

Introduction

General Requirements

Unless expressly provided otherwise in the opinion of the Administration, all LSA's shall: Lifesaving is the act involving rescue, resuscitation and first aid. It often refers to aquatic rescue; moreover, it includes ice rescue, flood and river rescue, swimming

1. be constructed with proper workmanship and materials; offer emergency medical services. Its main aim is to provide relief to a person in a shallow body of water. Lifesaving also refers to sport where rescuers compete based on their ability to retrieve a person's body from a shallow body of water.
2. not be damaged in stowage throughout the air temperature range -30°C to +65°C;
3. if they are likely to be immersed in seawater during their use, operate through a temperature range of -20°C to +30°C;
4. where applicable, be rot-proof, corrosion-resistant, and not be unduly affected by fungal attack;
5. where exposed to sunlight, be resistant to deterioration;
6. be of a highly visible color on all parts where this will assist detection;
7. be fitted with retro-reflective material where it will assist in detection and in accordance with the recommendations of the Organization in A.658(16);
8. if they are to be used in a seaway, be capable of satisfactory operation in that environment;
9. be clearly marked with approval information including the Administration which issued the approval and any operational restrictions;
10. where applicable, be provided with electrical short circuit protection to prevent damage.

List of Life Saving Appliances

1. Lifebuoys and Life-jackets
2. Immersion suits, Anti-exposure suits and Thermal protective aids
3. Lifeboats
4. Life-rafts
5. Rescue boats
6. Rocket parachute flares
7. Hand flares
8. Buoyant smoke signals
9. Launching and embarkation appliances
10. Marine evacuation systems
11. Line-throwing appliances
12. General emergency alarm system
13. Public address system
14. IMO Symbols and Safety signs

LIFEBUOYS

[AEM-3a8]

1. Have an outer diameter of not more than 800 mm and an inner diameter of not less than 400 mm;
2. Be constructed of inherently buoyant material; it shall not depend upon rushes, cork shavings or granulated cork, any other loose granulated material or any air compartment which depends on inflation for buoyancy;
3. Be capable of supporting not less than 14.5 kg of iron in fresh water for a period of 24 hours;
4. Have a mass of not less than 2.5 kg;
5. Not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 seconds;
6. Be constructed to withstand a drop into the water from the height at which it is stowed above the waterline in the lightest sea-going condition or 30 m, whichever is the greater, without impairing either its operating capability or that of its attached components;
7. If it is intended to operate the quick release arrangement provided for the self-activated smoke signals and self-igniting lights,
8. Have a mass sufficient to operate the quick release arrangement;
9. Be fitted with a grabline not less than 9.5 mm in diameter and not less than 4 times the outside diameter of the body of the buoy in length. The grabline shall be secured at four equidistant points around the circumference of the buoy to form four equal loops.



Life-jackets:

An adult life-jacket shall be so constructed that :

1. shall not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 seconds.
2. at least 75% of persons, who are completely unfamiliar with the lifejacket, can correctly don it within a period of one min without assistance, guidance or prior demonstration;
3. after demonstration, all persons can correctly don it within a period of one minute without assistance;
4. it is clearly capable of being worn in only one way or, as far as is practicable, cannot be donned incorrectly;
5. it is comfortable to wear;
6. it allows the wearer to jump from a height of at least 4.5 m into the water without injury and without dislodging or damaging the lifejacket.
7. shall have buoyancy which is not reduced by more than 5% after 24h submersion in fresh water.
8. shall be fitted with a whistle firmly secured by a cord
9. lift the mouth of an exhausted or unconscious person not less than 120 mm clear of the water with the body inclined backwards at an angle of not less than 20° from the vertical position;
10. turn the body of an unconscious person in the water from any position to one where the mouth is clear of the water in not more than 5 s.
11. shall allow the person wearing it to swim a short distance and to board a survival craft.

A child lifejacket shall be constructed and perform the same as an adult lifejacket except as follows:

1. donning assistance is permitted for small children;
2. it shall only be required to lift the mouth of an exhausted or unconscious wearer clear of the water a distance appropriate to the size of the intended wearer;
3. assistance may be given to board a survival craft, but wearer mobility shall not be significantly reduced.

Inflatable lifejackets

[AEM-328]

A lifejacket which depends on inflation for buoyancy shall have not less than two separate compartments and comply with the all requirements for ordinary lifejacket, and shall:

1. inflate automatically on immersion, be provided with a device to permit inflation by a single
2. manual motion and be capable of being inflated by mouth;
3. in the event of loss of buoyancy in any one compartment be capable of complying with the all
4. requirements for ordinary lifejacket;
5. shall have buoyancy which is not reduced by more than 5% after 24h submersion in fresh
6. water after inflation by means of the automatic mechanism.



The immersion suit

[AEM-328]

The immersion suit shall be constructed with waterproof materials such that:

1. it can be unpacked and donned without assistance within 2 min, taking into account any associated clothing*, and a lifejacket to be worn in conjunction with a lifejacket;
2. it will not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 seconds;
3. it will cover the whole body with the exception of the face. Hands shall also be covered unless permanently attached gloves are provided;
4. it is provided with arrangements to minimize or reduce free air in the legs of the suit;
5. following a jump from a height of not less than 4.5 m into the water there is no undue ingress of water into the suit.

An immersion suit which has buoyancy and is designed to be worn without a lifejacket shall be fitted with a light and the whistle complying with the requirements for life-jackets. If the immersion suit is to be worn in conjunction with a lifejacket, the lifejacket shall be worn over the immersion suit. A person wearing such an immersion suit shall be able to don a lifejacket without assistance. In that case immersion suit shall permit the person wearing it:

1. to climb up and down a vertical ladder at least 5 m in length;
2. to perform normal duties associated with abandonment;
3. to jump from a height of not less than 4.5 m into the water without damaging or dislodging the immersion suit, or being injured;
4. to swim a short distance through the water and board a survival craft.

An immersion suit made of material with inherent insulation, when worn either on its own or with a lifejacket, if the immersion suit is to be worn in conjunction with a lifejacket, shall provide the wearer with sufficient thermal insulation, following one jump into the water from a height of 4.5 m, to ensure that the wearer's body core temperature does not fall more than 2°C after a period of 6h immersion in calm circulating water at a temperature of between 0°C and 2°C.

Thermal protective aids

A thermal protective aid shall be made of waterproof material having a thermal conductance of not more than $7800 \text{ W}/(\text{m}^2\cdot\text{K})$ and shall be so constructed that, when used to enclose a person, it shall reduce both the convective and evaporative heat loss from the wearer's body.

The thermal protective aid shall:

1. cover the whole body of persons of all sizes wearing a lifejacket with the exception of the face. Hands shall also be covered unless permanently attached gloves are provided;
2. be capable of being unpacked and easily donned without assistance in a survival craft or rescue boat;
3. permit the wearer to remove it in the water in not more than 2 min, if it impairs ability to swim.
4. The thermal protective aid shall function properly throughout an air temperature range -30°C to $+20^\circ\text{C}$.

Life boats

1. Lifeboat is one of the most important life-saving equipments onboard a ship, which is used at the time of extreme emergencies for abandoning a ship.
2. Lifeboat is a smaller rigid vessel, secured onboard into davits so that it can be launched over the side of the ship with least time and mechanical assistance possible for an early escape of the crew from the ship.
3. A lifeboat must carry all the equipments described under SOLAS and LSA codes, which are passed for the survival at sea. This includes rations, fresh water, first aid, compass, distress signalling equipments like rocket etc.
4. A life boat shall be constructed with non-combustible material rigid strong enough to with stand move stability and safely with enough free board with maximum capacity of 150 persons.
5. Must have sufficient fuel for running under fully loaded.
6. Must have arrangements for erecting the antennae of radar transponder
7. Have an electric flash light at not less than 50 flashes/min.



Life rafts

- a) Constructed with suitable materials that capable of withstanding exposure of 30 days in all sea conditions.
- b) Canopy to protect the persons inside
- c) Good insulation against heat and cold.
- d) Capable of withstanding repeated jumps
- e) Pleasing interior colour.
- f) Provided with one or two entrances for entering the raft with perfect closing arrangements.
- g) Atleast one viewing port



LINE-THROWING APPLIANCES

[AEM-328]

Every line-throwing appliance shall:

1. Be capable of throwing a line with reasonable accuracy;
2. Include not less than four projectiles each capable of carrying the line at least 230 m in calm weather;
3. Include not less than four lines each having a breaking strength of not less than 2 kN;
4. Have brief instructions or diagrams clearly illustrating the use of the line-throwing appliance.
5. The rocket, in the case of a pistol-fired rocket, or the assembly, in the case of an integral rocket and line, shall be contained in a water resistant casing. In addition, in the case of a pistol-fired rocket, the line and rockets together with the means of ignition shall be stowed in a container which provides protection from the weather.



BUOYANT SMOKE SIGNALS

[AEM-328]

The buoyant smoke signal shall:

1. Be contained in a water-resistant casing;
2. Not ignite explosively when used in accordance with the manufacturer's operating instructions
3. Have brief instructions or diagrams clearly illustrating the use of the buoyant smoke signal printed on its casing.
4. Emit smoke of a highly visible color at a uniform rate for a period of not less than 3 min when floating in calm water;
5. Not emit any flame during the entire smoke emission time;
6. Not be swamped in a seaway;
7. Continue to emit smoke when submerged in water for a period of 10 s under 100 mm of water.



Hand Flares

The hand flare shall:

1. Be contained in a water-resistant casing;
2. Have brief instructions or diagrams clearly illustrating the use of the hand flare printed on its casing;
3. Have a self-contained means of ignition; and
4. Be so designed as not to cause discomfort to the person holding the casing and not endanger the survival craft by burning or glowing residues when used in accordance with the manufacturer's operating instructions.
5. Burn with a bright red colour;
6. Burn uniformly with an average luminous intensity of not less than 15,000 cd;
7. Have a burning period of not less than 1 min; and
8. Continue to burn after having been immersed for a period of 10s under 100 mm of water.



IMO SYMBOLS & SAFETY SIGNS

ON SELF-ADHESIVE PHOTOLUMINESCENT STICKERS (150mm X 150mm)

 502.01 Fasten seat belts	 502.02 Secure hatches	 502.03 Start engine	 502.04 Lower lifeboat	 502.05 Lower liferaft	 502.06 Lower rescue boat
 502.08 Start water spray	 502.09 Start air supply	 502.10 Release gripes	 502.11 Lifeboat	 502.12 Rescue boat	 502.13 Liferaft
 502.15 Embarkation ladder	 502.16 Evacuation slide	 502.17 Lifebuoy	 502.18 Lifebuoy with line	 502.19 Lifebuoy with light	 502.20 Lifebuoy with light and smoke
 502.22 Child's lifejacket	 502.23 Immersion suit	 502.24 Survival craft portable radio	 502.25 EPRB	 502.26 Radar transponder	 502.27 Survival craft distress signal
 502.29 Line-throwing appliance	 502.30 Muster station (Assembly station)	 502.33	 502.34	 502.35 T.R.A. Thermal photo-locator aid	 MOOO1

First Aid

First aid is the assistance given to any person suffering a sudden illness to preserve life, prevent the condition from worsening, and/or promote recovery. It involves intervention in a serious condition prior to professional medical help, such as performing CPR while awaiting an ambulance, as well as the complete treatment of minor injuries, such as applying a plaster to a cut. First aid is generally performed by the lay person, but can also be provided by trained personnel, such as first aiders, providing basic levels of first aid, and others willing to do so from acquired knowledge.

Aims

The key aims of first aid can be summarised in three key points, sometimes called the '3 Ps':

1. **Preserve life:** The overriding aim of all medical care which includes first aid is to preserve life and minimize the threat of death.
2. **Prevent further harm:** Prevent further harm also sometimes called 'prevent worsening', or danger of further injury, this covers both external factors, such as weather, and internal factors, such as shock, and applying first aid techniques to prevent worsening, such as applying pressure to stop a bleed becoming dangerous.
3. **Promote recovery:** First aid also involves trying to start the recovery process. This may involve applying a plaster to a small wound.

First aid for drowning

Call 911 if someone is drowning

1. Get Help

- Notify a lifeguard, if one is close. If not, ask someone to call 911. If you are alone, follow

2. Move the Person

- Take the person out of the water.

3. Check for Breathing

- Place your ear next to the person's mouth and nose. Feel air on the cheek. Look to see if th

4. If the Person is Not Breathing, Check Pulse

- Check the person's pulse for 10 seconds.

5. If There is No Pulse, Start CPR

- Carefully place person on back.
- For an adult or child, place the heel of one hand on the center of the chest at the nipple hand on top of the other.
- For an infant, place two fingers on the breastbone.
- For an adult or child, press down about 2 inches. Make sure not to press on ribs. For an in inches. Make sure not to press on the end of the breastbone.
- Do 30 chest compressions, at the rate of 100 per minute or more. Let the chest rise complete
- Check to see if the person has started breathing.

6. Repeat if Person Is Still Not Breathing

- Now open the airway by tilting the head back and lifting the chin.
- Pinch the nose of the victim closed. Take a normal breath, cover the victim's mouth with and then give 2 one-second breaths as you watch for the chest to rise.
- Give 2 breaths followed by 30 chest compressions.
- Continue this cycle of 30 compressions and 2 breaths until the person starts breathing or e

Sunburns

Results and Causes-- Sunburn of survivors can be very serious and deaths have resulted from body have been burned as a result of scanty clothing. Exposure in an uncovered boat or raft can be under a cloudy sky. A well-tanned skin does not protect always against sunburn.

Moderate Sunburn--First-Aid Treatment-- First-aid treatment for sunburn is the same as for a first degree sunburn where the skin is reddened and very small blisters appear, use a burn ointment such as tannic acid ointment. Use zinc oxide ointment in cases where the skin has begun to crack and peel.

Symptoms and Treatment of Severe Sunburn--

For more severe burns where large blisters are present, put on boric acid ointment and cover with gauze. If ointment is not available, use vaseline. Be careful not to open any blisters that have not already opened. In cases of this kind and in cases where large areas of the body are moderately sunburned, the patient should be kept in bed and drinking water and other fluids should be plentifully given.

Eye Inflammation

[AEM-328]

Causes:

Eye inflammation often occurs among survivors. It may be caused by exposure to hot water; another kind called reflection blindness is caused by exposure to sunlight or snow, or ice. Eye inflammation is also caused by oil that may get in the eyes when survivors are covered with water.

Symptoms of Eye Inflammation:

The symptoms of eye inflammation are about the same whatever the cause. The eyes look oil stained and dirty. Eye inflammation causes the eyes to be red, bloodshot, and sometimes painful, and there is often a sticky crust on the lids. Looking at a bright light is painful to the victim.

Treatment of Eye Inflammation:

1. Use a 2 percent baking soda solution or a boric acid solution to wash out the eyes. Use the solution dropped in the eyes using an eye dropper or medicine dropper.
2. Cold compresses (ice bags or cloths wrung out of cold water) should be placed over the eyes out of every hour that the eyes are painful.
3. If you have a supply of clear, clean, mineral oil on hand, use a drop of it in each eye three times per day.
4. Have the victim wear dark glasses until all the inflammation is gone.

Frostbite and Prolonged Exposure to Cold

Frostbite-- Frostbite is the freezing of single parts of the body most often the nose and toes. Frostbitten hands or feet are usually very painful. Frozen ears, cheeks and nose. The victim usually does not realize they are frozen until someone notices the color change.

Thawing Out Frozen Parts-- In thawing out frozen parts of the body, never use direct heat. Pain and swelling result. The skin may peel off leaving a raw surface and there is a risk of infection.

First (chilblain), Second, and Third Degree Frostbite--In first-degree frostbite, the skin is a dark red color and the part is painful. In second-degree frostbite, the skin is white and blisters. In third-degree frostbite, the frozen part is pale, stiff, and brittle.

Treatment-- Treatment should be started by putting cold wet cloths on the frozen part. (The temperature of the water in which the cloths are soaked should be raised every few minutes) until it is luke-warm. If there are blisters, do not open them. When the skin color is normal again and apply boric acid ointment to the frozen areas. Pain from third-degree frostbite will, of course, not improve with treatment, and gangrene may develop. In. Cases like this need medical attention as soon as possible.

Conclusion

Life is a very precious thing to live in. Therefore it is very important to save it from any such disasters or threats to prevent the loss of human lives. Thus the topic explains the apparatus used to save a man's life from danger and threats.

Also the first aid points covers each and every step that must be carried out by a person in order to provide relief to an affected person in a short period of time. The first aid is a primary relief providing action in a short period of time. It doesn't mean that the whole problem is identified and solved. Secondary or other advanced processes may also follow after the first aid for better care and better protection.

References:

www.google.com/lifesavingappliances/wikipedia

Pdf's:

- Life saving appliances on ships- Norwegian maritime author
- Life saving appliances 1

www.google.com/firstaid/wikipedia

*Thank
you*

