SEAFARERS TRAINING CENTER INC

Proficiency in Personal Survival Techniques

MODEL OMI 1.19

In accordance with the International Agreement of Training, Certification and Watch keeping for Seafarers 1978 and its Code (STCW 1978 as amended)

SCOPE

This course aims to meet the mandatory minimum requirements for familiarization, basic safety training and instruction in accordance with Section A-VI/1 of STCW Code as amended

OBJECTIVE

This syllabus covers the requirements of the 1978 STCW Convention as amended and Chapter VI, Section A-VI/1. On meeting the minimum standard of competence in personal survival techniques, a trainee will be able to survive at sea in the event of ship abandonment.

The trainee will be able to:

- Don a lifejacket.
- Don and use an immersion suit.
- Safely jump from a height into the water.
- Right an inverted liferaft while wearing a lifejacket.
- Swim while wearing a lifejacket.
- Keep afloat without a lifejacket.
- Board a survival craft from ship and water while wearing a lifejacket.
- Take initial actions on boarding survival craft to enhance chance of survival.
- Stream a drogue or sea-anchor.
- Operate survival craft equipment.
- Operate location devices, including radio equipment.

ENTRY STANDARDS

This course in principally intended as basic training for seafarers employed or engaged in any capacity on board ship as part of the ship's complement with designated safety duties in operation of the ship. There are no particular educational requirements. All trainees must be certified by a doctor to be in good health.

COURSE CERTIFICATE OR DOCUMENT

On successful completion of the course and demonstration of competence, a document will be issued certifying that the holder has met the standard of competence specified in Table A-VI/1-1 of STCW 1978 amended.

COURSE INTAKE LIMITATION

The maximum number of trainees attending each session will be 25 persons.

STAFF REQUIREMENTS

The instructor shall have appropriate training in instructional techniques and training methods (STCW 1978 as amended, Section A-I/6, para. 7)

6.09 Instructor course.

TRAINING FACILITIES AND EQUIPMENT

A classroom facilities and an overhead projector are required for the lectures. In addition, a demonstration table measuring 3m by 1 m would be an advantage. Then making use of audiovisual material such as videos or slides, make sure the appropriate equipment is available.
The practical lessons require access to water, a swimming pool, The following items of equipment are required:

36 lifejackets
5 inflatable lifejackets
2 lifebuoys
1 rigid liferaft
2 twenty-person inflatable liferafts for wet drills
1 SART operating on 9 GHz frequency
Survival suits
Complete set of liferaft equipment
Complete set of lifeboat equipment
1 emergency position-indicating radio beacon (EPIRB) operating on 460 MHz
Shark repellent
Safety/first-aid equipment comprising
- high-speed rescue boat [1]
- powerful search ights[2]
- light-reflecting badges[2]
- stretcher
- first-aid kit
- resuscitation kit with oxygen/suction unit

TEACHING AIDS

Instructor manual

Videos

V1 SOLAS Chapter III Part 1 – Preparing for abandonment
V2 SOLAS Chapter III Part 2 – Preparing by Lifeboat
V3 SOLAS Chapter III Part 3 – Preparing by Liferaft
V4 SOLAS Chapter III Part 4 – Preparing of Survival
V5 SOLAS Chapter III Part 5 – SOLAS Amendments
V6 Cold Water Casualty
V7 Man Overboard

TIMETABLE

COURSE OUTLINE

COURSE KNOWLEDGE, UNDERSTANDING ANPROFICIENCY	APPROXIMATE TIME (HOURS) LECTURES, DEMOSTRATIONS AND PRACTICAL EXCERCISES
1. INTRODUCTION, SAFETY AND SURVIVAL 12.1 Safety guidance 12.2 Principles of survival at sea 12.3 Definitions, survival craft and appliances 12.4 SOLAS training manual 15.5 Safety symbols	0.75
2. EMERGENCY SITUATIONS 2.1 Types of emergencies 2.2 Precautions 2.3 Fire provisions 2.4 Foundering 2.5 Crew expertise and initial familiarization 2.6 Muster list and emergency signals 2.7 Crew and emergency instructions 2.8 Extra equipment and survival 2.9 Abandoning ship - complications	1.50
3. EVACUATION 3.1 Abandoning ship – last resort 3.2 Personal preparation for abandoning ship 3.3 Need to prevent panic 3.4 Crew duties – launching survival craft 3.5 Crew duties to passengers 3.6 Master's orders to abandon ship 3.7 Means of survival	0.75
4. SURVIVAL CRAFT AND RESCUE BOATS 4.1 Lifeboats 4.2 Liferafts 4.3 Rescue boats	2.00
5. PERSONAL LIFE – SAVING APPLIANCES 5.1 Lifebuoys 5.2 Lifejackets 5.3 Immersion suits/anti-exposure suit 5.3 Thermal protective aids	0.75

COURSE	APPROXIMATE TIME (HOURS)
KNOWLEDGE, UNDERSTANDING ANPROFICIENCY	**LECTURES, DEMOSTRATIONS AND PRACTICAL EXCERCISES**
6. PERSONAL LIFE SAVING APPLIANCES (DEMOSTRATION) 6.1 Lifebuoys 6.2 Lifejackets 6.3 Immersion suits/anti-exposure suit 6.4 Thermal protective aids 6.5 Inflatable lifejacket 6.6 Personal survival without a lifejacket 6.7 Boarding survival craft	3.75
7. SURVIVAL AT SEA 7.1 Dangers to survivors 7.2 Best use survival craft facilities	0.75
8. EMERGENCY RADIO EQUIPMENT 8.1 Portable radio apparatus for survival craft 8.2 Emergency position-indicating radio beacons (EPIRB) 8.3 Search and rescue transponders (SART)	1.50
9. HELICOPTER ASSISTANCE (OPCIONAL) 9.1 Communicating with the helicopter 9.2 Evacuation from ship and survival craft 9.3 Correct use helicopter harness	1.50
TOTAL	13.25
10. REVIEW AND FINAL ASSESSMENT	

COURSE TIMETABLE

	1st PERIOD (1.5 hours)	2nd PERIOD (1.5 hours)	3rd PERIOD (1.5 hours)	4th PERIOD (1.5 hours)
DAY 1	1. Introduction, safety and survival 2. Emergency situations	2. Emergency situations (continued) 3. Evacuation	4. survival craft and rescue boats	4. survival craft and rescue boats (continued) 5. Personal life-saving appliances
DAY 2	6. Personal life-saving appliances (demonstration)	6. Personal life-saving appliances (demonstration continued)	6. Personal life-saving appliances (demonstration continued) 7. survival at sea	8. emergency radio equipment
DAY 3	9. Helicopter assistance (optional)	10. review and final assessment		

MANUAL

CHAPTER 1: INTRODUCTION

1. General:

The International Treaty on Norms of Formation, Degree and Guard for the sailors, 1978 was adopted by the International Marine Organization in 1978. This Agreement didn't go into effect until 1984 due to a slow process of acceptance by the state members in the Convention. In 1992, the Agreement was ratified by many governments (Administrations). The state members in the convention recognized that it was necessary to do a complete revision, and this was quickly fulfilled. The Agreement was reviewed and was signed in April of 1995; this revision was called STCW - 95 (for its initials in English for Standard of Training, Certification and Watchkeeping for Seafarers).

The revision to the Agreement STCW was necessary due to the great number of accidents that could be attributed to human factors; there was a big gap that still existed partly because of the competition for the change of supplies of the crew and to the variable quality of the education and systems of training. Although this contained some good principles, it was not specific enough to be implemented properly. Mainly, it didn't provide enoug4 aid for the implementation and control on the part of the authorities. The Code STCW95 established certain minimum requirements for seafarers. The new requirements took effect on February 1 1997. The requirements of basic training apply, in particular, for those who begin their training after August 1 1998.

2. Requirements of the STCW:

The basic training applies for those members of the crew of registered ships, engaged in any function on that ship, as an elementary part of the operations, and with specific and designated obligations of security and prevention of the contamination. There are four main elements of basic formation that include:

- ✓ Techniques of personal survival
- ✓ Prevention and fight against fires

- ✓ Elementary first aid
- ✓ Personal security and social responsibility

3. Objective of the course:

The Objective of the Personal Survival Techniques Course is to enable the participant with the standard required as per Section A VI/ 1-1 of the Code STCW 95. At the end of the course the participant should:

- ✓ Know the types of urgent situation that can take place on board of a ship
- ✓ Know the types of life saving devices on a lifeboat and their use
- ✓ Know the survival boats and their use
- ✓ Know the location of the personal devices of rescue
- ✓ Know the principles related with survival at sea
- ✓ Know the importance of the formation exercises

CHAPTER 2: TYPES OF EMERGENCIES AND SITUATIONS THAT AN HAPPEN ON A SHIP

1. Types of urgencies:

Fire, collapse, or injuries are constant dangers on board a boat on the high seas. The difference between a marine urgency and a marine disaster is often determined by the organization training and teamwork of the crew. These three things don't happen by chance but through training.

The types of chances and the way to act such in as well as the procedures in case of surviving at the time of leaving the boat will be treated here.

Emergencies can be very different, and even the same emergency can present different characteristic as for its causes, its importance, the means of combating it and its consequences. There are emergencies that can happen when the ship is on the sea and also they can equally happen in port.

There are emergencies that have a component of speed that is to say, they happen quickly and it is necessary to make decisions quickly. Others have a slower process. There are occasions in that an emergency gets complicated because of outside influence or human behavior. The abandonment of a ship is for example, a very different operation in bad weather and decisions have to be made as to whether it is a good time or bad time to abandon.

2. Emergencies in port:

In an emergency in port it is possible to have attendance of the port services to reduce their effects, as to injuries to people and material damage.

- ✓ **Fire:** When the ship is moored to the wharf, it is very probable that any fire outbreak will be extinguished with the aid of the fire equipments onshore. When the ship is anchored, it is possible that it will also have the aid of tugboats to fight the fire, in addition to the services of its own firefighting crew.

- ✓ **Water:** When water penetrates in the interior of the ship, the case of a flood of the interior compartments of the ship can cause the ship to sink. When the ship is tied to the wharf, the sinking usually is not total, since the openwork of the ports allow that the ship leans back in the bottom without sinking completely, although this depends on the port and of the size of the ship.

- ✓ **Boarding**: is called when two ships have a more or les s violent in undesired contact. When the ship is in port, the collisions are usually produced by errors or accidents during the maneuvers. These collisions take place at very low speed. An important risk is when one or both ships are tankers and the heat generated by the friction of the plates of a ship against those of the other one, can be enough to set on fire the hydrocarbons gases and to produce great explosions.

- ✓ **Explosions:** when the ship transports merchandise that by the action of the fire can get to explode. The international code of dangerous merchandise indicates with great detail that other shipments are susceptible of explosion or big [¡re and gives norms for packing, labeling and stowing safely on board vessels.

- ✓ **Overflow of tanks:** it is an emergency that doesn't cause personal damages, but it does to the waters and the environment. If it is a tank ship loading a dry cargo ship with fuel, it can happen that it continues putting products when the tank already has been filled, allowing the fuel to overflow and spill out into the sea. Sometimes it is possible to fully or at least partially contain the spill in cover by means of sand, wood, sacks, etc.

3. Emergencies in the sea:

- ✓ **Fire:** as in the port, it can start in any part of the ship due to numerous causes.

- ✓ **Water route:** if the quantity of water that enters on board is not properly controlled, the ship will sink without remedy. The water that enters can be controlled by trying to close or to plug the water route or draining to the sea the water that penetrated on both operations.

- ✓ **Run Aground**: this takes place when the ship strikes the sea bed or rocks unwittingly, mainly at its bottom.

- ✓ **Loss of the stability:** for failures in the calculations of stability or by the haste in loading the ship, or because load landslides have taken place for effects of the balances, the ship loses its capacity to correct itself after a balance. If it is not corrected, the ship ends up turning and it collapses. This is the main cause of disappearance of the ships and crews in the sea.

- ✓ **Man overboard**: this is always a risk, whether the ship is navigating at sea or is in port.

- ✓ **Others:** emergencies of industrial type that can be suffered on board: burns, injury due to incorrect handling of tools, suffocations due to entering confined spaces that are lacking in oxygen, freezing, excessive exposure in the sun, fractures of bones and dislocations, intoxications due to breathing toxic atmospheres, contact with corrosive liquids on parts of the body, nutritious and ethylic intoxications etc.

4. Man overboard:

It is said that Man overboard accident has taken place when one or more members of the crew have fallen involuntarily to the water, so much if the ship is navigating, as berthed. Man overboard accident is always serious. Often it is also serious. It is not strange that in addition it is also mortal.

The survival of a crew member involuntarily fallen to the water it is more difficult than in the event of a programmed abandonment, since normally he won't wear the lifejacket, nor will be crafts of survival, at least until the search and rescue is organized.

4.1. Prevention of Falling to the Water:

The best prevention is not to be a man overboard this means to constantly take a series of normal cautions that make the involuntary fall to the water impossible, or at least very difficult.

4.2. Being the ship on navigation:

Not coming closer to unprotected areas of the ship in solitaire, such as boat deck navs, in the termination of stem, the part more outpost of the row castle, and in all those areas or zones of bad weather in which there is a danger, by remote that it can seem, falling to the sea.

It must consider that apparently safe places of the ship, can become a trap when they are combined: an unfavorable balance; a slippery floor; an unsafe footwear; an instantaneous loss of balance; bad illumination, etc.

There have been cases in that a crew member of the engine room when finishing his guard and to refresh of the heat leaves to cover to take air and has never been seen more.

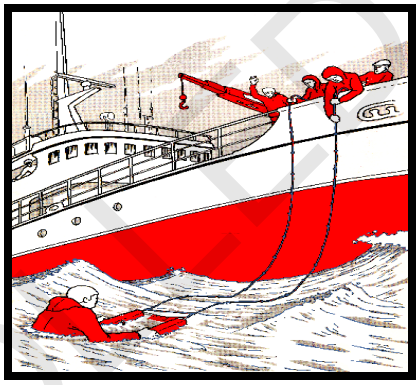
If it is necessary to come closer to work in some of the dangerous areas, or under not very favorable conditions, it is necessary to take all the cautions: to always count with at least another person that supervises the work from a safe place and that will be who give the alarm if the accident takes place.

4.3. Being the ship anchored or berthed:

Basically the same precautions, although in these cases it is very frequent to take advantage to make works of repair or maintenance in huts and flanks. Such works should never be made in solitaire, little as it is the risk that is believed to exist. When the ship is berthed with the flank to a wharf, the works in this flank are particularly dangerous, because the fall to the water can be preceded of a violent blow against elements of the wharf or the ship, in addition to possible crushing. Again, it should never be worked in **solitaire.**

4.4. Once happened the man overboard:

The crew member who sees a man overboard has the obligation of giving the alarm in an intelligent and effective form. In addition to this, he muss makes an effort shortly not losing the view of the place where the man fell. The alarm is intelligent when it gives information. The procedure that is to say, in high voice, with all the forces to alert the greater number of people and in particular the official who is on duty in the bridge.



4.5. Man overboard on... (Starboard or port):

The alarm is effective when it arrives quickly to the official on duty of the ship and this one initiates the maneuver and the procedure of man overboard.

The shipwreck's life can depend on not loosing him of view. From the moment he falls into the water until the ship begins its evolution, minutes can pass before the ship can travel miles. A man is a small point in the sea that the ship has to locate and gather. He is vital to be able to lead the ship securely in search of the man who is in the water.

Even if the man has not been seen fall, but the alarm of man overboard is heard it is necessary to proceed with speed and to communicate to the bridge, by telephone or in person, of the happened accident, but immediately and with effectiveness, that is to say, having the security that the alarm has been heard and understood.

But the previous thing is not enough. At the moment of giving the alarm, as much the one that or those that has seen the man fall, as well as the crew members that arrive, they must send to the water hoops, great life-guards, plank, or empty (but closed) barrels that are in the proximities, even life vests or termic suits. The life of the man has more guarantees of being saved if it has those important aids.

4.6. Attitude of the Victim:

The crew member that is in the water also has to take a series of cautions:

- ✓ Not to lose the moral, because soon they are going to look for him and he will be rescued. He will survive. .
- ✓ To watch if flotation devices have been thrown to him, and in this case, swim slowly with the les s effort toward the closer and use it. Once he have some aid, as a life saver hook or vest, look with more thoroughness to see if there is a better or additional device. As a barrel or thermal suit, and use it.
- ✓ Not to lose the time screaming, since nothing can be heard on board with the noise of the machine or because of the distance.
- ✓ To realize that the ship has to go away to be able to turn and to pick up him.
- ✓ To make signs with the arms or visible object, but without desperation. Sometimes it is enough to rise or slowly move the arms.
- ✓ To have patience, hope and courage.
- ✓ Not to exhaust himself wanting to swim desperately.
- ✓ To conserve forces. The rescue can delay.
- ✓ When he sees that they will rescue him, once the ship has approached and lowered the rescue boat keep conserving the calm. Allow to work those that come to rescue him. They know what they have to do. Not to worry about the causes of the fall o who was responsible of it. All that will be seen later, the first thing is to save the life.

- ✓ If it is at night or nobody has seen him fall, the procedure can be the same but more delayed. It is necessary much more calm and resistance. In some moment they will realize that he has disappeared and the ship will return exactly through the same route it took to leave. Try to float with the minimum effort, without movements, with hope, because the ship will come for him.

4.7. Maneuvers of search and rescue of man overboard:

The official on guard should begin this maneuver as soon as it is heard and quickly verified man overboard alarm Immediately he should inform the Captain. The general norm is to put all rudder in the same band to which the man fell and to stop the machine. However, this can be the best maneuver if it has lapsed certain time since he fell. In this case, one of the search maneuvers of man overboard will be undertaken, of which there are certain variants. In any event it is necessary to take note of the hour when the man fell to the water. All of them intend that the ship returns for the shipwreck in the opposed direction that it was when he fell and exactly for the same route. The maneuvers described below have shown their effectiveness of "Man overboard":

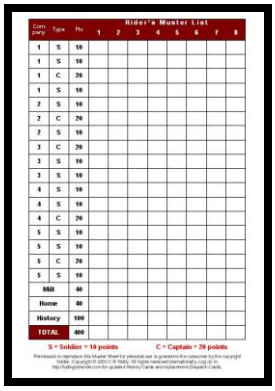
- ✓ **Simple Turn**
- ✓ **Williamson Turn**
- ✓ **Scharnow Turn**

5. Station bill or muster list, stations and urgency signals:

5.1. Station bid or muster list:

The starting point of the Survival on board and the training of survival is the Station Bill or Muster List. The Station Bill or Muster List is a list of tasks and/or functions and alarm signs in situations of urgency for each one of the crew members of the ship; this chart or lists of functions it is a requirement demanded by the international Agreement of Security of the Human Life in the Sea, as well as National regulations.

The Station Bill is prepared by the Official in charge of the Security on board the ship and signed by the Captain of the ship. Every time that a new captain ascends on board, one of his first duties is to prepare a new station bill. When a new crew member boards the ship, the crew member is assigned with a particular task and his name is put in the list; likewise, also the ship weighs anchor of port, he will have to conduct a shamble so that the new crew members become familiar with the procedures of emergency as well as the location of the different life saving devices. Copies of the station bill are located in places of common stay of the crew members like in their booths or lodgings, dining rooms, recess rooms, sailing bridge, machines room, etc.



5.2. Emergency signals:

The alarms are given on board to indicate the type of urgency. These alarms can either be given by the bell that it is listened within the ship or they can be emitted with the whistle of the ship that can be listened within the ship or in deck. The alarms are given by a combination of short or long sounds or the continuous ringing. The following alarms are typical examples that can be used on board.

- ✓ **Fire alarms**: continuous short sounds with the whistle of the ship and with the bell for a period not smaller to ten seconds.
- ✓ **Man overboard:** three long sounds with the whistle of the ship that will be repeated several times. This is the international sign of the letter O for "Oscar" that means "Man overboard". There is not equivalent sign for this alarm.
- ✓ **Abandonment of the ship:** six or more short sounds or followed by a long sound with the whistle of the ship and the same sign with the bell of the ship.

5.3. Urgency Instructions:

An accident or urgency like a fire will be quickly solved if the correct attitude is taken in the first minutes. However, if a small urgency is not treated immediately, it can be developed in such a way that attempts against the life and the lost of the ship. The correct initial attitude once discovered the urgency can be the difference between life and death. The importance of knowing what to do in urgency should not be deducted. The only form of becoming efficient in the answer is with the shambles and trainings. The shambles has three fundamental objectives: to know the survival equipment of the ship, to know its location and use and finally, to carry out a revision of all the equipment.

5.4. **Importance of the Training:**

The periodic exercises assure that all the crew members know how to use the survival equipment. They also serve so that the survival equipment is always available and under good conditions. It is vital to have:

a. A good organization of rescue with:
   - ✓ A good list of personal obligations.
   - ✓ A task for each crew member.
   - ✓ Some good general signs.

b. A good formation in rescue and survival for:
   - ✓ The effective putting in practices of the organization.
   - ✓ The correct flexibility of the organization so it can face all dangerous situations.

CHAPTER 3: ABANDONMENT OF A SHIP

1. Abandonment of the Ship:

The desperation and the distress can take us, in a situation of danger, to abandon our craft in a precipitate way and without adopting the minimum cautions of security.

- ✓ **Golden rule:** "the craft will be abandoned only when it offers less protection guarantees than any other means of survival, and never, if it is possible, without having emitted aid messages and adopting the preparatory basic measures of the abandonment."

The most important factor for the survival in the sea is determined by what is done when the abandoning the ship order is received or, if all communication is cut, when deciding for own initiative that the ship should be abandoned. The experience in the Pacific has demonstrated the advantage that the men have the shoes on when they abandon the ship. The shoes are a great disadvantage when swimming without the lifesaver vest, but the lack of them is lamentable once on land, in a desert. This is also seen in the case of being saved by a naval craft in tropical areas. The plates of the cover warm up so much by the sun that it is not possible to walk barefoot on them.

2. Preparation for the abandonment:

- ✓ The loss of heat in the water decreases a lot if one wears a lot of c1othes. If you foresee to have to be to the water, it can be vital to get dressed with more c1othes.
- ✓ In all moment the lifesaver vest should be worn.
- ✓ Emission of aid message, according to the radio-telephonic procedure, activation of the radio beacon
- ✓ Stop the ship (if the raft is thrown into the water, it could be lost).
- ✓ Have ready rafts, hoops, vests, and all the material that will be evacuated including the radio beacon.
- ✓ Cover up well.

- ✓ Replace heavier footwear for other lighter.
- ✓ Adjust the vest correctly.
- ✓ Embark directly, if it is possible, in the raft. After embarking all the material and checking that the whole crew is there, cut the retainer that ties us to the craft.
- ✓ If it is necessary to jump into the water, do it standing, holding the vest, covering the nose and mouth.
- ✓ Distribute pills against the sickness.
- ✓ Steady all the material.
- ✓ Drain and dry the interior of the raft.
- ✓ Organize guard turns.
- ✓ To distribute all the weigh in the raft to avoid tipping over.
- ✓ Release the floating anchor.

3. Steps to the abandonment of the Ship:

To abandon the ship, it is necessary to wait that it stops; trying to use a boat lifeboat, only jumping in case it is impossible to get down with a hose, rope, net or stairs. Remember the to put on the gloves and to lower taking alternately with each hand and not slipping and burning the hands; they will be needed later. If it is necessary to jump, to cross the arms strongly against the lifesaving vest and after choosing a c1ear place below, jump with legs extended legs and the feet together. If you have to throw yourself without a boat or raft been lowered (in a sea not totally calm) do it on the windward flank. In that way the wind won't push the ship to the drift against you. You have to be careful not to be taken again to the ship by the sea. To avoid this, jump by prow or stern, the one that is closer to the water.

If the helixes still work it jumps for the prow. Swim untiringly to move away from the ship surrounding the prow or the stem. Once the petroleum or other dangers are past, rest and swim or wade slowly, toward the nearest floating device or group of survivors. It is better to decide which way to go before throwing yourself to the water, because it is better seen from covert than from the water.

If there is fuel oil floating, it should be avoided in all the possible ways, maintaining the head high and the mouth closed. To swallow petroleum make sick and if it penetrates in the eyes it will be swollen for a few days. Nevertheless, serious consequences have rarely been suffered by the contact of the petroleum in the sea, nor the wounds gave indications of delay in healing themselves.

If it is necessary to jump from the ship over petroleum on fire, the burns can be avoided if one is good swimmer, doing the following procedure that has been used with success. Jump through the flames with the feet down; he/she swims then under the water all the possible time, then leave the water impelling yourself with a strong kick (like the one made when playing water polo) and giving a wide stroke at the same time to separate the flames in order to breathe over the tire; then dive and continue swimming under the water. This way it has been possible to cross 180 meters of petroleum burning. For this it is necessary to get rid of the lifesaver and other annoying garments.

Note: Logically every sea man will take advantage of any opportunity to learn how to swim. Nevertheless, to maintain the serenity is as important as to know how to swim. The lifesaving vest will sustain a man with all its clothes. Many have drowned because they lose serenity and moved in the water without any direction. Don't waste energy screaming or swimming unnecessarily. Swim or wade slowly toward a boat or raft or any floating device that can serve as support.

CHAPTER 4: CRAFTS OF SURVIVAL

1. General:

The lifeboats that can be boats, rafts or rescue boats. They provide:

- ✓ Shelter to the survivors taking them outside of the water.
- ✓ Protection against the wind, rain, waves and mainly of the cold, of the heat and of the sun.
- ✓ Easier localization for the search services and rescue.

- ✓ Water and food with the rations contained in the equipment of the boat.

2. Lifeboats:

The lifeboats, together with the lifesaver rafts, are the essential elements for a prolonged survival in the sea, especially when the duration of the survival, the climatologically inclemency or the presence of dangerous animal s makes intolerable a prolonged immersion in the water.

The lifeboats are a means of rescue more resistant than the lifesaving rafts. Nevertheless, they present the negative counterpart that their launching and putting in flotation the water is more difficult than in the case of the rafts, particularly if these operations should be carried out with bad time.

2.1. Building material:

The lifeboat can be:

- ✓ **Of fiber glass,** reinforced with polyester, with the stem, keel and metal sternpost.
- ✓ **Metallic**, of aluminum plates generally riveted.
- ✓ **Wooden,** that is much more used at the present time.

2.2. Form and propulsion:

Traditionally the lifeboats have been "open" boats, that is to say, without cover it

close. This type of boat protects, up to a certain point of the surge and wind, but it protects less of the extreme temperatures or hydrocarbon flames set afire on the sea. More recently, and following the requirements of the SOLAS, have appeared in the ships the type of "closed" lifeboat; that is to say, they are boats with a rigid and closed cover that covers it totally giving better protection to the persons. There is another type of lifeboat called "partially closed" that as it name indicates has a rigid covering in only a portion of its length. All the lifeboats can prepare oars for maneuver and propulsion. Most of the lifeboats have a diesel engine for a maneuver and more effective propulsion. Some lifeboats are designed to rig the sails, generally a "Latin" one and a jib.

2.3. Main elements of a lifeboat:

The integral elements of a lifeboat are, without the listing to be exhaustive, the following:

- ✓ Gunwale

- ✓ Anchor chain
- ✓ Escape hook
- ✓ Garland
- ✓ Addition to fix hood
- ✓ Buttonhole of Hood
- ✓ Cabin
- ✓ Fogonadura
- ✓ Equipment box
- ✓ Oar stone bench
- ✓ Lady
- ✓ Fluorescent tape
- ✓ Bomb of water
- ✓ Life rope
- ✓ Antenna support
- ✓ Bilge keel
- ✓ Bagpipe
- ✓ Varenga
- ✓ Bracket of the rudder
- ✓ Tank of water
- ✓ Cleat
- ✓ Lining
- ✓ Escape hook

2.4. Equipment of lifeboat:

The equipment that the lifeboats should take depends on the type of the ship, its size and navigation to that is dedicated. This equipment is well specified in the SOLAS agreement. The following listing is representative of the equipment that normally takes the merchant ships of sailing of height.

- ✓ Set of two floating oars for each stone bench

- ✓ Two floating spare oars
- ✓ A floating espadrille
- ✓ 1 ½ games of brackets or tellers attached to the boat by means of chains or ropes
- ✓ A boat hook
- ✓ Two spigots for each hole of drainage attached to the boat by chains or ropes A bailer and two cubes of stainless material
- ✓ A rudder attached to the boat and a cane
- ✓ Two axes, one in each end of the boat
- ✓ A lamp with enough oil for 12 hours
- ✓ Two boxes of appropriate matches in a tight recipient
- ✓ A mast with steel stay and galvanized
- ✓ A set of orange candles
- ✓ A compass inside its or with means of illumination
- ✓ A hung garland and tied around and on the outside of the boat lifeboat
- ✓ An floating anchor of appropriate dimensions
- ✓ Two buoys of large enough, one will be tied to the end of the prow of the lifeboat with gauze and cazonete so that it can be thrown and the other one will be firmly tied to the roda of the lifeboat and also ready to be used.
- ✓ A recipient that contains 4 Y2 liters of oil vegetable or animal. The recipient will be built in such a way that can be tied to the floating anchor
- ✓ A portion of food for each person that the boat can take. These portions will have to remain in tight containers that will be placed inside a watertight container.
- ✓ A watertight recipient that contains 3 liters of drinkable water for each crew member that can take the lifeboat.
- ✓ A desalination apparatus able to produce a liter of drinkable water by crew member A stainless ladle to drink
- ✓ Four flares with parachute able to give a brilliant red light at great height

- ✓ Six flares of hand of approved type of a brilliant red light
- ✓ Two floating fumigants devices of approved type (to be used by day)
- ✓ A first-aid kit of *first* aids inside a tight box, containing the following articles: 4 wet towels; an ounce of burn ointment; 30 adhesive band of ¾ inches x 3 inches (sterile); a sterile adhesive band of 2 inches x 5 yards; a clamp; a scissor; 8 ounces of suspension against the diarrhea; 10 disposable glasses to drink; ½ ounce of antiseptic liquid; ½ ounce of ammonia; 10 pills against the sickness; 10 pills of salt; 8 ounces of distilled water; 50 aspirins; 2 plastic spoons; an adhesive band of ½ inch and 5 yards
- ✓ A waterproof lantern adapted to signal in the Morse code, with a battery set and spare bulb inside a waterproof container
- ✓ A mirror of approved type appropriated to make signals during the day
- ✓ A pocket knife with a can opener. Two floating guides
- ✓ A manual bomb
- ✓ A whistle
- ✓ A fishing kit

2.5. Derricks:

The elements that hold a ship consisting of two derricks and all their apparels for each lifeboat. They assure and they allow the flotation of the lifeboat. The derricks have been evolving with the time, trying to fulfill their intention perfectly. At the present time, the pattern of more used derrick is called the "gravity derrick".

More recently platforms for launching lifeboats have appeared, designed only for the completely closed boats, by means of which the lifeboat, with their crew, arrive at the sea in free fall of prow from the ship.

So that they serve to their intention in the lifeboat they should be located on board so that:

- ✓ They are well fastened to avoid the damage due to the ship movements.

- ✓ They are accessible so that the crew members can embark quickly and safely.
- ✓ They should allow an easy, quick and sure launching of the boat to the water, keeping in mind the possibility of the existence of bad weather.

2.6. Gravity Derrick:

The system of the gravity davits is completely mechanical and it can operate with the heaviest boats. The derricks have a form so that they can lodge to the lifeboat in a species of cradle or support. The lowering of the boat is made by the weight of the own boat, and that is why they receive the name of "gravity". One man can carry out the maneuver of the lowering using a break handle. The process of hoisting the boat is made by a winch driven by an electric motor. In the case that electricity is not available it has a manual mechanism for the hoisting.

2.7. Embarkment to the lifeboat:

In general, this operation consists on two phases:

- ✓ The first one consists on taking the boat from its position in the derricks to the deck of boats.
- ✓ The next phase consists on taking the boat, but with its crew already in, from the deck of boats to the water.

2.8. Phase of the Lowering:

2.8.1. First Phase of the Lowering:

It will start when the order is given and it will never be done by own account without receiving the proper instructions from the person in charge of the operation of the abandonment of the ship. One person will be the one in charge of acting the break lever. Usually two persons embark initially to the boat to loosen ends, order the equipment and prepare the boat for the embarkment of the crew members.

The boat is slowly lowered until it is at the same height of the deck of boats, as even as it can be. In that moment two persons that are aboard will facilitate or help to the embankment of the rest of the crew members waiting at the deck of boats. This operation should be done safely and rapidly, trying to compensate as much as possible the difficulties that can give the possible inclination or the balance of the boat. People who embark the boat will remain seated and you holded firmly, with the hands inside the boat, never outside of it. If the ship takes passengers that should embark in that boat, it will be necessary to give them special care and even more if they are elderly persons or with difficulties.

2.8.2. Second Phase of the Lowering:

The crew members of the boat get ready for the lowering of it to the sea, reason why they have to release the corresponding lashings and retained. Once the person who controls the break receives the order of the lifeboat pattem, a slow but safe lowering will start. This person will have on mind the dominant conditions of the sea especially about the boat inclination and movement. When the boat flotes over the sea, the break will be lowered, and the ropes and hooks will be released automatically, what should be

facilitated by those in charge of it in a way that the apparels don't end up hitting people to the border of the boat. All the lashings that retain the boat to the ship will be released, with exception of the stoppers, at the proper moment. The crew member, who was lowering the boat by means of the derrick break, will embark the boat sliding on one of the lifesaving ropes, very carefully to avoid the friction between his. Hands and the ropes that can generate too much heat. If the boat is inclined or there is bad weather this operation can be very difficult, since it is possible that the boat is not on the vertical of the derricks, in this case, if the person slides on the lifesaving ropes he might not get to he boat. This operation has to be made with the maximum coordination between the personnel of the boat the ship with the intention to pick this person up.

The embarkment of the lifeboat will prohibit that anybody accommodates in the spaces left from the hooks to the prow or respectively to the stem. The crew members of the boat have to be ready to attend rapidly and diligence the instructions from the patron of the boat.

If the weather is good and the sea is calm, the operation of moorage of the lifeboat from the flank of the ship will not be difficult. When the order is given, with the engine on and the oars prepared, the stoppers will be released and the boat will start to separate from the ship.

3. Difficulties:

The operation can be more difficult if the ship has avante start at the moment that the boat

starts to float. In this case is essential to keep the prow stopper of the ship firmly, so that it can tow the boat until it reaches enough speed and it can move away from the ship.

In case the boat is lowered to the to the sea with bad weather, the operation can be easier and demands good calculation, decision and all the people's coordination that take part. In some cases you can end up using oil to calm the waves of the sea. The operation of

lowering the boat as well as the one of releasing the apparels should be synchronized with the movements of the boat and ship, so that the boat doesn't end up being hit against the hull of it. In this case the two apparels of the derricks, that is to say the ribbons and their hooks, they should come unfastened at the same time. The lowering should be made immediately and as fast as it can be done. A very old habit in this operation consists on trying that the boat touches the sea in the crest of a wave and it releases the ribbons and hooks when the boat is in the bosom of the other wave. In any event, when the boat is floating in the sea, it is tied to the ship by means of the stoppers, one toward the prow and the other toward stem. Both are important, but more important is the prow stopper that would be convenient if it is long. The intelligent use of the stoppers is good to maintain the ship close to the hull of the ship if we desires, or to ease off it. If the boat does not have an engine it is necessary to have special care so that the stem stopper and any other rope are far from the helix.

The prow stopper will never be released until it is sure that the boat is ready for moving away from the ship.

During the whole maneuver of lowering, the passengers or those crew members of the lifeboat that are not active in their maneuver, will remain sited in the inferior benches to give more visibility to people that take part and direct the maneuver, as well as to increase the stability of the boat.

In some ships, the person that handles the winch or the control of the lowering brake of the boat should occupy a position that prevents him to see the boat when it reaches the sea. In this case it is necessary that a perfect communication is established among the boat and the person that is in the winch, for what is necessary of the aid of a second person that occupies a position in the ship that is visible to both and establish a good code of signs so that different orders and positions of the boat during the maneuver can be clearly identified.

4. Lifesaving Rafts:

In the merchant ships, the rafts can be from 6 until 25 people's rafts. The number of people of each raft is marked on the cover and on the raft.

4.1. Means of Launching:

- ✓ **Stopper:** it maintains the raft close to the ship. If it sinks it should break. It is good

to inflate the raft manually.

- ✓ ***Hydrostatic release****:* it inflates the raft automatically when it has submerged.

4.2. Operation of Inflating:

- ✓ Locate the stopper that appears on the cover. Its other ends get to the mechanism of the gas cylinder. If the stopper is pulled the raft inflates next to the ship.
- ✓ The stopper should always be firm to the ship.
- ✓ The raft should never be thrown to the water before receiving the corresponding order. The lashings of the raft are released (they release automatically).
- ✓ Test to check if the stopper is firmly attached to the ship.
- ✓ Test that the raft will get to the water.
- ✓ The raft is thrown to the water.
- ✓ The stopper is pulled; maybe there is a lot to pull.
- ✓ It should be avoided that the raft touches hardly the flank of the ship.

4.3. Turning over:

Is unlikely that when filling out the raft its keel is in the sun. But if it is this way, it can be turned using the turning over ribbons. For this:

- ✓ Put your feet over the cylinder.
- ✓ Hold the turning over ribbons with the hands in the opposite end of the raft.
- ✓ Turn it back; taking advantage of the wind and sea.

4.4. In general:

- ✓ Don't throw the raft until the right moment
- ✓ Have it ready to throw
- ✓ Wait for the order
- ✓ The stopper will break if the ship when sinking tries to drag the raft; but in this case it should be tried by all possible means to cut the stopper before it breaks
- ✓ The whistle of the security valves can be heard when gas is allowed to leave after it is inflated or when the temperature increases. It is not important.

4.5. Embarkation to the lifesaver raft::

- ✓ If it is possible to embark being dry, that is to say, without touching the water. Climb and access.
- ✓ A void jumping. If it is necessary, only in the entrance, from less than 4.5 meters.
- ✓ The raft will be cut if we use in a bad way: metallic tools; hard shoes with ironwork; piercing objects; etc.
- ✓ It is difficult to embark from the water without help.
- ✓ Use of the garlands.
- ✓ Submerged support points.

- ✓ The wounded enter head first, with the back down, with a lot help and care.

4.6. Equipment of the Lifesaving raft:

The equipment should be in their respective place in the raft. If it is possible it should have another equipment in a table in the classroom. All the lifesaving equipment can be considered in some of the three big groups:

- ✓ General assistant equipment
- ✓ Help for the localization
- ✓ Ration of food and it water

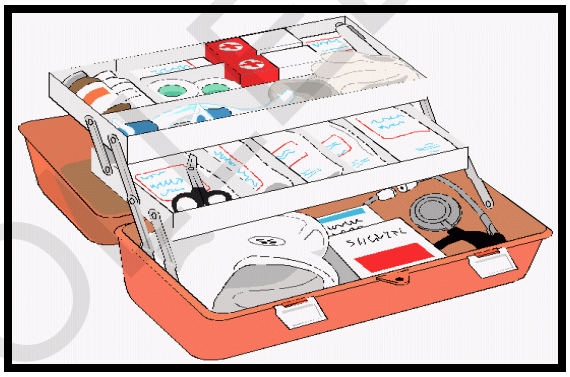
4.6.1. General Assistant Equipment:

Each one of the equipment elements is explained, relating them with the high-priority actions that should be executed with such equipment in the raft.

- ✓ **Knife:** it is next to the entrance. It is of security. I use primordial: to Cut the stopper to be released of the ship.

- ✓ **Zaguales (oars):** so that the raft can move away from the ship; to maneuver to pick up survivors; to reunite with other rafts.
- ✓ **Pills against the Sickness:** they are in the package of survival.
- ✓ **Inflating Bomb**: to inflate the floor ifit is necessary and to stuff the cameras of the flotation.
- ✓ **A Small Hoop and End**: it is next to a flotation camera. Easy to use in the rescue of surviving.

- ✓ **Bailer and Sponges**: to drain the water and to dry the interior of the raft.
- ✓ **Package Of Survival**: it Contains elements that are not usually used immediately: useful small, ration, localization equipment, book with instructions to survive.
- ✓ **First-aid kit:** F or the treatment in the wounded.
- ✓ **Equipment to Repair Jabs**: Detection, localization and repair of the jab. Inflating Gas Carbon dioxide (C02) or a mixture of this gas with Nitrogen.



4.6.2. Aids for the localization:

- ✓ Hand lamp
- ✓ Signal mirrors
- ✓ Pyrotechnic signs

- ✓ Class and type of pyrotechnic signs
- ✓ Portable radio. It doesn't belong to the equipment of the raft, but it is brought from the bridge

4.6.3. Portions of foods and water:

- ✓ 1.5 liters of water per person
- ✓ 12 ounces food, that doesn't make you thirst, per person; 6 ounces per person of candies.

4.7. Rescue of a crew member to the drift:

If a member of the crew is to the drift and far from the raft:

- ✓ If the raft oars, go after picking the floating anchor. Throw him a floating rope with a buoy at the end.

If it far from the ship sends somebody to the rescue, adopting the following cautions: he should be tied to the raft by a rope, swim to leeward of the raft, and if it is possible, equipped with a neoprene or survival suit.

5. Rescue boat:

- ✓ The length should be above 3.8. m and under 8.5 m.
- ✓ It should be able to take to 5 seated people and a lying one.
- ✓ It should be able to maneuver to speeds of up to 6 knots and to maintain this speed for 4 hrs.
- ✓ It should be able to maneuver in stirred up sea and to tow the biggest raft on board the ship to a speed of 2 knots.

CHAPTER 5: DEVICES OF PERSONAL SURVIVAL

1. General:

The lifesaving on board depends on the size of the ship, traffic duties and the area where it operates. The lifesaving equipment is composed of:

- ✓ **Flotation elements:** vests and lifesaver hoops
- ✓ **Protection elements**: immersion suits, thermal aid.
- ✓ **Signaling elements**: rockets, flares, fumigant signals
- ✓ **Crafts lifeboat**: rafts and lifeboats.

2. Lifevest:

The lifevest is one of the most important elements in the rescue equipment. But it is only good to maintain floating a person, but it doesn't protect from cold or heat. The vest is designed to:

- ✓ Maintain floating person that is totally dressed and wearing shoes.
- ✓ Make that an unconscious person, no matter how he fell to the sea, floats with the mouth and head outside of the water.

All of them:

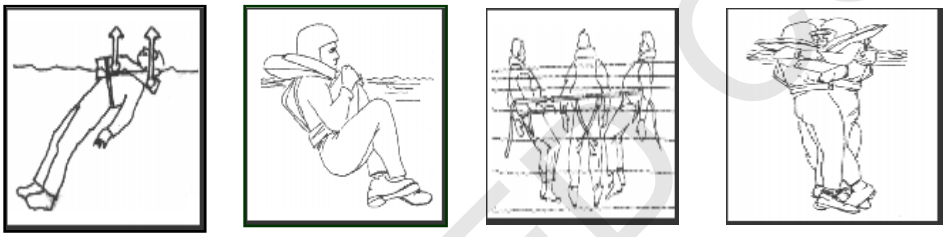
- Can be placed over the c10thes
- Can be tied to a rope or tow guide
- Allows that the person who to abandon the ship, jumps from a certain height without loosing the vest.
- Rave a whistle to get the attention
- Rave reflective ribbons or fringes.

2.1. Purpose and use of the Lifevest:

The vest can seem and feel that it is too bulky and uncomfortable to wear, but it is essential to have it on before the abandonment of the ship. It should stay on until the shipwreck is picked up by the rescue services. It is impossible or very

difficult to place and adjust the lifevest in the water. If the abandonment takes place in cold waters the low temperature can weaken or make lose consciousness of the shipwreck. If he is not wearing a lifevest, he will drown for sure.

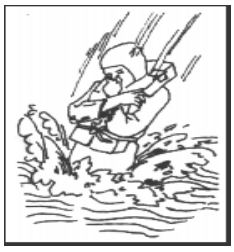
If the shipwreck wears correctly the vest, and if for any reason he can't help himself, the vest will maintain him floating.



2.2. Jumping into the Water:

A not well done jump can cause injuries or even the death to the shipwreck, or to other people, or to essential elements of the equipment. To make a good jump it is necessary:

- ✓ To cover the nose and mouth
- ✓ To hold the vest with the arms and elbows
- ✓ To have the feet together and straight, very straight.
- ✓ Before jumping, look to the water and a void to jump over other people or over floating debris or other obstacles.
- ✓ To jump taking a step ahead, with the parallel look to the horizon and forward.
- ✓ you should not jump on the boats, or over the hood of the rafts, unless it is absolutely necessary. You should never jump on the raft from more than 4.5 meters.



3. Lifesaving hoops:

- ✓ Not to have neither an external diameter bigger than 800rnm nor an internal diameter smaller than 400 mm.
- ✓ Built of a floating material.
- ✓ To be able to support not less than 14.5 Kg of iron in sweet water.
- ✓ To have a mass not inferior to 2.5 Kg
- ✓ To stop burning in two seconds if it is on flames.
- ✓ To be built so that it can resists a fall to the water from where it is packed over the corresponding flotation line to the condition of minimum openwork in water of sea or from a height of 30 meters.

4. Suit of Immersion:

- ✓ Can be unpacked and put on without aid in less than 2 minutes.
- ✓ It stops buming after being on fue after 2 seconds
- ✓ It covers the whole body but not the face.
- ✓ It has the necessary to reduce to the mínimum the air intake in the legs
- ✓ It doesn't allow the water to penetrate excessively when falling from a height of 4.5 m

5. Thermic aid:

- ✓ It is manufactured with waterproof material with thermo conductivity below 0.25 W and it will reduce the heath loss that a person can suffer by convection and evaporation.
- ✓ It has to be unpacked and put on without help in a lifeboat. . It will allows the user to take off it in the water in not more than 2 minutes.
- ✓ It protects in temperatures of the air among -30◦ C and + 20◦ C.

6. Lifeguard Signaling Equipment:

The signs are used to transmit a message. In nautical the signs should have a double purpose:

- ✓ To get the attention
- ✓ To indicate the existence of an emergency

6.1. Type of Signs:

There are simpler and more effective signals and of course of several types like they would be the radial ones, the sound ones or the visual ones. Inside the visual ones they exist: day, night and mixed. Some are regulated and other advisable but not demanded. Among the sound signaling elements we have the roar bombs that don't have application in the nautical, but the brass bells or the horns of fog do. Something very common it is the whistle that is attached to the life vests to indicate the position of the shipwrecks in the darkness and so that they stays together.

6.2. The mirror:

It is very useful when there is sun, because besides being very visible at great distance allows to transmit messages in morse code. Even when it would be very difficult to find a shipwreck that knows the morse you can emit signs of the type **MAYDAY** with a mirror as well with a lantern.

6.3. The self -ignition buoy:

It has a bulb that will allow to ubicate a crew member or fallen passenger at night. Therefore, it will only turn on when it gets in contact with the water and not before. It has a small electric bulb activated with common batteries or chemical

ones water activated. The duration of the light should be 45 minutes, the time necessary for the ship to make the "Man overboard" maneuvers. For obvious reasons this light should be close to the lifesaver hoop that will be throw to the water.

6.4. Pyrotechnic Signals:

The more known signals are the PYROTECHNIC ones. There are the exclusively diurnal ones and the ones with orange smoke. The exclusively diurnal are tins that ignite because of a coated wire inside the cover. Once it lits, it is thrown to the water and it releases dense orange smoke during for minutes that forms a very visible cloud in the horizon. It is harmless and the biggest danger is the stains that can be left on the clothes during the demonstrations. The nocturnal ones, as the red flare and the one with parachute can be used during day but they lose effectiveness in very clear days he/she can leave the coloring of the smoke in the clothes during the demonstrations. The night ones, as the flare of red hand and the rocket with parachute can be used by day but they lose effectiveness when there is a lot of light but they are extremely visible in the darkness.

6.5. The hand flare:

It is a tube of special plastic that contains chemical substances (powdered metallic magnesium and strontium nitrate) that produce an intense light when

ignited. They light up in one end due to a coated wire on the other side. The covers are distinguished in the darkness because the one that lights is marked. Once lit it should be holded with the arm extended, away from the craft pointing in the same direction of the wind, because in the event of that some incandescent ash comes off, it would produce serious burns

Once lit, the hand flare burns for 60 or 90 seconds depending on the flare type and it is very difficult to turn it off. In the event of falling to the water it can be picked up and it is possible that it stilllit. If not, it can be lit again with a lighter or with another flare before it extinguish. It is very hard to extinguish a hand flare, never try to do it with an extinguisher. The best way is to crush the lit part as in a cigarette.

They are practical and simple elements to use. The light can be seen at 30 Km in case of being in the bridge of the ship. In all cases is visible from the horizon, and in the case of a boat holding the flare at 1.50 mts over the water level, it could be seen from 8 to 10 Km.

6.6. The flare with parachute:

It is a device consisting of a tube made of aluminum of about 40 cm length by 40 mm diameter, which lodges a cover made of aluminum too, formed with the impeller motor in the interior part and the light with the parachute I the superior part.

To throw it the external tube it is holded with a hand which has been taken both cap s from the end. The shot will be produced in the direction of the arrow so it has to be pointed upwards to reach a maximum height or 45 degrees if there were low clouds. Keep in mind that if the shot is at les s than 45 degrees it can fall

lit. With the other hand you shoot the firing pin that produces the ignition of the interior wick that tires the rocket or motor that in a couple of seconds transmit the impulse to the cover that takes the flare to 300 m height. At the moment that starts to fall the flare emits a light from the cover and it is hanging from the cover that hangs from the parachute at the same time, producing an illumination of an intensity from 30 to 40.000 candles during more than 30 seconds.

6.7. Other Signs:

There are other types of signals that a1though they are not demanded by the regulations they are very effective. Among them the "pocket size mini triggers", of the size of a pencil that allows to throw mini flares to a height of 60 mt. and that illuminates for 5 seconds. There are also portable smoke signals.

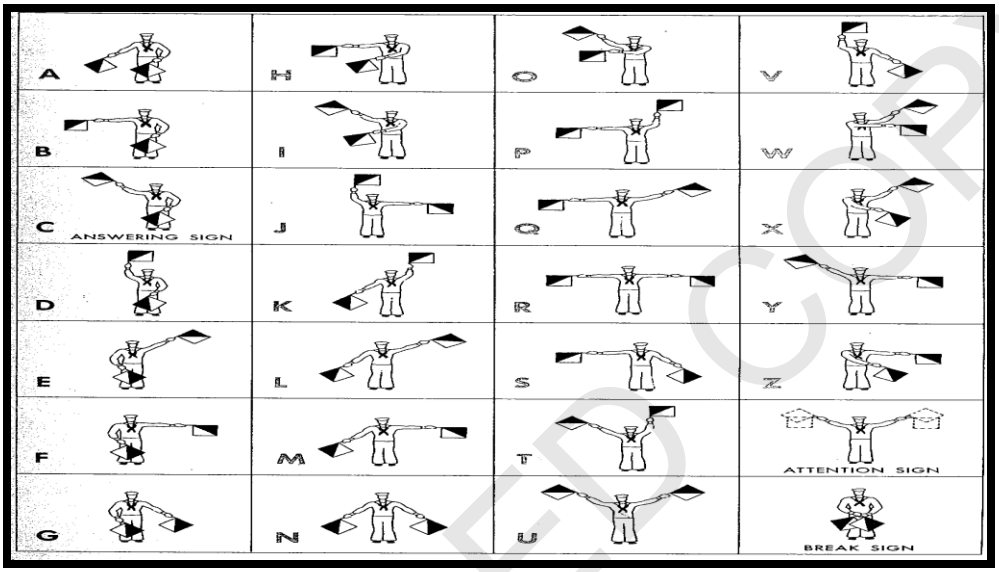
Little known around, but very effective are the signaling uguns that can [¡re stars or rockets with parachute.

Señales visuales de socorro pirotécnicas		
 **Humo naranja:** Señal de día	 **Cohete rojo:** Señal de día y de noche	 **Bengala roja:** Señal de día y de noche
Señales visuales de socorro no pirotécnicas		

 **Luz eléctrica:** Señal de noche	 **Bandera naranja:** Señal de día	 **Señal de brazos:** Si bien no es una VDS aprobada por la USCG, puede usarla para indicar que necesita ayuda en caso de no tener disponibles otras señales visuales de socorro.

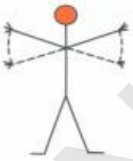
6.8. Safety of the pyrotechnic signaling:

The pyrotechnic elements of sailing are safe, reliable and they are designed to produce emergency signals. They should not be used as games, because although they are not explosive, the great power of illumination is possible with great temperatures that can produce serious injuries. In the case of a flare with parachute, this is worse because takes this power to distances and if they are used in an irresponsible way can lead to irreparable damages. The expiration date is a warranty of its operation but they don't lose the effectives. Never leave expirated flares in children's hands.



Disparo de cañón cada minuto.

Sonido continúo de una señal de niebla.



Movimientos lentos y repetidos de brazos

Señal de alarma radiotelefónica.

SOS

Señal emitida por radio telegrafía consistente en el grupo SOS del código Morse

Banderas "NC" del Código Internacional de Señales.

Bandera cuadra con una bola, u objeto análogo encima o debajo de ella.

CHAPTER 6: PERSONAL SURVIVAL

1. Difficulties for survival:

It is the capacity and the ability of remaining I live when one's life and the rest of the person's life it is threatened, that can happen in cases of: fire on board, sinking of the ship, to run aground, boarding and when there is no other alternative than abandoning the ship. Survival on the ea means to take the most advantage of what is available, improvise with the objective of prolonging life in adverse conditions. The egressions that originate the death of the shipwreck are:

- ✓ **Drowning or suffocation: i**t kills in minutes. The death by drowning is common during the shipwreck itself. There are certain factors that favor it: the weather at the sea and its temperature, the lack of lifevest, the bad design of them, and the weight of the clothes weared by the shipwreck.
- ✓ **Prolonged immersion in the sea:**
- ✓ **Exposition to the inclemencies:** (Cold and heath); the inclemency; kills in hours. The temperature of our environment is fundamental to be able to lengthen the time of survival. If the shipwreck is in the water, without possibility of ascending to a raft, he should try to keep the body the most tempered possible. The head, the trunk, the groin are areas to protect prioritarily, that is why is important to take coating clothes when abandoning the ship. If we dress lifevest we can adopt a posture that

diminishes the loss of heat as much as possible. We will maintain the head, included the nape, outside the water. The forearms crossed in the front of the trunk, keeping the knees cossed to cover the lower stomach.

- ✓ **Thirst:** it kills in days.
- ✓ **Hunger:** it kills in weeks.
- ✓ **Fear**: that aided by the inclemency, can produce death in hours.

2. How to proceed in a craft lifeboat:

Half of the battle it is won when you arrive safe and sound to the raft or boat lifeboat. The statistics demonstrate that almost half of the boats that were to the drift during more than 24 hours arrived to sure area in five days. It is an exception that a lifeboat is not rescued in the lapse of three weeks. If one has vision, knowledge and initiative, the probabilities of surviving are many. From this instant what is made will not only affect the own well-being and the own probabilities of surviving, but also those of the other ones.

Don't get excited to avoid the tireness. Don't sing neither scream, because this spends energy and a valuable humidity. If around a raft there are many shipwrecks, cling but do not try to climb to it. Help to move int the wounded. Even ifyou feel uncomfortable, try to seemjovial, and if it is not possible, remain still. Try to diminish the importance of the situation, because the survival depends on fulfilling the routine friendly and promptly. It is very important that everybody has a task even if it is insignificant. The only exceptions are serious wounded or very tired ones. The guards should be made with an strict routine. Guards like strict routine will be completed.

- ✓ Flotation stroke its objective is to offer the floatability, taking advantage of the air of the lungs. It requires a vertical and completely submerged position. The body should be like hanging inside the water. To take air, the legs are agitated softly and alternatively forward and backwards. The forearms are taken to the front and the head put up. In the nose the air is expelled and in the mouth is inspired, to return to the hanging position in the water. It is not necessary to renovate all the air in the lungs. These elementary ardiles can transform the initial feeling of panic to a first

success in front of adversity. We shouldn't miss the opportunity to practice them, by a small course or any day at the beach. If there are several survivors and they are floating with vests, they can help those who doesn't have, or the weaker, holding arms and forming a circle around the less favored ones. Besides, in this way they will be more visible to the rescue teams.

- ✓ **How to proceed if we don't have a lifeboat":** float around all the coast. Once in the water we shold vencer our natural instinct to panic and move away from it.

- ✓ **Without Lifevest**: a lifevest is important, but if we don't have him we will jeopardize our hability. If the footwear is heavy the shipwreck will take it off, although always keeping the socks. The shirt and the pants, since they are wet, can inflate and carry part of the weight of

  the body. Therefore, we can improve our floating, taking our pants of, making a knot in each leg around the ankle sone, then we put them over our heads and submerve violently forward. The waist will be oppressed under water letting the inflated legs to sustain us. Another possibility of improving the flotation is to buckle the shirt inside out around the neck, using the lap to catch some air. If the neck of the shirt is too comfortable, another solution is to tie the sleeves one to the other and surround the head when inflated, ounded with them the head.

3. Factors to survive in the sea depend on three factors:

- ✓ Knowledge,
- ✓ Equipment and
- ✓ Training.

Without some of these three requirements, with luck, you can save the situation, but it will be more difficult and the possibilities to do it, smaller. The moment to know all the relative to the emergency equipment, where it is and how to use it, it is previous to the abandoning the ship, not later. It is good to remember that the urgent actions are based largely on reactions meditated.

4. Exhibition to the elements in the sea:

In the raft or boat, the wet clothes will be twisted as soon as possible, but everything won't be removed unless the time is warm and dry, and the wind moderate. Undress and dry the clothes of to a garment per time.

Dedicate special attention to the feet. Take off the shoes and the socks, and dry them. If it is possible, put on dry socks. In this case have a pair of socks with with waterproof cover. The raincoat gives good dividends. The feet will stay dry and covered. If the craft is wet, leave the on shoes, but take off them if you notice that the feet become inflamed.

To be protected from the cold winds, the rain, the sea foam, or in the tropics, of the sun, lift a canvas or another material or to arm a tent with what you find. Do not take off too much c1othes: it protects against the sun bum that can happen in cloudy weather. The experience of men that remained in rafts for weeks before being rescued, indicates that in the tropics, a systematic preparation of the resistance to sun rays, before an emergency, lower the penuries of the exposition, being swimming, a good way to do it, and as told before is a true life insurance. The epidermis toasted by the sun is great help, but the clothes are essential during the day to protect against the solar reflection and during the night, of the cold. Not to take off too much clothes: it protects of the bums of the sun that can even happen in advance cloudy. The experience of men that you/they remained in rafts during weeks, until being possibly rescued, indicates that in the tropics, a systematic preparation of the resistance to the solar rays, previously to an emergency, it reduces the penuries of the exhibition, being the swimming, a good way to achieve it and, I eat it was already said, a true life insurance. The epidermis toasted by the sun is a great help, but the clothes is essential during the day to be protected of the solar splendor, and during the night, of the cold.

The eyes can be protected of the reflection of the sun in the water, protecting the slots. A piece of the eyes of the reflection of the sun can be protected in the water, improvising some type of glasses or protective with grooves. A gender piece tied on the nose will hide the horizon when one looks of front and it will reduce the splendor. The use

of a shirt or T -shirt and something to cover the head soaked from time to time in water, will diminish the effects of the sun.

To remain sat down during long whiles with the wet feet spreads to cause pain and numbness, followed by inflammation and after bladders or ulcers (the call foot of immersion"). To avoid it they will take the following cautions that have been effective:

- ✓ Maintain the drained craft and the driest thing possible.
- ✓ Try by all means that your feet are dry.
- ✓ Loosen the cords of the shoes, suspenders and c10thes that difficult the circulation in the legs.

To exercise and to frequently move the fingers of the feet; lift them to the height of the hips for a while and lay down over your back and keep them on the air for some minutes, once in a while. If the legs a fee are swollen, do not apply massage or heat, but keep them rise and as dry as possible. Take off your shoes if the inflammation is serious. As a consequence of the strict limitations of food and water, the evacuations, will become dry and hard, and the urine concentrated.

5. Metabolism of the Shipwreck:

Although the intestine has to be stimulated anyway, the constipation can not be avoided. The experience of a lot of survivors indicates that it doesn't bring consequences for the future. While the urine turns more concentrated tends to produce pain when it passes. Under these circumstances is good to eliminate it once or two times per day, since the ardor due to a major quantity. It has to be remembered that the alcohol is not good to calm the thirst and that is very dangerous to drink it in these cases. The smokers will find a sedative on tobacco, especially in long guards, but it doesn't possess any virtue and it increases thirst.

6. Drinking water in the sea:

The drinkable water will be the most urgent necessity. If the emergency craft is equipped with distill or chemical apparatus to remove the salt of the sea water. Y you have to learn before mounting it and make it work. Probably there will be some water in the ship and the equipment has to be prepared to collect rain. Use the cape of the anchor, sail or boat, or any other piece of canvas; having the precaution of eliminating the salt from the receptor surface and what we will do is on the first symptoms of rain, clean the sea water, to dissolve the ammont of salt deposited over it. This washing has to continue with the first raindrops, using a sponge or shirt. Once the surface is clean we collect the rain water.

The time to the drift will be estimated and the water will be rationed in accordance with the estimation. A man needs approximated half a liter per day to be fine, but can survive with less than a quarter of liter. A man in perfect health can live eight to twelve days without water. The water will last longer if it is in the mouth for a while, rinsing and gargling first and swallowing later.

If there is not water, don't eat, since the digestion consumes the humidity of the body. To conserve the water that there is in the body is almost as important as having water to drink. To avoid the excessive perspiration it will be necessary to avoid the unnecessary exercises. If it is hot take off (but won't throw) all the clothes except the head covers, shirt, pants and stockings that are necessary to avoid the burns of the sun. A tent will rise for protection against the sun, but it should not interrupt the breeze. Keep all the wet clothes with sea water so that the evaporation cools the body, but suspend this if it feels chills.

Don't drink urine; it contains toxic substances that increase the thirst vastly.

Don't drink sea water since it will increase the thirst and it will cause a strong sickness. However, relief can be obtained humidifying the lips and rinsing the mouth with sea water, and also humidifying the cookies with a small quantity of it. But it is necessary to remember that the sea water, ingested in any form in great quantities is very dangerous.

Rinse the clothes in the sea at least once a day to avoid accumulation of salt. Dry it at dusk to avoid in excessive cooling at night. In fresh time it maintains the dry clothes.

7. The food in the sea:

The food is not as important as the water. A man can subsist several weeks with water without food. However, food is ingested more, the better probabilities; therefore count the emergency portions previously and learn the best way to distribute them and to use them.

Distribute the food and the water at regular intervals. If there is not a clock to measure the time, they will be distributed at dawn, at noon and at dusk. Strict and permanent surveillance has to be made with the foods and water. A man of trust will be designated to take chare of the rationing and care of the food and water.

8. Fishing:

If you can fish you will have food and water. Make sure that the container that has the fishing set is in the raft. It contains complete instructions but they are worth of repeating. If you are able to fish, you won't starve or die of thirst. The fish meat, taken out from the open sea, it is good to eat cooked or raw; it is healthy and nutritious. Many tribes and some towns habitually eat with pleasure raw fish. In the case of having fished bigger quantity of the necessary one for the consumption, the meat will be chewed to extract the juice. To make this put a fish piece in the mouth, suck the juice and swallow it, spitting the pulp later. Make this when feeling thirsty, and have fish. The fish juice has a taste very similar to the juice of raw oysters or clams. It has been proven that it is healthy. A good method to extract the juice is the following one: take a piece without thorns, neither skin and cut it in small pieces, wrap it in a canvas leaving two long ends that are twisted strongly between two. Something of juice will drip. This has been experienced with success varied in different occasions and it is not entirely safe, but since it will have more than enough time, don't loose anything by trying.

CHAPTER 7: AID COMMUNICATIONS

1. General:

The procedures that are described next are obligatory in the Marine Mobile Service and they have for object to allow the exchange of messages among stations and to facilitate the effective reception of a message of danger. The frequencies for the signs, calls and aid traffic are: VHF Channel16 (156.8 Mhz) and in HalfWave 2.182 Khz.

2. Restrictions:

The duration of the communications in the aid channels, except in situation of danger, it will be limited to the minimum essential to establish the contact and to agree the work channel, and it should not exceed a minimum. It is prohibited all emission that can cause harmful interferences in the aid communications, it alarms, urgency or security and especially: the useless transmissions; the transmissions of false or deceiving signs; the transmissions of signs and of superfluous correspondence; the transmission of signs without identification.

3. Message to transmit:

Three levels of aid messages exist, depending on the graveness of the situation:

- ✓ Danger MAYDAY-MAYDAY-MAYDAY; it is good us to announce a serious and imminent danger. Use norms: it should only be used in the event of needing it aids immediate. For their emission the frequencies of 2.182 and Channel 16 of VHF are used. It is necessary to speak clear and slowly, pronouncing the numbers and letters one to one. If there is language problem, the International Code of Signs should be used. Content of the message: Name of the craft; Situation (Coordinated or delays and it distances); reason of the call of danger.

- ✓ Urgency PAN PAN; it is used to transmit messages that have relationship with the security of a craft or of people, although a serious or immediate danger doesn't exist. It has priority on all the communications, except those of danger.

- ✓ Security SECURITÉ-SECURITÉ-SECURITÉ; it is used to transmit messages relative to the security of the sailing or important meteorological warnings.

4. Use Rational Of These Signs:

It is necessary to clarify that these signs should be used appropriately, in order to that the help is the corresponding to the case. For example, if a mishap takes place in our motor, we cannot navigate for lack of wind, etc. and we want that the adequate aid, we will emit a message of " urgency " and not one of" danger ".

5. Radio Beacons:

The system COSP AS-SARSA T is the system used for search and rescue with the help of satellite, projected to locate the aid buoys. Their object is to lend help to all the organizations of the world dedicated to search operations and rescues when it happens a catastrophe, either in the sea, in the air or in earth. The technical requirements that should complete are the following ones:

- ✓ That they have capacity to transmit an aid alert in the band of 406 MHz
- ✓ That it is installed in an easily accessible place.
- ✓ That it is ready to be loosen manually and can be transported by a person to a craft of survival.
- ✓ That it can be released and to float if the ship sinks and it is activated automatically when is floating.

6. Recommendations on the use of radio Beacons:

It is recommended without dependence of the size of the ship, the acquisition of buoys of 406 MHz, they are but more precise than the ones of 121.5 MHz. When you have the occasion, remember that it is an effective system to be able to locate you in the event of emergency that is why so important to takes one on board, although it is not obligatory for their craft.

Carry out in appropriate maintenance that figures in the manual of the same one, The radio buoy should on1y be used in the event of emergency, since otherwise unnecessary immobilizations of the rescue means take place. The radio buoys are not substitutes of the traditional elements of transmission of aid messages (channel 16 of VHF and 2.182 KHz), if not that it is a complementary element. Don't forget that the radio buoys should be meetly registered to be easily identifiable in the event of emergency.

E.P.I.R.B. COSP AS-SARSA T