/T fitted with.

Before the helicopter take off from its base, the helicopter pilot must be provided with some the information, by the master of the vessel, such as name of the ship, its color, course . speed and shop should fly colour pendant on its mast at day time and weather condition visibility a distance from the land. And night area of the operation must be well illuminated.

Operation of a helicopter depends on a circumstances of the bad weather conditions and visibility. The master of the vessel in distress must have efficient communication between all parties, are essential so that rescue operation can be carried out in an efficient manner to the distressed victims. The time factor also plays a large part in helicopter, with an effective range of 299 nautical miles one way approximately, the actual range is in fact considerably greater by allowance must be made for hovering over and above the scene of operation. Helicopter use is retracted, as bad weather conditions (wind over 50 knots) sometimes prevents helicopter becoming airborne. There are of course may be other types of helicopter in use. The ranges and passenger capacity may be varying.

Passengers	Range from base
10	100
16	150
18	155
20	195
22	270

The officer in-charge of the ship make sure that before the helicopter approach the ship the WINCHING AREA must be seriously considered such as (1) On the open deck forward or aft (2) On the lifeboat (3) On the life raft an necessary arrangement on the ship to assist winhing operations in order to ensure that the helicopters may operate safety without risk to persons on board or in the helicopter itself should be made

1. The winching area should, as far as practicable, be located on the port side of the ship such that a large portion of the maneuvering zone extends over the ship side and situated where it will enable the pilot to have an abstracted view of the ship.
2. The area selected on the deck having a minimum diameter of 5m should be painted yellow in a circular manner and a letter H painted yellow in the center of the circle.
3. The height of obstacles such as ventilators, small deck houses area companion ways should be remove than 3m height.
4. Side rails and where necessary, a wings stanchions should be lower to deck level.
5. All loose gear rages, cotton waist must be secured/ pick up from the sea..
6. The operating area should be if possible free of heavy weather spray.
7. Deck party should be ready and all passengers should be clear of the operating place.
8. Deck party should be aware that rescue operation is about to take place or taking place.
9. Fire jump should be running and adequate water pressure should be running in the fire hoses of the operating area.
10. Portable foam type extinguisher should be ready.
11. A rescue party, wearing fireman's outfits should be ready.
12. Man overboard rescue boat should be ready.
13. Portable fire extinguisher large axe, wire cutters, torches etc. should be ready.
14. In the case of tankers inter gas system should be ready and the operating area should be vented to the atmosphere, 30 minutes before the operation is due to start.
15. Helicopter will normally approaching the winching area along a flight path on the poet side of the ship and a wind pendant is hoisted in a position where it can be readily seen by the pilot of the helicopter.
16. If winching operation have to be conducted hours of darkness then it will be necessary to illuminate the maneuvering zone the mustering area and the wind pendant and lighting should be not directed at the sea or toward the helicopter.
17. All significant obstruction such a mast, funnel, derricks should be illuminated by flood lights.
18. Head the ship according to the pilots recommendation.
19. If the winching operation cannot be preformed on the deck, then the survivors to be rescued, astern of the vessel in a raft on long painter about 100 to 120 meters or if the helicopter cannot pick up direct from the ship and if the life raft is not available then the survivors to be rescued a beam in a open or totally enclosed lifeboat having top canopy hatch and railing all around to protect the people from failing overboard.
20. Never touch the winch wire until it is earthen with sea water or ship structure as it s carrying static electricity.
21. Never secure the winch wire on deck or allow it to become fouled.

Note : The Pilot and crew of the helicopter are professionals in rescue operation to be carried out either form the ship's deck or from water . The method employed by this helicopter in winching operating are as follows:

i. Lower a crew member form the helicopter to the man if he is helpless.

ii. Lowering a strop slip to a person on the winch wire (if he able to help himself)

iii. Helicopter lifting strop should be use as under

a. Take the strop and put both the head and the arms through the loop and secure the strop under the armpit with the padded point positioned as high as possible across the back.
b. Tighten up the strop by pulling down the toggle as low as possible near the chest.
c. When securing the strop extend one arm and give the thumbs up signal to the which man in the helicopter.

Rescue also can be performed by means of the following :

1. Rescue liter or stretcher
2. Rescue net
3. Rescue basket etc.

Chapter 10

HYPOTHERMIA

Loss of body heat is known as hypothermia. When body temperature dropped down to 35 degree C or 94 degree F, the person is said to be effected by hypothermia. The normal body temperature of a person is 98.6 F or 37.3 C. Hypothermia can develop to a person any climatic condition when exposed to any cold climatic conditions.

Hypothermia can occur

1. Hypothermia can occur at temperature above freezing point an over exposure in cold climatic condition to any person when he is unprepared not recognizing that the has been exposed to cold, is the first step that a person is being effected by hypothermia.
2. Proper dress, safe working practices in cold climatic condition, knowledge of hypothermia and a positive attitude can protect you and your crew members from a hypothermia tragedy.
3. Hypothermia occur when the body loses heat faster than it produces it.
4. The body inner core temperature normally 98.6 F or 37.3 c being to fall, causing failure to vital organs. Symptoms become very sever as body temperature become below 82° F r 38° C, death is likely.
5. Although commonly caused by immersion in cold water, chilling winds, and rain. Thus mariners must be alert while working on deck or in other exposed condition.
6. Cold water can cool the body as much 25 time faster than air, so chilling begins immediately. Even mariners in tropical climates should not dismiss this hazard.

SYMPOTOMS & TREATMENT

In mild hypothermia individuals will shiver and have painfully cold hand and feet nails and that may become numb, and cramp may occur on fingers as well as feet and legs. As the person's condition progresses, the individual will stop shivering, become confused and person any exhibit poor co-ordination such as, speaking difficulties, very cold to the touch pale face, has a weak pulse etc.

Prevent further heat loss through evaporation and from exposure to the wind. Wrap the patient in blankets and/or a casualty bag or large plastic bag and transfer immediately to sheltered area or below decks to a compartment between 15°C to 20°C keeping him horizontal, slightly head down.

Advice on re-warming and decision regarding further treatment should normally be given only by a doctor. If no medical advice is immediately available continue to apply the essential life saving procedures given in paragraph 1 to 6 above . In addition if the rescued person is cold not appears dead or if he (or she) deteriorates and / or the pulse and breathing are lost, warming of the person should be attempted immediately.

Medical authorities degree on the best method of re-warming, but either an `active' or passive method is normally used i.e.

1. `active method' of warming - this is done preferably in a bath of warm water (38° C to 40° C alternatively using heated blankets or sheets (about 45° C, but not hother)
2. `Passive method of warming – cut the persons clothing so that it can be removed with the minimum of disturbance. Then wrap the person in blankets to reduce further heat loss. Do not attempt to warm the person by vigorous actions. Apply heating pads or hot water bottles under the blankets to the person's heat, neck, chest and groin. But never place these a warm objects against the bare skin, as cold skin is easily burned. If active or passive methods of warming are not available then apply body warmth by direct body to body contact with the rescued person. In addition wrap a blanket around both the rescued persons and the person(s) supplying the warmth. In all cases try to monitor the pulse and breathing.

As he drifts into the come state, his pupils dilate and poor health can occur even before the body temperature drops to 31° C, and indeed any consequence of cold weather is likely initially to effect heavy drinker, people with poor circulation and anyone in poor health.

As the condition worsens, the individual will become semi conscious or unconscious. below 82° F or 28° C the victim may appear dead or no apparent breathing or pulse, dilated eyes and cold, bluish gray or pale skin. It is important to assure the patient can be revived, even at this stage and to continue treatment. Obviously the cure for hypothermia is to re-warm the patient . There are right ways and wrong ways to do this. The right way to stop further heat lose and every gradually re-warm the core body temperature and does not allow the further body heat loss. Thus does not obtain warmth.

In case of any person effected by hypothermia in the lifeboat and life raft the person must be covered with the blankets to regain hear or person must be covered with TAP . In case the blanket or TPA is not available some persons must huddle against him and try to impart their own body heat to him. If a hypothermia is brought abroad a ship, it is most important to

warm his toroce before his limbs . Warming the latter will bring a rush of icy blood to the heart causing after drop of perhaps death.

Remember that hypothermia are most susceptible to frost bite and that further 10% of body heat can be lost through the head . Cover the head, ears and nose if they are exposed to extreme cold. The patient must be placed on his back in a situation where further heat lose will not occur. If at all possible find a warm location in the ship, preferably a heated room below deck. Be sure the patient is insulated form a cold floor by blankets or their suitable materials . Carefully remove all wet clothing. Wrap the patient body in blankets clothes or a sleeping bag.

Re-warming the body core should be done by applying dry heat to the head neck, chest and groin. You can use heating pad, hot water bags, or bottles, even objects you can warmed in the galley oven, whatever you too have. Mild heat comfortable to the elbow, wrist is required . Warming the arms and legs can cause a serious reaction called after drop, as the body cools it, shoots of blood around the vital organs or fatal death.

Treatment for the mildly hypothermic individual is that, removing him form exposed situation, providing warm, dry clothing and allowing for plenty of rest. Such an individual should not be given any food or water, or tea, at all until the victim is fully conscious and able to swallow without checking . If a person is conscious, hot milk coffee, tea and cocoa can be given.

If a man is an unconscious situation, where the victim may be suffering form severe hypothermia, it is extremely important to handle him gently. His system is in a very fragile state. Rough handling can cause further stress to the circulatory system, even causing heart attack.. Carry him horizontally if you have help, and handle gently through all stages of the treatment.

a. Move the patient as little as possible.
b. Check for pulse and respiration or carotid pulse for at least for 1 to 2 minutes only.
c. If none is detected, should be initiate CPR (Cardiac pulmonary Resuscitation).