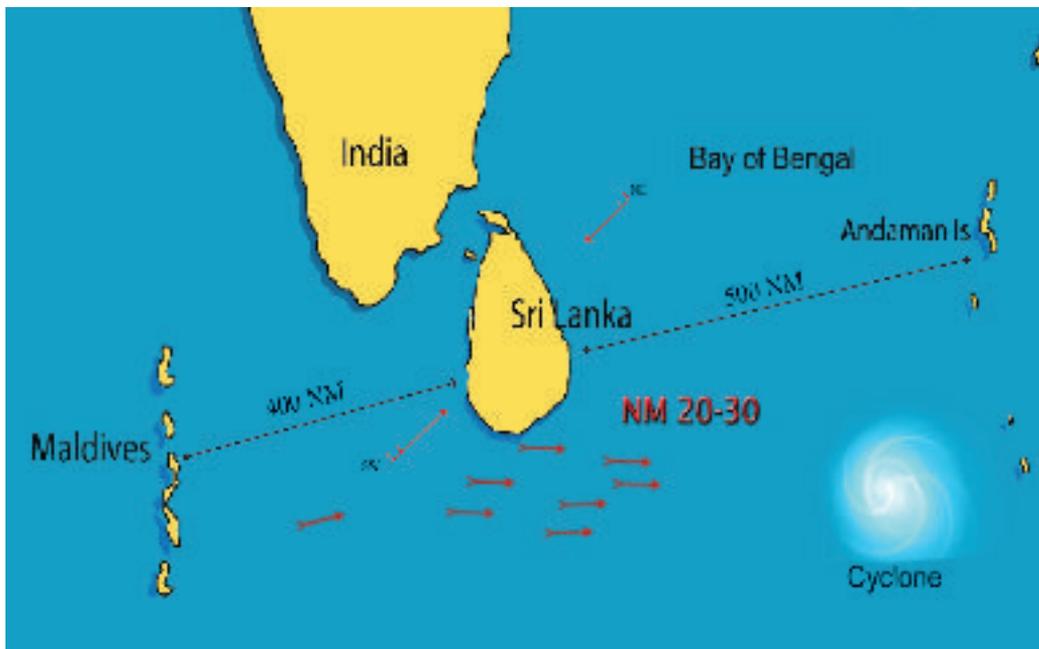


Chapter V

Survival at sea

Sri Lanka is an island situated in the Indian Ocean, just south of India, approximately 6° degrees north of the equator. The distance between India and Sri Lanka is approximately 26Km over the ocean through Polk Strait from the northern peninsula of the island. The west coast of the island is bordered with the Indian Ocean spreading over 400 nautical miles (NM) up to the Maldives Islands and the east coast of the island is bordered with the Indian Ocean spreading over 500 NM up to the Andaman Islands through Bay of Bengal. The southern coast of the island is bordered by the open ocean up to the south pole, except for a few small isolated islands such as the Cocos Island, Diego Garcia Island etc.

In general, during half of the year, rough seas can be experienced around the island; western seas are rough during the south-west monsoons and the eastern seas (Bay of Bengal) are rough during the north-east monsoons. Strong currents can be observed during the monsoon seasons which reach a rate of 20-30 NM a day. Strong tropical cyclones developed due to depressions have been reported frequently during the months of June-July and November-December.



The Sri Lankan fishing fleet consists of coastal fishing vessels and deep sea fishing vessels that engage in fishing activities in the Indian Ocean throughout the year. All deep sea fishing vessels are mechanized. Most of the coastal fishing vessels are also mechanized except for a small percentage of coastal vessels that are traditional in nature, and are manual-operated canoes. Sails and oars are the main power source of canoes. Deep sea fishing vessels very often sail over a few hundred nautical miles and stay out at sea for few weeks depending on the availability and the haul of the catch. They use GPS to find their position on the chart and use SSB radio to communicate with the land and other Sri Lankan fishing vessels. In most cases, operators of these vessels lack knowledge in proper navigation methods and other safety measures to be undertaken out at sea in order to safeguard the vessel and its crew. GPS is the sole equipment available on board to find the position and way back to land. If something goes wrong with the GPS or in a situation where there is a power failure, the crew will find themselves in trouble, marooned out at sea.

Unfortunate incidents encounter at sea

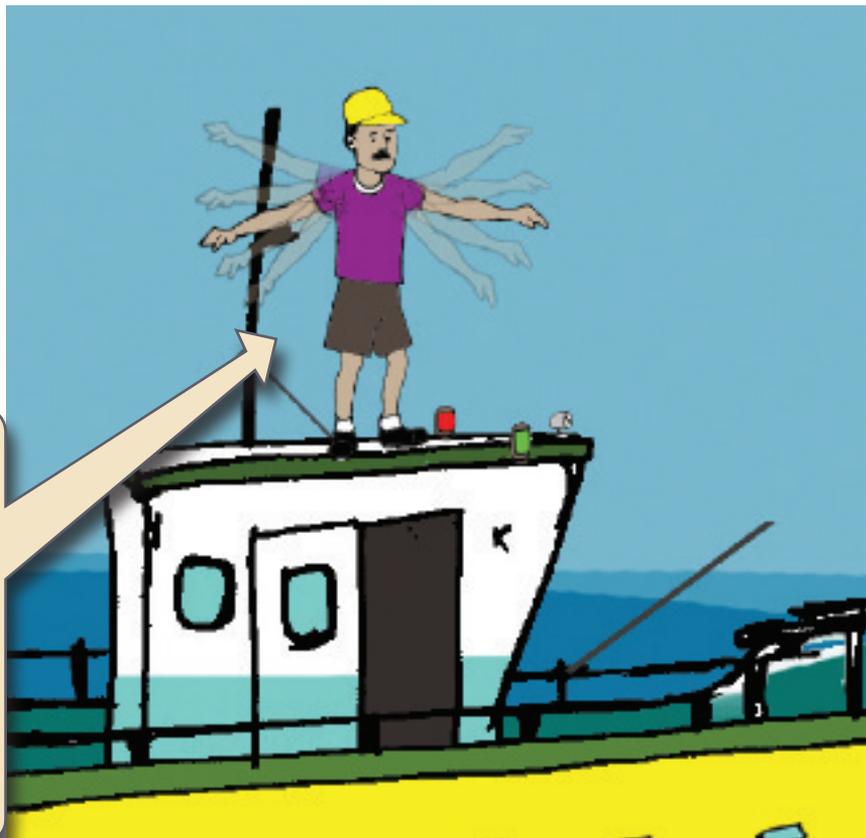
1. Fire onboard
2. Man falling overboard
3. Personal accidents harming the crew
4. Water leaks in the hull
5. Loose position and become stranded
6. Loss of fishing gear
7. Engine failure
8. Loss of steering system
9. Loss of propeller
10. Brakedown in the gear box.
11. Running short of fuel
12. Encountering a cyclone
13. Run short of drinking water and provisions
14. Collision with another vessel
15. Lose of communication
16. Falling in the hands of pirates
17. Run aground
18. Explosions
19. Encountering strong winds and currents
20. Lightning

As mentioned earlier monsoon season is very dangerous in terms of safety for Sri Lankan fishermen. Fishermen are tempted to go fishing, despite the sea being very rough, for the simple reason that the fish catch in the monsoon season is fabulous. Fish are caught in foreshore and offshore areas in close proximity to the land allowing fishermen to make good profit with less expenditure and less effort. Fishing during monsoon season is relatively risky, as any engine failure of a vessel could cause it to drift to an adjacent country, often for several weeks or months, unless salvaged by another vessel. Vessels that drift to the west or east of the island are safer because other countries are around, but vessels that drift to the south of the island are in real danger as there is hardly any land to embark.

In the event of an engine failure fishermen should know how to handle the situation. The following points will help to bring the situation in to control.

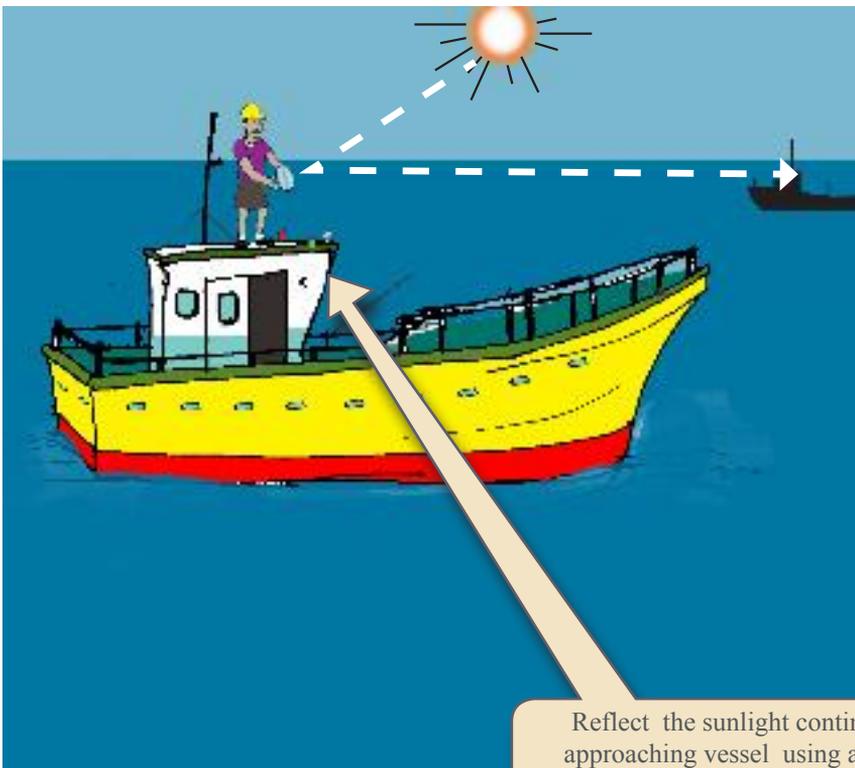
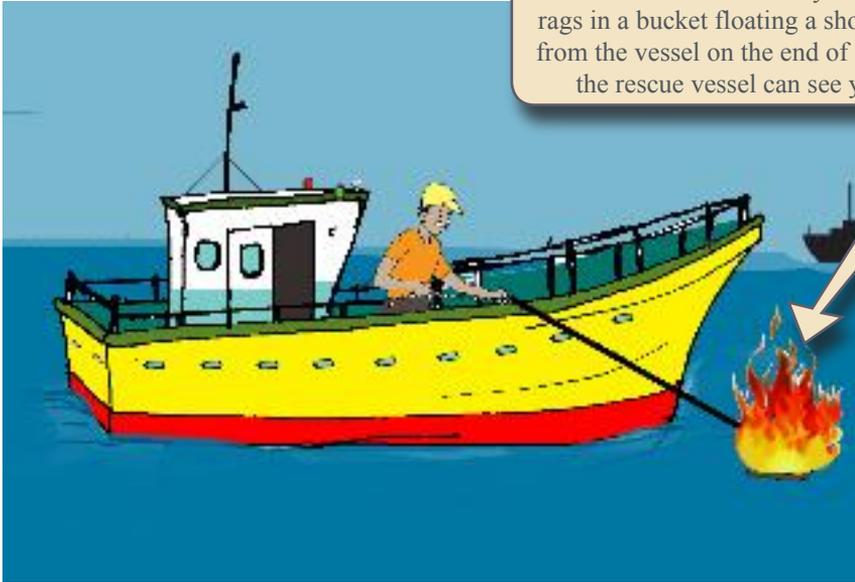
- Find your exact position and inform the local authorities and other vessels in the area of your need for assistance. Make sure you inform them of your exact position.
- Plot the position on a chart and watch for the drift. If you are drifting away from the land make your fishing nets like a rope, fasten the anchor at one end and drop it into the sea. This will help you to minimize the drift and maintain your position closer to your initial position.
- Drop the sea anchor if available.
- Try to repair the engine using existing spare parts if the repair is manageable.
- Search for other vessels in the vicinity or closeby who can assist you if the repair is beyond your control.
- Minimize the use of radio to save your battery strength.
- Inform local authorities of your position at least twice a day.
- The skipper should keep the crew strictly under his command and should not panic.
- Let the vessel drift, if the drift is towards the land. Use the sail if available.
- Ration your drinking water and provisions, enabling to stay out at sea for a maximum period.

- Do not engage the crew for daily routine work such as maintenance of the vessel and other hard work so they can preserve their body energy.
- Maintain a look out and watch duty in order to find a vessel passing by which can help you.
- Send SOS or MAY DAY signals on channel 16 for other vessel's attention if VHF radio is available onboard.
- If you can see a vessel in the vicinity try to get its attention by carrying out the following actions:



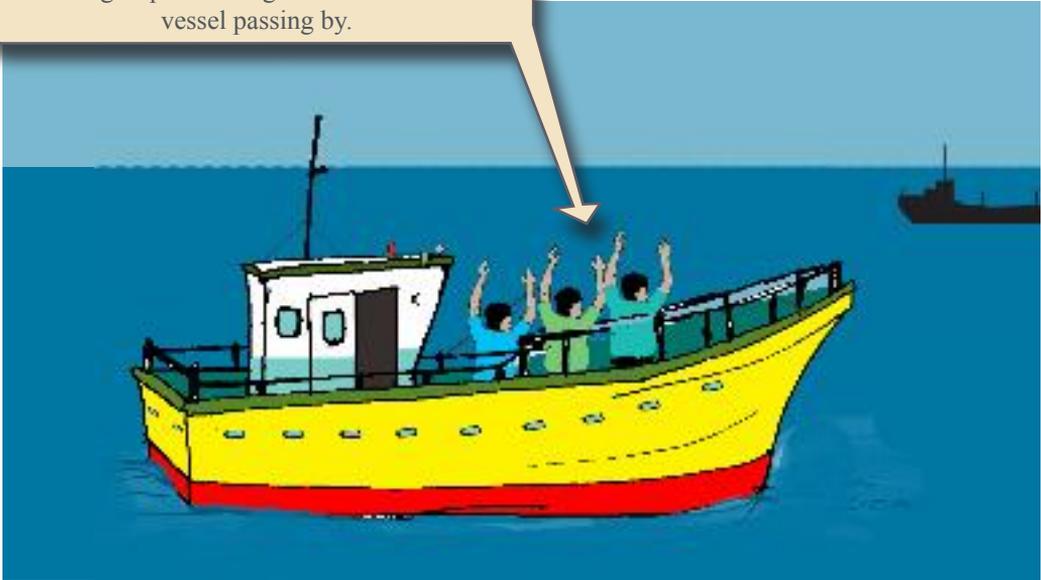
Slowly and repeatedly raise and lower your arms outstretched to each side when standing on the top of the wheelhouse or another visible place.

Make smoke and flame by burning oil soaked rags in a bucket floating a short distance away from the vessel on the end of a buoyant line so the rescue vessel can see your location.

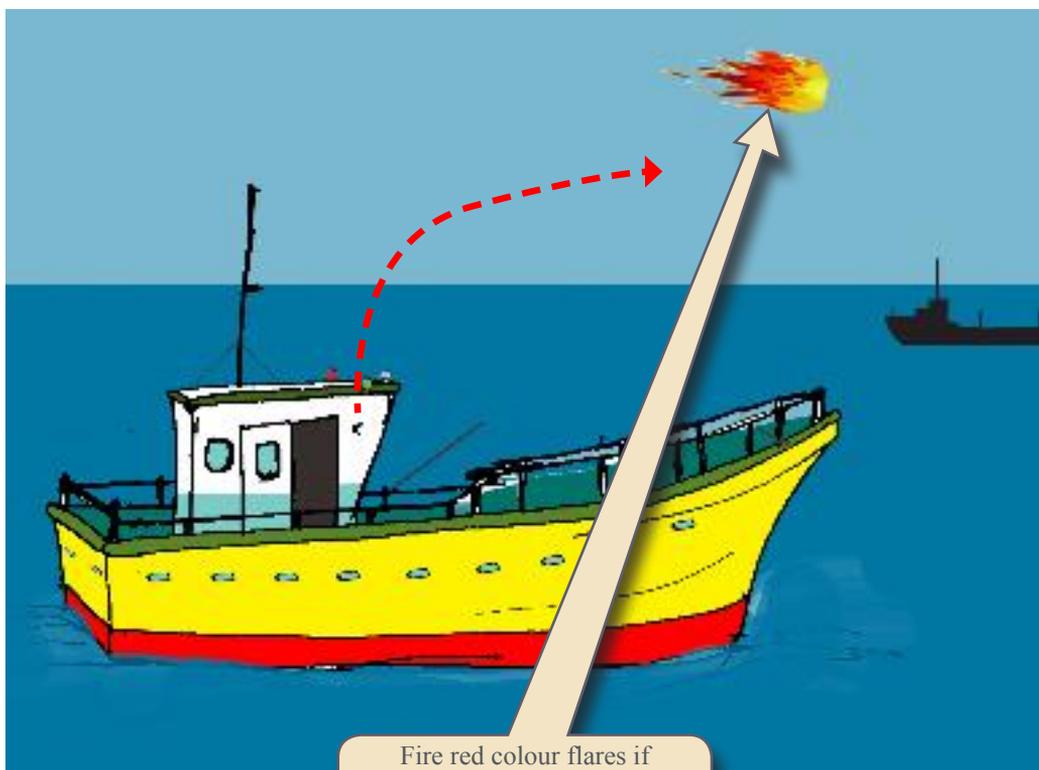


Reflect the sunlight continuously to the approaching vessel using a mirror or any other reflecting object.

Make a group shout to gather attention of the vessel passing by.



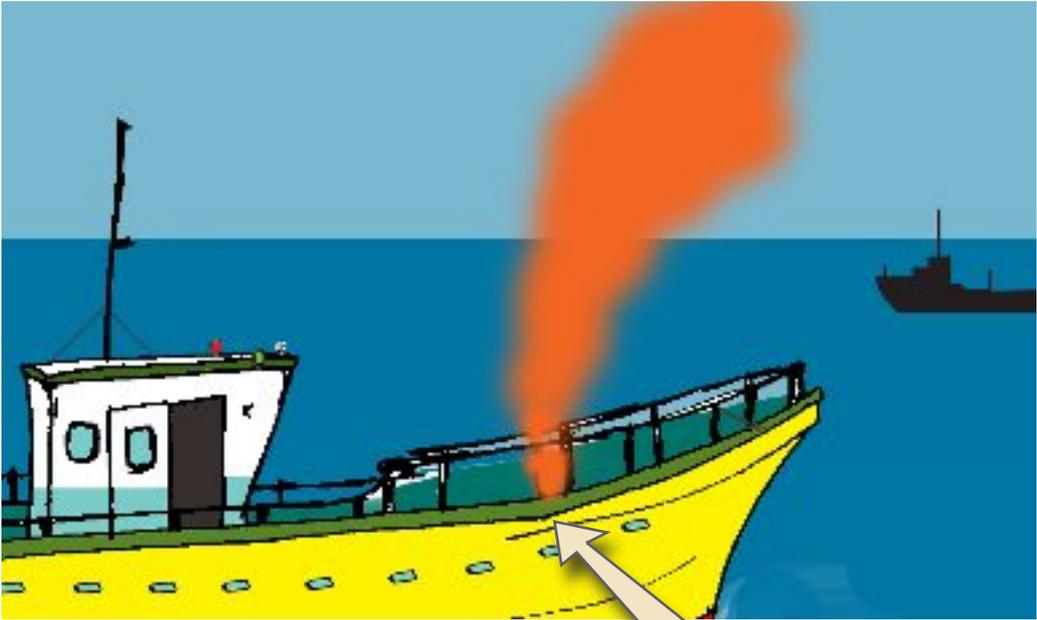
Hang a highly coloured canvas on the wheel house or at the most visible place.



Hang the flag “November” on the mast accompanied with the flag “Charlie”.



Blow your whistle continuously if the approaching vessel is within reach.



Use orange color smoke signals.



Flash your torch or the flash light directly to the wheel house of an approaching vessel. Use a signal consisting of the group •••—••• (SOS) in the Morse code.

- Do not allow the crew to drink sea water at any time. Remember 40 per cent of total deaths reported, were a result of drinking sea water.
- Do not expose to sea breeze and to sea water.
- Do not drink alcohol or the blood of birds.
- Avoid protein rich foods. It will dehydrate your body. Consume only carbohydrate and glucose rich foods.
- Remember that one liter of fresh water a day is enough for a person to survive in tropical areas.
- Collect rain water in clean containers and store for future use.
- Do not smoke as it tends to dehydrate your body.
- In a desperate situation, you can collect plankton to fight hunger by using a funnel made out of cloth. When you pull the cloth funnel through sea water for some time you can see plankton deposits at the cod end. A sleeve of a shirt can be used for this purpose. Remember that eating plankton or seaweed increases the requirement of fresh water for your body. The spinal fluids of fish, however, contain fresh water and may safely be sucked out and swallowed.
- Do not expect a quick rescue. It may take considerable length of time. Therefore be patient.
- If any other vessel can save only the crew, forget about the crippled vessel and save the crew.

Life rafts and life jackets

Sri Lankan fishing vessels are not geared with life rafts or buoyant apparatus on board for use in an emergency. Life jackets are very rarely seen onboard. Life jackets are essential to have onboard vessels. This equipment could save your life in an emergency situation, for example, where a vessel must be abandoned. A life jacket can enable a person to float for a considerable time. However, a long stay in sea water leads to dehydration weakness. In a desperate situation a life jacket is helpful to keep a person afloat until a rescue boat arrives.

A life raft is a marvelous piece of equipment to have onboard in case a vessel needs to be abandoned. Crew members can get into the life raft until the rescue boat arrives. Different capacities of life rafts are available in the market, one onboard a vessel should be capable of accommodating the full crew. A life raft is very useful in deep seas enabling crew to survive for weeks or more. In some cases crews have managed to survive in a life raft for 100 days or more until they were sighted and rescued. The effects of cold, seasickness, anxiety, thirst and hunger all combine to work against the will to survive. Case histories have shown that people with a strong will to survive have overcome seemingly impossible difficulties, it is most important for the raft leader to keep up spirits and to maintain confidence in eventual rescue.

The ideal life raft should consist of

- One buoyant rescue quoit (ring), attached to not less than 30 meters buoyant line.
- One safety knife of the non-folding type, with a buoyant handle and lanyard attached and stowed in a pocket on the exterior of the canopy near the point at which the painter is attached to the life raft. In addition, a life raft, shall be provided with a second safety knife, which need not be of the non-folding type.
- One buoyant bailer is a requirement for a life raft which is permitted to accommodate not more than 12 persons. However, for a life raft that has the capacity for 13 or more persons, the requirement is two buoyant bailers.
- Two sponges.
- Two approved sea-anchors, each with shock resistant hawser and tripping line, one being spare and the other permanently attached to the life raft in such a way that when the life raft inflates or is waterborne it will cause the life raft to lie oriented to the wind in the most stable manner. The strength of each sea anchor and its hawser and tripping line shall be adequate for all sea conditions. The sea anchor shall be fitted with a swivel at each end of the line and shall be of a type, which is unlikely to turn inside out between its shroud lines.
- Two buoyant paddles.
- Three tin openers. Safety knives containing special tin – operator blades are satisfactory for this requirement.
- One approved first-aid kit in a waterproof case capable of being closed tightly after use.
- One whistle or equivalent sound signal.
- Four rocket parachute flares complying with requirements.

- Six hand flares complying with requirements.
- Two buoyant smoke signals complying with requirements.
- One approved waterproof electric torch suitable for Morse signaling together with one spare set of batteries and one spare bulb in a waterproof container.
- An efficient radar reflector.
- One approved daylight signaling mirror with instructions on its use for signaling to ships and aircrafts.
- One copy of life-saving signals on a waterproof card or in a waterproof container.
- One set of approved fishing tackle.
- Approved food rations totaling not less than 10,000 Kilojoules for each person the life raft is permitted to accommodate; these rations shall be kept in airtight packaging and be stowed in a watertight container.
- Watertight receptacles containing a total of 1.5 liters of fresh water for each person the life raft is permitted to accommodate, of which 0.5 liters per person may be replaced by approved de-salting apparatus capable of producing an equal amount of fresh water in two days.
- One rustproof graduated drinking vessel.
- Six doses of anti-sea-sickness medicine and one sea-sickness bag for each person that the life raft is permitted to accommodate.
- Approved instructions on how to survive.
- Approved instructions for immediate action.
- Thermal protective aids complying with the requirements sufficient for 10 percent of the number of persons the life raft is permitted to accommodate or “two” whichever is greater.

Hazards of cold exposure (Survival techniques)

Cooling as a result of exposure to cold water is the most frequent cause of death at sea. Investigations of ship disasters have shown that the risk of dying from exposure to the cold is greater than the risk of drowning.

Knowledge about protection against exposure to the cold and treatment of persons who have been exposed to the cold is therefore of great importance. A person may get incapacitated due to the cold and then he/she may drown as a result.

The normal temperature of the human body is approximately 37°C. When the temperature rises to 40-41°C, it results in the person being in a state of delirium. If the temperature falls to 33°C or below, the person will become unconscious. At approximately 25°C, death occurs as the heart cannot beat at temperatures lower than 25°C.

When a person falls into cold water, it will immediately penetrate their clothes. The insulating layer of air in the clothes will be displaced by water and the skin will be strongly cooled. If a person falls in to water below 30°C the blood vessels of the skin will become narrow in an attempt to preserve heat, however, this action will no longer aid the victim to preserve body heat.

The body will try to produce more heat by tightening the muscles, as a result of this action, shivers will occur.

If the temperature continues to fall, shivering decreases and the person will no longer feel the cold to such a stronger degree, but will slowly go into a state of unconsciousness.

If a crew-member falls overboard into cold water, the person's limbs will be somewhat frozen and the person may experience paralysis causing him/her to be unable to hold on to or grasp any line etc that may be thrown to him/her in order that he/she be rescued.

If you accidentally fall into the water, there are certain things that you yourself can do in order to survive. If the possibility exists try to get out of the water as much as possible. Please keep in mind that water cools 5-6 times more than air, even at high wind velocities.

Hypothermia

Hypothermia is the condition of low body-core temperature. This results from prolonged heat loss due to immersion in cold water or insufficient clothing or covering when in cold weather, wet and windy conditions. It is also associated with physical exhaustion, hunger and anxiety or low morale. All survivors, especially those in an open craft, are likely to find themselves in these circumstances.

All survivors should know that hypothermia is a killer. Its onset can be rapid and if not recognized by the victim or other survivors, death is likely to follow within one hour. A victim of hypothermia often does not realize his condition so it is important that the signs of hypothermia are known. People have died of exposure without even complaining of the cold. Very early stages of hypothermia can be identified by the shivering of the body in order to produce more body heat. However if the exposure is severe, the body will be unable to conserve or produce enough heat. Body core temperature begins to fall further and when it is below 35°C the person is suffering from “hypothermia”. This can be identified by discomfort, tiredness, poor coordination, numbness, impaired speech; disorientation and mental confusion are well established in the victim. Although death may occur at any stage of hypothermia, when a person’s body temperature is below 30°C it is very difficult to be sure whether he is alive or dead. Death by hypothermia is then defined as a failure to revive on re-warming.

Hypothermia is not easily recognizable. A victim is exhausted, reluctant to do anything, difficult to reason with and has slowed mental and physical reactions. Sense of touch is poor, speech may be slurred, and lips, hands and feet may swell.

The only safe treatment for hypothermia is to shelter the victim from wet and wind conditions. Warm the person with extra clothing or coverings and by also warming the body through physical contact, such as having two people lie alongside him/her. On no account should the body or limbs be rubbed in an attempt to warm the victim. When survivors reach land, victims of hypothermia must not be placed close to external heat, such as a fire.

The following measures can be taken to treat a hypothermia:

- Prevent further heat loss due to evaporation or exposure.
- Place the victim next to other people for warmth. Huddling together under covers is a faster way to provide the victim with sufficient heat for his/her body.

- Avoid unnecessary physical contact with the person.
- When the victim is conscious, give him/her a warm sweet drink.
- Do not wrap in a blanket unless the air temperature is less than the water temperature or unless the blankets have been preheated. (Unheated blankets insulate the cold surface of the body surface from the source of external heat).
- Do not massage the body or limbs.
- Do not feed solids or liquids to an unconscious survivor.
- Do not give alcohol.

Immersion foot

Immersion foot is the result of a limb being exposed to the cold. It is usually caused by a limb being immersed in to cold water. The limb becomes chilled and wet, resulting in poor circulation.

The affected part is swollen, numb and painful, and later, the skin may become discolored or broken.

If immersion of the foot occurs, keep the victim warm, and make sure that effected part of the body is elevated. Warm the victim's body first, then the limb and do not massage the limb. Relieve the victim's pain. If ulcers or blisters occur, cover them with clean dressings.

Any shoes and socks should be removed at intervals, the feet dried and the legs and feet exercised as far as possible by making full knee and ankle movements.

If the feet begin to swell take off any footwear and keep the feet in dry clothing material or warm them in the laps of other survivors.

Sunburn

Crew-members whose duties are to be performed out in the open, such as lookouts, should take care to cover up as much of their skin as possible in order to prevent sunburn. They should keep out of the sun as much as possible.

Because of the conditions in a vessel or life raft, survivors are more susceptible to sunburn. This is likely to lead to blistering and runs the risk of infection.

Sunburn should be treated as a mild burn. Do not prick any blisters but apply antiseptic cream and cover.

Salt water boils and sores

These are likely to occur when a survivor's skin is saturated with salt water, such as when sitting in water in survival craft or vessel. Skin sodden with salt water is not resistant to infection in small cuts and scratches.

Do not squeeze boils or sores but cover with antiseptic cream and dressings and leave to heal.

Chafing sores are likely to form on buttocks after several days of being on a survival craft or vessel.

Bodily functions

All survivors should be made to urinate frequently so as to keep the bladder free of urine. If not it could have serious consequences as the kidneys will continue producing urine. There is no benefit from retaining urine in the bladder, as water cannot be restored from urine into the general circulation.

Survivors should not worry if they become constipated after the first couple of days. There is very little waste residue in the emergency rations in life raft.

Dehydration

The human body contains about 40 liters of water, of which approximately 25 liters are needed to maintain life. The normal amount of water lost by a resting person each day when neither food nor water is taken is about one liter. A person should therefore survive for about two weeks if there is no additional loss of water.

Accelerated water loss will, however, be caused by exertion, sweating, vomiting, diarrhoea, drinking urine, drinking sea water, or eating or sucking fish. Exertion should be avoided as far as possible. Particularly in the tropics, sweating should be minimized as far as possible. Vomiting must be avoided by taking seasickness tablets, as vomiting leads to the reduction of water content in the body.

Survivors must avoid any foodstuffs likely to cause diarrhoea because of the loss of body water involved. If affected, avoid food until recovered.

Urine contains poisonous waste materials dissolved in water. These waste products are of no use to the body. **Urine must not be drunk regardless of the desperate nature of the situation.**

Survivors should **not drink seawater as it increases dehydration**, which continues even after consumption. It could therefore prove to be a fatal mistake.

Survivors should **avoid the temptation to use seawater for dry and cracked lips.**

Delirium and mental disturbance

Delirium is most likely to be caused by drinking seawater. A delirious person will have delusions and may sometimes attempt to jump in to the water. It is impossible to reason with a delirious person; restraint may be required. Survivors suffering from exhaustion, injuries, etc. may become irrational or light headed. They should be humoured as much as possible, but carefully watched, for any sudden irrational action.

Hygiene

Survivors should be urged to keep their skin and mouth clean. The skin is likely to become infected from ingrained salt and dirt and salt covered clothing rubbing against it. Temperature permitting exposure to rain water, bathing and brief exposure to sun and fresh air are likely to be beneficial. If bathing, survivors should be attached to the survival craft by life lines and should not waste energy by swimming about. A look out should be kept for predatory fish.

Survivors are likely to find that their lips and tongues will become swollen and their lips may crack due to the small ration of water and the lack of saliva in the mouth. The inside of the mouth is likely to become furry and foul tasting.