



**\*MEO CLASS 4  
SAFETY(COSCPPOOL)ORAL  
PREPARATION FILE\*  
PART 1**

**ORAL QUESTION WITH ANSWER**

*THIS FILE IS JUST WILL HELPFULL A LOT TO PREPARE YOUR SELF IN FUNCTION 3 (SAFETY) COSCPPOOL ( CONTROLLING THE OPERATION OF SHIP AND CARE FOR PERSON ON BOARD AT OPERATIONAL LEVEL) ORAL. AND I HOPE YOU WILL SURE CLEAR THE MOST IMPORTANT FUNCTION IN CLASS 4 EXAM, Bcoz MOST OF THE STUDENT WILL NOT ABLE TO CLEAR THIS FUNCTION EASILY, I JUST GIVE YOU SOME IMPORTANT NOTES ON THIS FUNCTION. THIS FILE WILL INCLUDE MOST OF THE FACEBOOK QUESTION, QUESTION ASKED BY SURVEYOR MOSTLY, AND A PART FROM MY LITTLE KNOWLEDGE. THANKING YOU.*

**KUNJAL S. SHAH**

**30-MAR-14**

# \*MEO CLASS 4 SAFETY(COSCPPOOL)ORAL PREPARATION FILE\* PART 1

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Hello to my entire friend who are giving his MEO CLASS-4 ORAL EXAM from any MMD in India. This file is only for function-3 (safety) (**CONTROLLING THE OPERATION OF SHIP AND CARE FOR PERSON ON BOARD AT OPERATIONAL LEVEL**) which is the toughest subject to be clear in exam. I sail on "CONTAINER SHIP" so this file will include only question regarding container vessel and I will try to put some question about TANKER safety also.

So this file will be a most helpful to you, that's my promise. And I hope you will clear as soon as possible your oral in mainly safety. Most of the surveyor will ask you different type of question in safety, so a part from what I collected and from the file of "WASIM HUSSAIN" & from question asked by surveyor, I will try to give you answer.

## **NOTE:**

- **IN THIS FILE MAIN QUESTION WILL BE WRITTEN AS Q 1, Q 2, Q 3.....etc, AND ITS SUB QUESTION WILL BE Q 1a, Q 2b, Q 3c.....etc.**

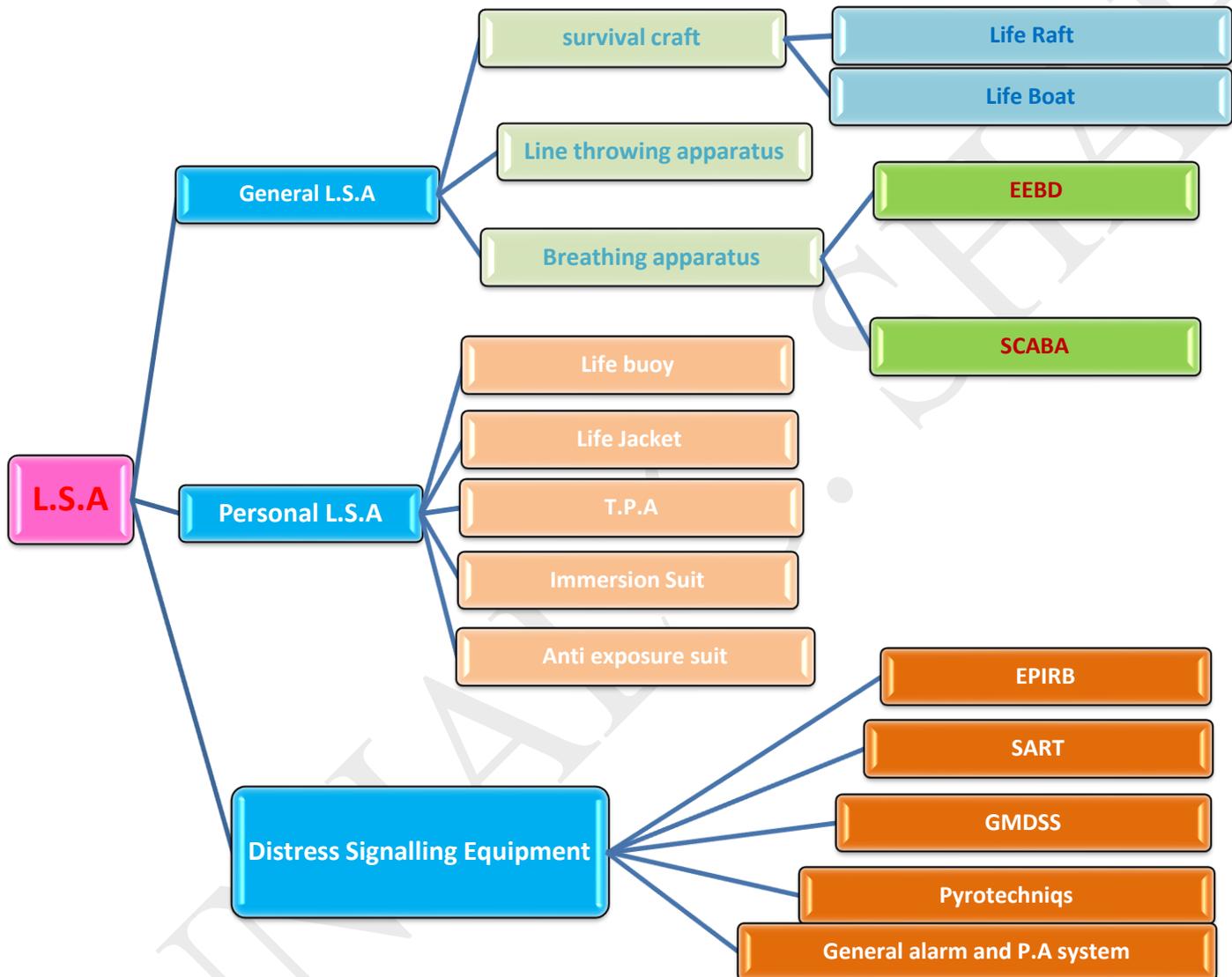
**PREPARED BY:**

**KUNJAL S. SHAH**

## "LIFE SAVING APPLIANCES"

Q 1: Tell me which are the categories in L.S.A ?

A 1:



- T.P.A:** Thermal Protective Aid  
**EEBD:** Emergency Escape Breathing Device  
**SCABA:** Self-Contained Air Breathing Apparatus  
**EPIRB:** Emergency Position Indicating Radio Beacon  
**SART:** Search And Rescue Transponder  
**GMDSS:** Global Maritime Distress Signaling System

**PERSONAL LIFE SAVING APPLIANCES FIGURE JUST FOR YOUR VIEW**

LIFE BUOY



SELF-IGNITING LIGHT



SELF- ACTIVATING SMOKE SIGNAL



RIGID LIFE JACKET



INFLATABLE LIFE JACKET



LIFE JACKET LIGHT



IMMERSION SUIT



ANTI EXPOSURE SUIT



THERMAL PROTECTIVE SUIT



**Q 2: Tell me about LIFE BUOYS including SOLAS regulation?**

**Q 2 a: How many life buoys in your ship and its location?**

**Q 2 b: According to solas which are the marking on life buoys?**

A 2, 2 a, 2 b: it's a PERSONAL L.S.A

To know how many life buoys and location of buoys in your ship plz check your "fire control and safety plan"

**SOLAS REGULATION:**

- **Carrying minimum capacity.** Ship length under 100 m = 8 no's  
100 m to 150 m = 10 no's  
150 m to 200 m = 12 no's  
Above 200 m = 14 no's
- **SIZE:** Inner diameter should **not be less than 400 mm or 16 inch**  
Outer diameter should **not be more than 800 mm or 32 inch**
- **WEIGHT:** total mass **not be less than 2.5 kg not be more than 6 kg**
- **MADE:** Inherently buoyant material
- **COLOUR:** internationally ORANGE in color, highly visible.
- **ACCESSORIES:**
  - 1) **Retro reflective taps** (Retro-reflective material is a material which reflects in the opposite direction a beam of light directed on it.)
  - 2) **Grab line:**
    - a) Its dia **not be less than 9.5 mm** and length of line **not be less than 4 times the outer dia of body in length.**
    - b) It must be secure at 4 equidistant space around the life buoys.
  - 3) **Self igniting light:**
    - a) White in colour
    - b) Capable of burning continues & its luminous intensity **not be less than 2 cd ( candela ) having min 50 and max 70 flashes per minute for a period of 2 hour, operated battery type.**
  - 4) **Buoyant life line:**
    - a) Non-kinking type
    - b) Dia not be less than 8 mm
    - c) Breaking strength not be less than 5 KN
  - 5) **Self- activating smoke signal:**
    - a) Capable of quick release from the height of 30 m.
    - b) Burning period at least 15 minute.
    - c) Smoke color is ORANGE.

- It is capable of supporting not less than 14.5 kg of iron in fresh water for a period of 24 hour.
  - **It shall not sustain burning or continues melting after being totally enveloped in a fire for a period of 2 sec.**
  - be constructed to withstand a drop into the water from the height at which it is stowed above the waterline in the lightest seagoing condition or 30 m, whichever is the greater, without impairing either its operating capability or that of its attached components.
  - Marking is “ **PORT OF REGISTRY**” of ship.
- =====

**Q 3: Tell me about LIFE JACKET including SOLAS regulation?**

**Q 3 a: How many life jacket in your ship and its location and its type?**

**Q 3 b: According to solas which are the marking on life jackets?**

**Q 3 c: After wear life jacket what is the meaning of H.E.L.P. ?**

**A 3, 3 a, 3 b, 3 c:** it's personal L.S.A

To know how many life jacket and location of jacket in your ship plz check your “fire control and safety plan”

**SOLAS REGULATION:**

- **Carrying minimum capacity.** Each person onboard must have its personal life jacket + extra life jacket for the watch keeper + 5% extra life jacket at Muster station or Embarkation station
- **TYPE: (1) inflatable (2) rigid**
- **MADE:** Non Flammable material or synthetic buoyant material
- **COLOUR:** internationally ORANGE in color, highly visible.
- **WORN:** it should be **donning within 1 min without any help from assistance. (at least 75% person)**, and it should be comfortable to wear
- **JUMP:** it is capable to allow jump from a **height of at least 4.5 m into water without injury of life jacket and personal.**
- **BUOYANCY:** it should **not be reduced by more than 5% after 24 hour submersion in fresh water.**
- **ACCESSORIES:**
  - 1) Retro reflective taps.
  - 2) Non conducting whistle secure with lanyard
  - 3) Manual igniting light:
    - c) White in color
    - d) Capable of burning continues & its luminous intensity not be less than 0.75 cd (candela) having min 50 and max 70 flashes per minute for a period of 8 hour.
- **It shall not sustain burning or continues melting after being totally enveloped in a fire for a period of 2 sec.**

• **MARKING:**

- a. Manufacture name
- b. Serial number
- c. Date of manufacture
- d. Weight capacity
- e. "FRONT" word printed

• **H.E.L.P. = HEAT ESCAPE LESSENING POSTURE**

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**Q 4: : Tell me about IMMERSION SUIT including SOLAS regulation?**

**Q 4 a: How many immersion suit in your ship and its location ?**

**Q 4 b: what is Hypothermia?**

**A 4, 4 a, 4 b: : it's personal L.S.A**

**To know how many immersion suit and location of suit in your ship plz check your "fire control and safety plan"**

**SOLAS REGULATION:**

- **Carrying minimum capacity.** Each person onboard must have its personal immersion suit + extra suit for the watch keeper.
- **TYPE: (1) insulated (2) Un-insulated (3) wearing with life jacket (4) have sufficient buoyancy.**
- **MADE:** Non Flammable and water proof material.
- **COLOUR:** internationally RED in color, highly visible.
- **WORN:** it should be Unpacked and **donning within 2 min without any help from assistance.**
- **JUMP:** it is capable to allow jump from a **height of at least 4.5 m into water without injury of life jacket and personal.**
- It will cover whole body, exception with face. Hand shall be covered unless permanently attached gloves are provided.
- **ACCESSORIES:**
  - 1) Retro reflective taps.
- **It shall not sustain burning or continues melting after being totally enveloped in a fire for a period of 2 sec.**
- **After wear it must be capable to normal work.**
- **Climb up and down a vertical ladder at least 5 m in length.**
- To swim a short distance through the water and board a survival craft.
- **It is used in cold weather, where the temp is at below freezing point.**
- **It will not allow to go down our body temp 2°C for a period of 6 hour immersion in calm circulating water at a temperature of between 0°C and 2°C.**

- A person in fresh water wearing either an immersion suit or an immersion suit with a lifejacket, shall be able to turn from a face-down to a face-up position in not more than 5 seconds.

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**Q 5: Tell me about ANTI-EXPOSURE SUIT including SOLAS regulation?**

**A 5:** : it's personal L.S.A

**To know how many Anti-exposure suit and location of suit in your ship plz check your "fire control and safety plan"**

**SOLAS REGULATION:**

- **MADE:** Non Flammable and water proof material.
- **COLOUR:** internationally ORANGE in color, highly visible.
- **WORN:** it should be Unpacked and **donning within 2 min without any help from assistance.**
- **JUMP:** it is capable to allow jump from a **height of at least 4.5 m into water without injury of life jacket and personal.**
- **covers the whole body with the exception of the head and hands and, where the Administration so permits, feet; gloves and a hood shall be provided in such a manner as to remain available for use with the anti-exposure suits;**
- **is equipped with a pocket for a portable VHF telephone;**
- **has a lateral field of vision of at least 120°.**
- **It shall not sustain burning or continues melting after being totally enveloped in a fire for a period of 2 sec.**
- After wear it must be capable to normal work.
- **Climb up and down a vertical ladder at least 5 m in length.**
- **to swim through the water at least 25 m and board a survival craft;**
- be so constructed, that when worn as marked, the suit continues to provide sufficient thermal protection following one jump into the water which totally submerges the wearer and shall ensure that when it is worn in calm circulating water at **a temperature of 5°C, the wearer's body core temperature does not fall at a rate of more than 1.5°C per hour, after the first 0.5 hours.**
- A person in fresh water wearing either an immersion suit or an immersion suit with a lifejacket, shall be able to turn from a face-down to a face-up position in not more than 5 seconds and be stable face-up.

**Q 6: Tell me about THERMAL PROTECTIVE AIDS including SOLAS regulation?**

**A 6:** it's personal L.S.A

To know how many Anti-exposure suit and location of suit in your ship plz check your "fire control and safety plan"

**SOLAS REGULATION:**

- **MADE:** Non Flammable and water proof 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.**
  - **thermal protective aid shall function properly throughout an air temperature range  $-30^\circ\text{C}$  to  $+20^\circ\text{C}$ .**
  - **COLOUR:** internationally ORANGE in color, highly visible.
  - **WORN:** permit the wearer to remove it in the water in not more than 2 min, if it impairs ability to swim.
  - **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;**
  - **be capable of being unpacked and easily donned without assistance in a survival craft or rescue boat.**
- =====

## PYROTECHNIQUES

### ROCKET PARACHUTE TYPE



### HAND FLARE TYPE



### BUOYANT SMOKE SIGNAL



**Q 7: Explain about flares or pyrotechniques? How many u have to carry along with survival craft?**

**A 7:**

There are main 3 types of pyrotechniques:

**Rocket parachute type. ( 4 per life boat & life raft )**

The rocket parachute flare shall:

- be contained in a **water-resistant casing**;
- **have brief instructions or diagrams clearly illustrating the use of the rocket parachute flare printed on its casing**;
- **have integral means of ignition**;
- be so designed as not to cause discomfort to the person holding the casing
- when used in accordance with the manufacturer's operating instructions.
- The rocket shall, when fired vertically, **reach an altitude of not less than 300 m**.
- At or near the top of its trajectory, the rocket shall eject a parachute flare, which shall burn with a **bright RED color**;
- burn uniformly with an average **luminous intensity of not less than 30,000 cd**;
- have a **burning period of not less than 40 s**;
- have a **rate of descent of not more than 5 m/s**; and not damage its parachute or attachments while **burning**.
- **Expire in 3 year from date of manufacture**.

**Hand Flare. ( 6 per life boat & life raft for F.G vessel for short voyage 3 pcs.)**

The hand flare shall:

- **be contained in a water-resistant casing**;
- have brief instructions or diagrams clearly illustrating the use of the hand flare printed on its casing;
- have a **self-contained means of ignition**;

- 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.
- burn with a **bright RED colour, 5-8 Nautical mile of visibility.**
- burn uniformly with an **average luminous intensity of not less than 15,000 cd;**
- have a **burning period of not less than 1 min;**
- **continue to burn after having been immersed for a period of 10s under 100 mm of water.**

### **Buoyant Smoke Signal**

The buoyant smoke signal shall:

- **be contained in a water-resistant casing;**
  - not ignite explosively when used in accordance with the manufacturer's operating instructions
  - **have brief instructions or diagrams clearly illustrating the use of the buoyant smoke signal printed on its casing.**
  - 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;**
  - not emit any flame during the entire smoke emission time;
  - **not be swamped in a seaway;**
  - **continue to emit smoke when submerged in water for a period of 10 s under 100 mm of water.**
- =====

### **Q 8: Explain about Walkie-Talkie or Two-way VHF radio telephone?**

**A 8:**

As per solas requirement vessel

**Between 300 to 500 GT= 2 no to be carried**

**Above 500 GT= 3 no to be carried.**

- it can be **continuously transmitting for 8 hrs and stand by for 24 hrs.**
- channel = 16 for ship to ship  
channel = 06 for ship to aircraft
- **Range of communication = 5 to 8 nautical mile**
- It shall highly visible in color
- It have ON/OFF visual indication
- **Water proof and buoyant**
- **Capable of single hand operation.**

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**Q 9: Explain about SART? Location of it? Functioning? Any indications where SART is kept?**

**A 9:**



- A search and rescue transponder (SART) is the main means for 'locating ships in distress or their survival craft.
- **As per SOLAS min 2 no required onboard.**
- SART has been made of Fiber reinforced plastic which can bear the prolonged sunlight and stays unaffected by the sea water or oil.
- **It is capable of self-floating free of survival craft.**
- **International ORANGE in color.**
- **SART is mounted in a mounting bracket which in turn is fixed to the bulkhead of ship.**
- **The SART operates in the 9GHz frequency band (i.e. 9.2 to 9.5 GHz) and generates a series of response signals on being interrogated by any ordinary 9 GHz ship borne 3-cm X-band radar or suitable airborne radar.**
- **SARTs can be either portable for use on board ship or carrying to survival craft and/or permanently installed in the survival craft.**
- **The SART is activated manually so that it will thereafter respond when interrogated.**
- When activated in a distress situation, a SART responds to radar interrogation by transmitting a signal which generates as a line of 12 blips code on a radar screen outward from the SART's position along its line of bearing.
- **Displayed on the Radar-Plan Position Indicator (PPI), the spacing between each pair of dots will be 0.6 nautical mile.**
- **As the search craft approach as to within about 1 nautical mile of the SART, the blip dots will change into wide arcs, and even become complete circles as the SART is closed and become continually triggered.**
- This is useful warning to the search craft to slow down.
- This distinctive and unique radar signal is easily recognized and is therefore much easier to spot than a signal echo such as from a radar reflector.

- The SART also provides a visual or audible indication of its correct operation and will also inform survivors when it is interrogated by radar.
  - An audible beep will sound every 2 seconds when the SART is interrogated by a radar and every 12 seconds when no radar in sight.
  - The SART should have sufficient battery capacity to operate in the standby condition for 96 hours followed by a minimum 8 hours of transmission while being interrogated by radar.
- =====

**Q 10: What is EPIRB? How does it activate? What is HRU? How does it operate?**



**A 10:**

- An EPIRB is a compact, buoyant, self-contained radio transmitter.
- **As per SOLAS min 1 no to be carried and as per D.G shipping requirement on INDIAN vessel min 2 no to be carried.**
- Battery storage life 5 year and weight 2 kg.
- **It is located on the bridge wing attached with H.R.U.**
- **Capable of floating free and is automatically activated in the event of the ship sinking.**
- Activated, it continuously emits a distinctive radio signal for a minimum of 48 hours.
- An **Emergency Position Indicating Radio Beacon** is used to alert search and rescue services in the event of an emergency.
- **it does this by transmitting a coded message on the 406.5 MHz distress frequency via satellite and earth stations to the nearest rescue co-ordination centre.**
- Some EPIRBs also have built-in GPS which enables the rescue services to accurately locate you to +/- 50 metres.
- **406 MHz EPIRBs work with the Cospas-Sarsat polar orbiting satellite system, giving true global coverage. There is an alert delay of about 45 minutes dependant on when the satellites come into view on the horizon.**
- The satellite can determine the position of your EPIRB to within 5km (3 miles). The coded message identifies the exact vessel to which the EPIRB is registered. This information allows the rescue services to eliminate false alerts and launch an appropriate rescue.

- **GPS-enabled EPIRBs have a built-in transmitter which will typically alert the rescue services within 3 minutes and to a positional accuracy of +/- 50 metres (updated every 20 minutes) given a clear view skywards.**
  - Some EPIRBs also have a secondary distress transmitter. This transmits on 121.5 MHz and is used for "homing" purposes. When the rescue services get close, this allows them to direction find on the signal. Some EPIRBs also have a high brightness LED flashing light that aids final visual location.
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**Q 11: What is GMDSS ? in which SOLAS chap it will come?**

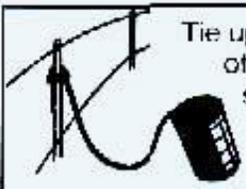
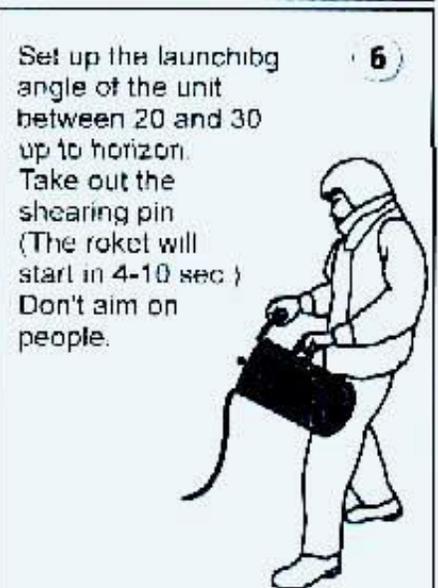
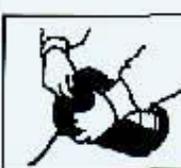
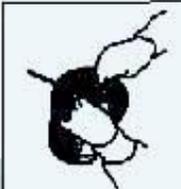
**A 11: GMDSS: GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM**

- It will come in solas chap 5 ( Safety of navigation )
  - **It is located on bridge.**
  - **It is main communication system of ship and all external communication through world is done by GMDSS.**
  - It can be operated by MASTER and OFFICER in charge.
  - **There are 3 sets of GMDSS.**
  - By using this we can Mail, Satellite call, etc done.
- =====

## GENERAL LIFE SAVING APPLIANCES

### LINE THROWING APPLIANCES



 <p>1 Unseal the cover</p>	 <p>5 Set up the shearing pin into the cocked position (turn up to 90°)</p>
 <p>2 Tie up the clear end of the line to any ship's structure</p>	 <p>6 Set up the launching angle of the unit between 20 and 30 up to horizon. Take out the shearing pin (The rocket will start in 4-10 sec.) Don't aim on people.</p>
 <p>3 Unscrew the plug</p>	
 <p>4 Screw in the ignition cartridge</p>	



**Q 12: Explain about Line throwing apparatus and tell me how much length it will cover?**

**Q 12 a: location of it?**

**A 12, 12 a:**

Every line-throwing appliance shall,

- **As per solas at least ONE pcs should be kept onboard.**
- It's have rope which will kept in a cylinder and when cylinder is propelled by pressing lever, rope will turned out from cylinder.
- **be capable of throwing a line with reasonable accuracy;**
- **include not less than four projectiles each capable of carrying the line at least 230 m in calm weather;**
- **include not less than four lines each having a breaking strength of not less than 2 kN;**
- **have brief instructions or diagrams clearly illustrating the use of the line-throwing appliance.**
- 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 this apparatus spring is **kept with high tension and when lever is pressed rope will comes out from cylinder.**
- **Direction of this YELLOW colored cylinder is explode in direction of wind and at angle of 45° to achieve max projectile path.**
- 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.
- **Kept on BRIDGE and with SAFETY PIN is provided to prevent accidental release of rope.**

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**BREATHING APPARATUS**

**Q 13: Tell about EEBD and its Location and minimum requirement onboard and how u will charge it and how ling you can be used?**

**Q 13 a: New type of EEBD with its procedure to wear?**

**Q 13 b: Maintenance on EEBD**

**A 13, 13 a, 13 b:**

**EEBD: Emergency Escape Breathing Device**

To know how many life jacket and location of jacket in your ship plz check your "fire control and safety plan"

**SOLAS REQUIREMENT:**

- **On cargo ship in accommodation min 2 & 1 spare**



- In ECR 1
- Near workshop 1
- At each deck or platform 1
- It must be situated ready for use and easily visible.
- EEBD is to be located in easily visible areas of machinery spaces, mostly in engine control room, workshop and near escape routes.
- Brief instruction for operation and usage is given with diagrams or pictures.



**EEBD includes the following:**

- **Cylinder:** It consists of small cylinder carrying 2.5 litre oxygen, along with a demand valve and low pressure alarm.
- **Hood & face piece:** Fresh air or oxygen comes inside the hood and the face piece, which are connected to the cylinder through a demand valve.
- **Clear window:** A clear window is provided in the face piece and is made up of flame resistant material for clear sighting and smooth escaping.
- **Pressure indicator:** to know the remaining pressure, and while you will charge to know the limit.
- **it shall not be use for fighting the fires, entering into oxygen deficient voids or tanks, or worn by fire fighters.**
- **It shall have service duration of at least 10 min.**
- EEBD oxygen cylinder will charged with **BREATHING AIR COMPRESSOR** and suitable adopter will be used to charge it, otherwise it may be charged by External Authority in Port.

**Maintenance on EEBD**

- Check indicator needle is in green zone, thus ensuring no leak has taken place. (Monthly)
- Keep the device case clean. (Monthly)
- Check and record expiry dates. Typically EEBD is valid for 15 years.
- Do not open EEBD. Use training piece for training purpose.

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**Q 14: Explain about SCABA and how you will use in emergency?**

**Q 14 a: How you will pressure test for remaining air in bottle or how you will make alarm?**

**A 14, 14 a:**

- A breathing apparatus normally known as the BA set or the SCBA (Self contained Breathing apparatus) or CABA (Compressed air breathing apparatus) is an equipment used to supply fresh air for human

breathing when a person is entering any space where the atmosphere is a suspect and may not support human life.

## **These include:**

- When entering into an enclosed space
- When entering into a space to fight fire



## **The Self Contained Breathing Apparatus (SCBA) or Compressed Air Breathing Apparatus (CABA):**

The equipment is designed on an open-circuit system. The exhaled air is discharged to the atmosphere and the wearer of this apparatus gets his fresh air from the air cylinder attached to the equipment.

## **The equipment consists of:**

- One or two cylinders containing air under pressure
- A harness to mount the cylinders on the back of the person.
- A respiratory system which incorporates a means of reducing the pressure of the air from the cylinder and of supplying the wearer on demand with air according to his requirements, and
- A facemask attached to a demand valve, which maintains a positive pressure inside the mask at all times.

## **The arrangement of a typical apparatus is as follows:**

- The cylinders contain approximately 1240 litres of free air compressed to give approximately 31 minutes of full air usage time and 21 minutes of working duration under normal circumstances. Please note that the usage time greatly varies from person to person and the workload the person is performing.
- A reducing valve is connected after the cylinders to reduce the pressure to approximately about 4 bars. This pressure is further reduced by the demand valve, which is attached to the mask of the wearer.
- The demand valve supplies air to the wearer when he inhales and closes when he exhales.

- An Exhalation valve releases the exhaled air from the facemask.
- When approximately 10 minutes of air is left (air cylinder pressure about 50 bar), a warning whistle will sound continuously – warning the user that his air supply would soon be over and he has to move out.
- This warning signal will sound continuously till the air in the cylinder is over.
- The facemask is made of moulded rubber with a series of adjustable rubber straps to secure it to the head of the wearer and fitted with quick release arrangements.
- The user should have a good field of vision so that the wearer does not need to turn his head constantly.
- A gauge is provided to indicate the pressure of the air in the cylinder.
- Spare cylinders should be provided for each set of breathing apparatus and a small air compressor to charge these cylinders is provided.

***If the facemask is dislodged whilst the wearer is in a smoky or toxic atmosphere, it is vital that the wearer should hold his breath and immediately replace the dislodged mask. If for any reason, there is likelihood of delay in doing so, the wearer should be evacuated to fresh air at the earliest, even though he may not feel any ill effects from the few breaths of contaminated air, which he has been forced to inhale.***

**An approximate Consumption and duration table:**

Degrees of work	Air consumption (Ltrs/minute)	Duration of cylinder having 1200 ltrs capacity (minutes)	Duration of cylinder having 1800 ltrs capacity (minutes)
Resting	8 – 12	150 – 100	225 - 150
Light Work	12 – 20	100 – 60	150 – 90
Moderate Work	20 – 40	60 – 30	90 – 45
Heavy Work	40 – 60	30 – 20	45 – 30

***Please note in the above table the total full duration is given. Reduce the safety margin from the above table to get the working duration.***

**Nominal Working Duration = (fully charged cylinder capacity) ---- 10 minutes.**

**(40)**

- Here we have taken an average consumption of 40 litres of air per minute being required by human being when doing heavy work.
- Hence if we have a cylinder of 1200 litres capacity fully charged then
- Nominal working duration =  $1200/40 = 30$  minutes – 10 minutes (period for which the alarm whistle will blow and time required for the wearer to get back to safe atmosphere) = 20 minutes.

**ALARM TESTING: ( mostly surveyor asking this)**

- Open cylinder valve.
- Line will be pressurized with 200 bar pressure.
- Pressure gauge indicates 200 bar pressure.
- Close cylinder valve.
- Check pressure should not drop 10 bar in a minute.
- Now to make alarm test, operate demand valve and pressure will start to reduce from high pressure line.
- When on pressure gauge the pressure will reach around 55/60 bar the alarm will sound.
- It will indicate that now you have only 8-10 min for escape.
- As soon as you heard sound, escape from that compartment.

**Function Checks:**

- Close cylinder valve.
- Breathe normally to vent system.
- During venting observe gauge - whistle alarm should sound at preset pressure of 55bar +/-5bar.
- When gauge indicates zero, hold breath. Face piece should hold onto face indicating positive seal.
- Open cylinder valve slowly, but fully to pressurize system.
- Inhale and hold breath. Unit must balance, i.e. no audible leak.
- Continue breathing. Expired air should easily flow out of exhalation valve.
- Press center of rubber cover on demand valve checking supplementary supply.

***Note: If leak detected, open cylinder valve, readjust head harness and retest.***

**During Use:**

- Cylinder pressure must not be less than 80% full.
- Check gauge reading regularly. Whistle will sound at 55 bar +/- 5 bar.
- When whistle sounds, exit and go to safe area, by shortest and safest route.
- Do Not remove equipment until in safe area, clear of hazard.

**After Use:**

- Press reset lever to switch 'Off' positive pressure.
- Press and hold down the button and remove the demand valve.
- Removing mask: Insert index finger behind the tabs on the neck straps and press the buckles forwards with thumb, pulling the mask forward off your face and then up and back over your head.
- Close cylinder valve and remove face piece.
- Unbuckle waist belt, lift shoulder strap buckles to loosen, remove equipment.

**Maintenance on facemask:**

**Cleaning:** The mask must be cleaned after every use. Do not use any organic solvents such as acetone, alcohol etc.

Clean the mask with a cloth and lukewarm water mixed with all-purpose detergent. Rinse thoroughly under running water.

**Disinfecting:** Disinfect mask after every use. Place mask in disinfectant bath. Only use approved disinfectants. Excessive disinfectant concentrations and over-long disinfecting times can damage the mask. Rinse thoroughly under running water.

**Drying:** Leave to dry in air. Maximum temperature 60°C. Keep out of direct sunlight.

**Testing:** The mask must be tested every time it has been used, repaired or serviced as per manufacturers instructions.

**Visual inspection of the speech diaphragm:** The speech diaphragm and O-ring must be clean and undamaged. If not, clean or replace.



**Visual inspection of inhalation valve:** The inhalation valve is visible in the mask connector. Check by blowing into it that both wings of the valve disc move freely. Replace if seized.



**Visual inspection of exhalation valve:** Remove the protective cap from the connector. Press one arm of the spring clamp inwards and remove the clamp. Hold valve disc by the nipple and lift out of guide. The valve disc and seat must be clean and undamaged. Clean or replace if necessary. Moisten valve disc with water and refit. When the seat is horizontal, the valve disc must slide into the guide under its own weight. Fit spring clamp and spring so that both clamp arms engage at the sides. The clamp is marked "L"= left and "R" right and fits at an angle.



**Additionally requires following checks to be carried out:**

- Every month the air bottles, bottle valves, reduction valve, intermediate hose, manometer, carrying back plate, the lung demand regulator, the warning alarm for withdrawal, and the breathing mask shall be examined and checked in accordance with the manufacturer's manual.
- Every year all valves, sealing and speech membranes shall be checked.
- Every second year the exhalation disc must be replaced. This should be done even if the mask has not been used.
- Every five years the complete breathing apparatus shall be submitted to a major service check, which should include a major overhaul of the reduction valves in an authorized workshop and a pressure test of the air bottles.

- Pressure test of the air bottles shall be carried out by an approved service company.
- If an air bottle shows any sign of corrosion or if it has been exposed to damage or overheating it shall be replaced instantly.

=====

**Q 15: Regulation about Life Raft? Carrying Capacity and Location on your ship?**

**Q 15 a: Thing to be carried in Life Raft?**

**Q 15 b: Launching Of Life Raft by all method (1) manually (2) Davit (3) auto?**

**Q 15 c: Marking on Life Raft?**

**Q 15 d: Safety on Life Raft?**

**Q 15 e: Maintenance on Life raft?**

**Q 15 f: Why only CO<sub>2</sub> use for inflation of life raft why not any other?**

**Q 15 g: What is H.R.U and how it will work?**

**Q 15 h: Difference between fwd and aft life raft?**

**Q 15 i : Breaking strength of H.R.U, Weak link and painter?**

**A 15, 15 a, 15 b, 15 c, 15 d, 15 e, 15 f, 15 g, 15 h, 15 i:**

Friend this are the most favorite question of all surveyor, he can ask you anything from it.

**There are mainly two type of Life raft,**

**(1) Inflatable (2) Rigid**

**SOLAS REGULATION:**

- Inflatable life raft contain inflation cylinder which contain CO<sub>2</sub> Gas.
  - **CO<sub>2</sub> gas containing small amount percentage of NITROGEN gas to act as an Anti-freeze,**
  - **also CO<sub>2</sub> is NON-FLAMMABLE and also weight is more than the AIR hence add buoyancy to raft,**
  - **freezing point of CO<sub>2</sub> is -78<sup>0</sup> c, so it can inflate life raft even at -15<sup>0</sup> c.**
- It shall be capable of being inflated by ONE person.
- **NO life raft shall be Approved which has a carrying capacity of less than 6 person.**
- **The total mass of the life raft with its container and its equipment shall not become more than 180 kg.**
- **Inflation shall be completed within a period of 1 min at an ambient temp. of between 18<sup>0</sup> c to 20<sup>0</sup> c, And within a period of 3 min at an ambient temp. of -30<sup>0</sup> c.**
- A life raft shall be constructed so as to be capable of withstanding exposure for **30 days** afloat in any sea condition.
- A life raft shall be constructed so that when, packed in its container,

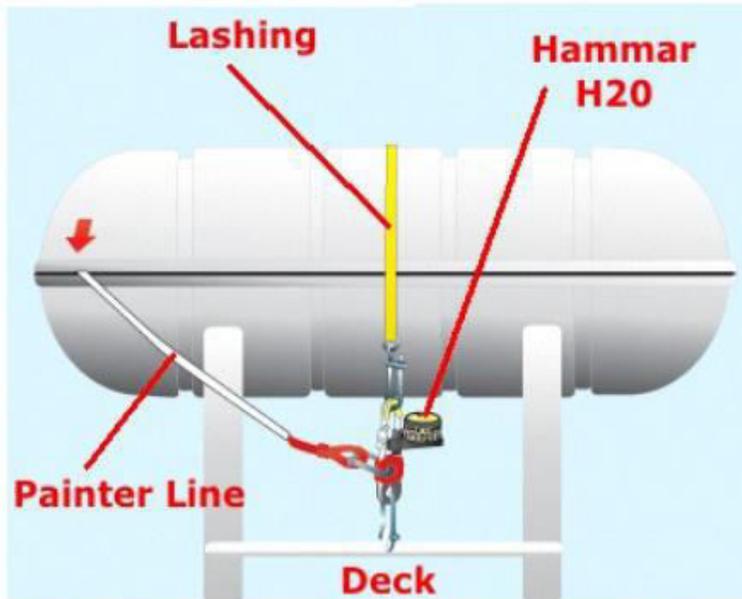
- it is dropped into the water from a height of **18 meter** the life raft and its equipment are not damaged.
- A life raft, when afloat, shall be capable of withstanding the number of jumps onto it equal to the number of members of its complement, from a height **of at least 4.5 m above its floor**.
- A life raft and its towing patch shall be so constructed **as to enable the life raft to be towed at a speed of 3 knots** in calm water when it is loaded with its full complement and equipment and **one of its sea anchors is streamed**.
- Life raft shall be provide INSULATION against HEAT and COLD by means of either TWO layer of material separated by an AIR GAP. Shall be provided to prevent accumulation of water in the AIR GAP.
- It shall be provided with means to mount a Survival Craft RADAR TRANSPONDER at a height of at least **ONE** meter above the SEA.
- Efficient PAINTER of length equal to not less than 15 m.
- A manually controlled Lamp shall be fitted to the TOP of the life raft CANOPY, the light shall be “white” and be capable of operating continuously for at least 12 hrs. with a luminous intensity not less than 4.3 cd, in all direction of the UPPER HEMISPHERE, the flashes rate not less than 50 and not more than 70 per minute.

Minimum carrying capacity = 6 person.

Location on ship = in forward ( 6 person )

At embarkation station in port and stbd side ( on my vessel 16 person )





**Breaking Strength of Painter:**

- 15 KN for more than 25 person life raft permitted to accommodate.
- 10 KN for 9 to 24
- 7.5 KN for any how.

**Equipment contain in LIFE RAFT as per SOLAS.**

- 1) Mirror / Heliograph = 1
- 2) Sponges = 2
- 3) Buoyant paddles = 2
- 4) Hand Flares = 6
- 5) Rocket parachutes = 4
- 6) Smoke signals = 2
- 7) EPIRB = 1
- 8) SART = 1
- 9) Food Ration = 500 gms/ person / days upto 3 days ( not less than 10000 kJ/each person )
- 10) Water = 500 ml / person / days upto 3 days
- 11) Knife = 1
- 12) Survival instruction booklet = 1
- 13) Topping Up pump and Bellow
- 14) Anti-sea sickness tablets = 50
- 15) Buoyant bailers = 2
- 16) Waterproof torch = 1
- 17) Daylight signaling lamp.
- 18) Radar reflector = 1

- 19) First Aid Kit in water proof case = 1 box
- 20) Fishing tackle = 1 set
- 21) Compass = 1
- 22) Sea Anchor = 2
- 23) Whistle = 1
- 24) Tin opener = 3
- 25) Thermal Protective aid = 2

**MARKING ON LIFE RAFT CONTAINER as per SOLAS:**

- 1) Maker's name or Trade mark
- 2) Serial number
- 3) Date when last serviced
- 4) Length of painter
- 5) Maximum permitted height of stowage above water line
- 6) Type of emergency pack enclosed
- 7) Date of manufacture ( month and year )
- 8) Capacity of life raft
- 9) Launching instruction
- 10) SOLAS

**MARKING ON LIFE RAFT as per SOLAS:**

- 1) Maker's name or Trade mark
- 2) Serial number
- 3) Date when last serviced
- 4) Date of manufacture ( month and year )
- 5) Name of approve authority.

**SAFETY ON LIFE RAFT:**

- 1) Pressure relief valve
- 2) Stabilizing pocket
- 3) Insulated canopy have Two layer.

**LAUNCHING OF LIFE RAFT MANUALLY:**

During drill or in case of any emergency when you have to lower the life raft, follow the procedure as follow.

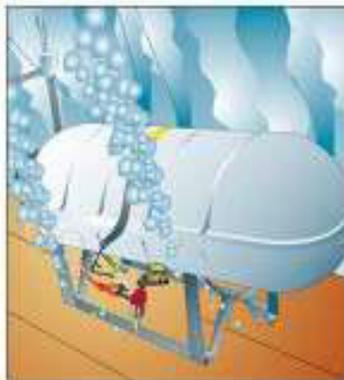
- First of all take out painter from life raft almost 80% of the total length.
- Now fasten it to ship side on deck and make sure it should not be loose.
- Now remove railing and clear the way for launch.

- Unfasten the ship hook from cradle,
- Two person will lift raft container from its cradle and thrown it to overboard ( **make sure painter point will be ship side** )
- Now after thrown take out remaining painter from raft and after that give sharp pull, but until the raft inflate ( **Regulation says that it will inflate within 1 to 3 min depend on ambient temp** )
- Now with the help of same painter pull it to ship side,
- Now lower the embarkation ladder or if height will low than jump into water, you can direct jump into raft if the height will not be more than 4.5 m from water line, and also by using embarkation ladder you can go down and jump it inside, or swim some distance and climb up in raft.( **but if you are in cold weather try to should not get wet, keep dry as possible as you can.** )
- You must have to sit in order wise means face by face, to not be unbalance of raft,
- **Have to take SART and EPIRB along with you.**
- After all person get inside head count must be taken,
- Now immediately cut the painter by using knife, and using paddle or sea anchor get clear the ship ( **bcoz as ship will start to sink there will be low pressure create in water near by area of ship and your raft will be possible to imbalance** )

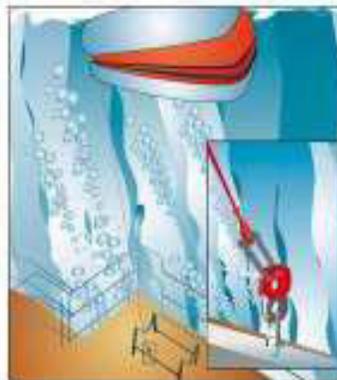
**NOTE: if your raft will inflate up side down so in raft you have RIGHTING STRAP, so climb up on CO<sub>2</sub> cylinder and pill it in the same direction of wind, means your face must be opposite to wind, so wind will be help you to make it stable.**



White Hammar H20 strong rope secured to deck or liferaft cradle and attached to liferaft lashing with a sliphook. Liferaft painter line shackled to the Red Weak Link connector.



If the ship sinks, the water pressure, within 4 metres, will activate the sharp knife, which cuts the strong rope and the liferaft will float free.



As the ship sinks, the liferaft painterline will be stretched and the liferaft starts to inflate.

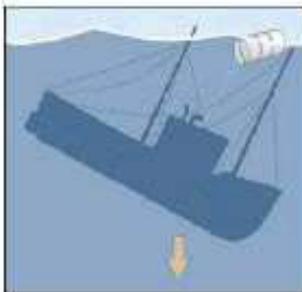
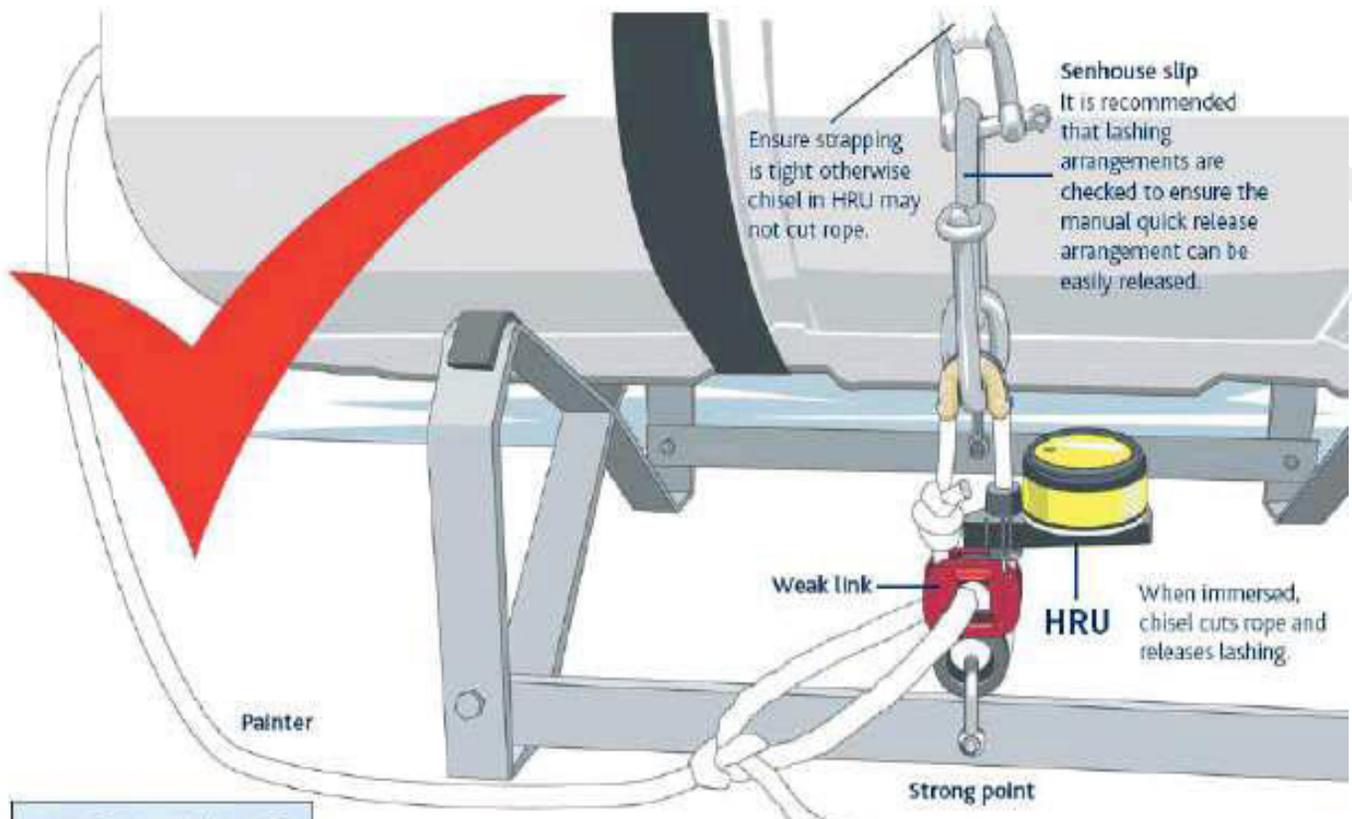


Red Weak Link breaks and survivors can board the inflated liferaft.

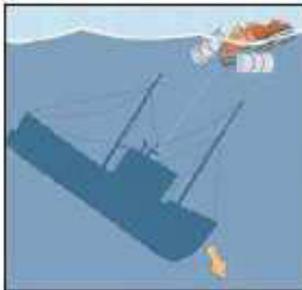
**LAUNCHING LIFE RAFT IN AUTO MEANS WHEN SHIP WILL SINK AND H.R.U WILL ACTIVE:**

- Once ship started to sink, and when it will sink upto 4 meter the water pressure will activate sharp knife in H.R.U
- It will cut the securing rope around the canister or container of the raft, and now raft will float free.
- Now ship will further sink, the painter line will stretched and it will inflate the raft.
- **Now due to increase in buoyancy will break the Red weak link around 2.2 KN± 0.4 and life raft will be on surface of water now.**

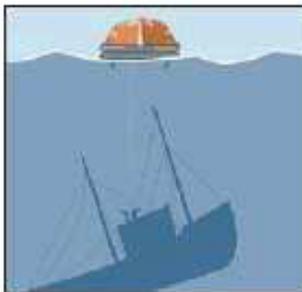
***NOTE: life raft located in forward will be only inflate manually, it don't have H.R.U and its person carrying capacity also 6 person, and life raft located in midship means at embarkation station it have maximum capacity and can be launched by manually, by davit and by H.R.U. So these are the main difference between fwd and aft life raft.***



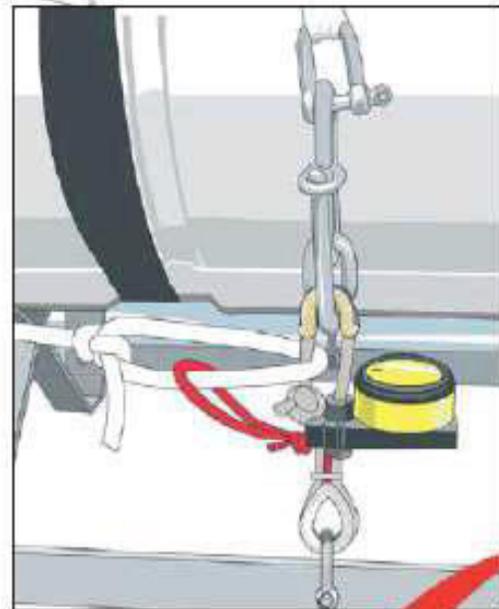
1. If vessel sinks, Hydrostatic Release Unit activates, and liferaft attempts to float to surface



2. Tension on painter will cause liferaft to inflate



3. Tension on weak link will cause it to break ensuring liferaft does not go down with the boat



Correct installation of older version HRU

**LAUNCHING LIFE RAFT BY DAVIT :**

- Launching life raft by davit make sure always you keep maintaining davit mechanism.
  - First you remove ship's hand rail or gate.
  - Unlash the container for launch, REMEMBER INBOARD mark should be ship side.
  - Lower davit hook and make it lock with lifting shackle.
  - Secure canister or container lines outboard.
  - Secure bowsing line.
  - Pull out approx 5-6 meter of painter line.
  - Make sure before lifting that hook and brake lanyard are inboard.
  - Secure painter line.
  - Now pull full length of painter.
  - Now lift the life raft canister upto some height.
  - Now pull the painter and give sharp pull to inflate life raft.
  - **Make sure the opening of canopy means access should be ship side.**
  - Now secure the life raft.
  - Now one person will go inside to make some check ( **make sure you should not wear Sharpe edge shoes or heels )**
  - Collect SART and EPIRB.
  - Now go inside life raft and seat evenly.
  - Now release bowsing line and pass to raft.
  - Check launching area is clear.
  - Lower the raft using brake release.
  - **You can operate hook release 1 m above the water or allow the raft to touch the water and load will reduce from hook and it will release it self.**
  - Now cut painter and use sea anchor or paddle to clear the area immediately.
-

**Q 16: Regulation about Life Boat? Carrying Capacity and Location on your ship?**

**Q 16 a: Thing to be carried in Life Boat?**

**Q 16 b: Launching Of Life Boat by all method (1) Davit?**

**Q 16 d: Marking on Life Boat?**

**Q 16 e: Safety on Life Boat?**

**Q 16 f: Maintenance on Life Boat?**

**Q 16 g: difference between Tanker Life boat and cargo life boat?**

**Q 16 h: life boat engine not starting checks?**

**Q 16 i: What is Deadman's handle? How you will use it?**

**A 16, 16 a, 16 b, 16 c, 16 d, 16 e, 16 f, 16 g, 16 h, 16 i:**

There are three types of lifeboats used on merchant vessels:

- **Open Lifeboat:**

As the name suggests, the open lifeboat has no roof and is normally propelled by manual power by using hand propelled oars. Compression ignition engine may also be provided for the propulsion purpose. However, open lifeboats are becoming obsolete now because of stringent safety norms, but one may find them on older ship.

The open lifeboat doesn't help much in rain or bad weather and the possibility of water ingress in the highest.

- **Closed lifeboat:**

Closed lifeboats are the most popular lifeboats that are used on ships, for they are enclosed which saves the crew from sea water, strong wind and rough weather. Moreover, the water tight integrity is higher in this type of lifeboat and it can also get upright on its own if toppled over by waves. Closed lifeboats are further classified as – Partially enclosed and fully enclosed lifeboats.

- **Free fall life boat:**

Free fall lifeboat is similar to an enclosed lifeboat but the process of launching is entirely different. They are aerodynamic in nature and thus the boat can penetrate the water without damaging the body when launched from the ship. The free fall life boat is located at the aft of the ship, which provides a maximum clear area for free fall.

**Solas Regulations of lifeboat.**

- Each lifeboat shall be fitted with a certificate of approval, endorse by the administration containing atleast following items:

- Manufacturer's name and address
- Lifeboat Model & serial number.
- Month and year of manufacture
- No. of persons approved to carry.

- All lifeboat shall be of sufficient strength to :
  - Enable them to safely launch when fully loaded with their full complement of person and equipment.
  - Be capable of launched and towed when a ship is making headway at a speed of 5 knots in calm water.**
- Except for free fall, each other lifeboat to be launched by falls shall be of sufficient strength to withstand when loaded with its full complement of person and equipment and with applicable skates or fenders in position, **a lateral impact against ship side at an impact velocity of atleast 3.5m/sec and also a drop into water from a height of atleast 3mt**
- A lifeboat shall not carry more than 150 persons.
- **The size, number and the capacity of the lifeboat for a merchant vessel is decided by the type of the ship and number of ship's crew, but it should not be less then 7.3 m in length and minimum two lifeboats are provided on both side of the ship (port and starboard).**
- The requirement for lifeboat of a **cargo ship with 20,000 GT is that the boat must be capable of launching when the ship is heading with a speed of 5 knots.**
- **The ship must carry one rescue boat for rescue purpose along with other lifeboats. One lifeboat can be designated as a rescue boat if more then one lifeboat is present onboard ship.**
- **The gravity davits must be hold and slide down the lifeboat even when the ship is heeled to an angle of 15 degree on either side.** Ropes are used to hold the lifeboat in stowed position with cradle. These ropes are called gripes.
- **The wires which lift or lower the lifeboat are known as falls and the speed of the lifeboat descent should not be more then 36m/ min which is controlled by means of centrifugal brakes.**
- **The hoisting time for the boat launching appliance should not be less then 0.3 m/sec with the boat loaded to its full capacity.**
- The Lifeboat must be painted in international bright orange color with the ship's call sign printed on it.

### **Regulation for lifeboat engine.**

- Lifeboat shall be powered by a compression ignition engine. No life boat engine can be used if the fuel used in it has a **flash point of 43 degree C or less.**
- **The lifeboat engine can either be two stroke or four-stroke type, and can be started either by hand or by power.**
- **The engine can be capable to operate when life boat be flooded upto waterline of crankshaft.**
- Power starting can be by using accumulator batteries or hydraulic.
- In power starting, normally two independent rechargeable energy sources are provided. However, any starting method should be capable of starting engines at **15 degrees C of ambient temperature within two minutes** of commencing of starting procedure.

- The engine power is transmitted to propeller through gearbox. **The gearbox is capable of disengaging the engine as well as engaging in either ahead or astern direction.**
- The exhaust pipe outlet is located well clear of waterline.
- Engine should be capable of **operating for not less than 5 minutes after starting from cold, with lifeboat out of water.**  
**Neptha or Butane spray is injected in air filter to start from cold condition**
- **A fully loaded lifeboat in calm water has an engine speed of 6 knots and enough fuel for 24 hours. When towing the biggest liferaft it makes good a speed of at least 2 knots for 25 person.**
- Before lowering lifeboat, battery-charging connection should be disconnected, if provided.

### **Regulation for the life boat hook:**

- **For ship built after 1<sup>st</sup> Jan 2014 to provide hook stability the release mechanism shall be designed so that when it is fully in the close position.**
- The weight of the life boat does not cause any force to be transmitted to the operating mechanism.
- Locking device shall be designed that they can not turn to open due to forces from the hook load.
- If a hydrostatic interlock is provide, it shall automatically reset upon lifting the boat from the water.

### **Specialty of Tanker lifeboats.**

- Self rightening, fully enclosed.
- Self-contained air system (Oxygen bottle)
- Fire protected lifeboat (Sprinkler system)

### **Equipment contain in LIFE Boat as per SOLAS.**

- 1) Boat hook =2
- 2) Buoyant oars = sufficient
- 3) Mirror / Heliograph = 1
- 4) Sponges = 2
- 5) Buoyant paddles = 2
- 6) Hand Flares = 6
- 7) Rocket parachutes = 4
- 8) Smoke signals =2
- 9) EPIRB = 1
- 10) Food Ration = 500 gms/ person / days upto 3 days ( not less than 10000 kJ/each person )
- 11) Water = 500 ml / person / days upto 3 days
- 12) Knife = 1
- 13) Survival instruction booklet = 1
- 14) Topping Up pump and Bellow =1

- 15) Anti-sea sickness tablets = 50
- 16) Buoyant bailers = 2
- 17) Waterproof torch = 1
- 18) Daylight signaling lamp.
- 19) Radar reflector = 1
- 20) First Aid Kit in water proof case = 1 box
- 21) Fishing tackle = 1 set
- 22) Compass = 1
- 23) Sea Anchor = 1
- 24) Whistle = 1
- 25) Tin opener = 3
- 26) Thermal Protective aid = 2
- 27) First aid kit = 1
- 28) Buckets = 2
- 29) Painter line = 2 upto 15 m
- 30) Tools = set

**Safety on Davit:**

- 1) Dead hook handle
- 2) Harbor pin
- 3) Winch upper limit switch
- 4) Drum brake
- 5) Release gear hook ring
- 6) Winch brake counter weight.

**MARKING on LIFE BOAT as per SOLAS ( in ROMAN alphabet)**

- 1) Name of ship
- 2) Maker name and trade mark
- 3) Serial number
- 4) Port of registry
- 5) IMO number
- 6) Call sign
- 7) Carrying capacity
- 8) Life boat dimension

**MAINTENANCE and weekly checks.**

- The engine should be trial out weekly.
- Propulsion has to be checked both fwd and astern side.

- Battery checks by electrical officer and is be changed every 2 year.
- Mechanical linkage and electrical equipment of launching gear are checked including lubrication.
- Cleaning of limit switch of davit.
- **According to SOLAS weekly the life boat will be lower upto embarkation ladder and all davit mechanisum is inspected and checked.**
- Winch type hand operated brake will go static and dynamic test.
- **Life boat should be launched once in 3 month and go for round in order to ensure proper functioning of life boat.**
- **In life boat to prevent this O<sub>2</sub> cylinder to provided, so it is released when life boat passes through fire.**

### **Lifeboat engine is not Starting, Checks on it.**

- Empty fuel tank.
- Incorrectly attached fuel supply hose.
- Damaged fuel supply hose.
- Defective fuel pump.
- Contaminated fuel.
- Improper starting procedures.
- Faulty, spoiled or incorrect positioning of spark plug(s).
- Improper maintenance.
- Emergency shut off de-activated.
- Undercharged starter battery.
- Loose electrical connections.
- Bad ignition coil.
- Defective starter motor

### **Launching of life boat:**

- One person goes inside the Life Boat and passes the end of toggle painter **and plugs the drain.**
- Check all lifeline and falls are clear of Life Boat.
- Make fast the other end of toggle painter on a strong point forward of the ship.
- Remove forward and aft gripes and both person stand by for passing bowing tackle and tricing pendant.
- **Remove harbour safety pin.**
- Make sure the ship's side is free of everything, no water or garbage is there.
- Now, one person lift's the Deadman's handle slowly which releases the brake.
- The boat along with cradle sides downward till it comes to the embarkation deck.
- By pulling tricing pendant , bring it alongside the embarkation deck.

- Persons embark inside the boat.
- Now, tricing pendant is removed and the whole load comes on falls.
- **Now, boat is further lowered with Deadman's handle.**

### 1 Initial preparations



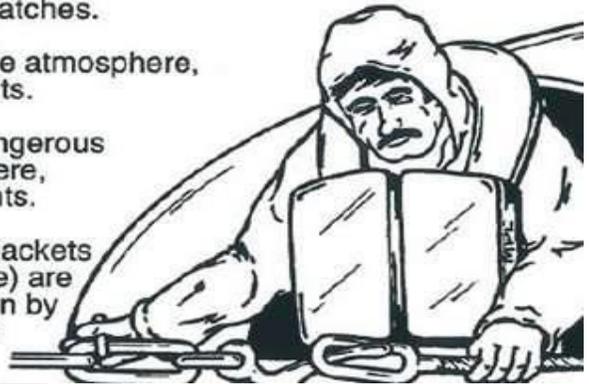
- Ensure harbour securing pins are removed.
- Disconnect electrical charge cable.
- Close drain plugs.
- Place E.P.I.R.B. and S.A.R.T. in boat.
- Board when instructed, sit and fasten seat belts.



### 2 Launch actions



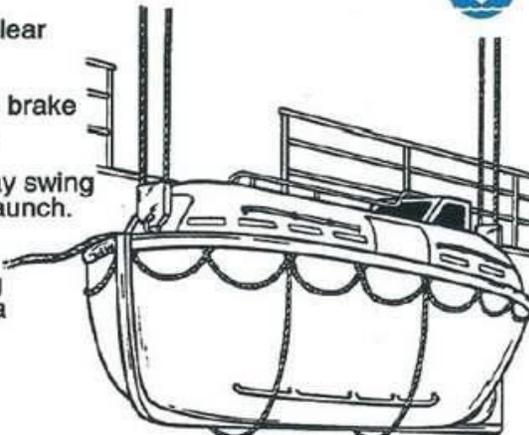
- Release gripes/securing wires.
- Secure hatches.
- If in a safe atmosphere, open vents.
- If in a dangerous atmosphere, close vents.
- Suitable jackets (inflatable) are to be worn by the boats crew.



### 3 Lower to water



- Check clear below.
- Operate brake release.
- Boat may swing during launch.
- Keep lowering boat at a steady rate.



### 4 Entering water



- Allow boat to settle in the water.
- Keep brake off.
- Release falls.
- If falls do not disengage, operate emergency release as follows:-
  - 1) Break glass.
  - 2) Move lever to green zone.
  - 3) Release falls.



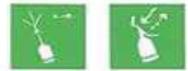
### 5 Letting go



- Start engine.
- If in a dangerous atmosphere, open air supply and water spray valves.
- Release painter when ready.
- Steer away from ship.



### 6 Final actions



- Rescue any swimming survivors if safe to do so.
- When clear of vessel, stream sea anchors.
- Operate E.P.I.R.B. and S.A.R.T.



**Note: deadman's handle is nothing but a simple handle which can be operate even by only one person to lower the life boat from inside.** As soon as the boat comes around 1meter above the sea-water, it can be released.

**Surveyor asking some time as an engineer what is your checks while Lowering life boat:**

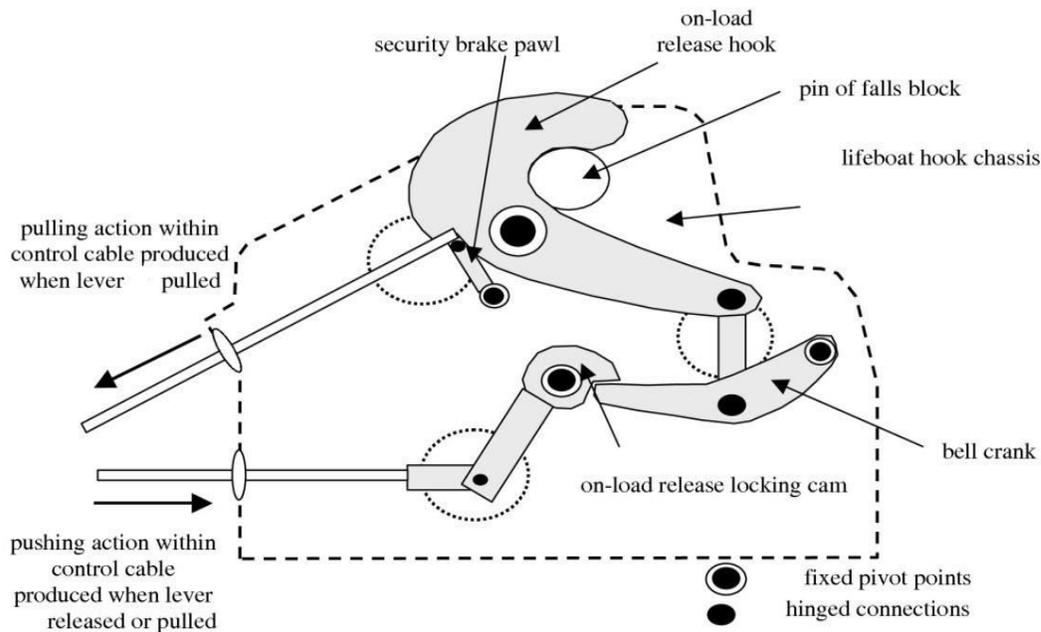
- before lower life boat check battery is properly charged.?
- Rudder is turning on both port and stbd side.
- Check fuel tank, fuel pipe, lube oil level.
- Check air bottle pressure.
- Ensure engine running in both direction means fwd and astern.
- Electrical connection checks.
- Condition of bilge pump and plug.
- Check all tools are in tool box.
- Check shaft sealing.

**Off load mechanism:**

- The off load mechanism releases the boat after the load of the boat is transferred to water or the boat has been lowered fully into the sea.
- **When the boat touches the surface of water, the load on the fall and hence the hook releases and due to its mechanism the hook detaches from the fall. If the detachment dose not takes place, any of the crew members can remove the hook from the fall.**
- Most of the times the offload mechanism is manually disengaged in case of malfunction; however, in case of fire, it is dangerous to go out and release the hook.

**On load mechanism:**

- On load mechanism can release the lifeboat from the wire, with the ship above the water level and with all the crew members inside the boat.
- **The load will be still on the fall as the boat would not have touched the water. Normally the height of about 1 m is kept for the on load release, so that the fall is smooth without damaging the boat and harming the crew inside.**
- A lever is provided inside the boat to operate this mechanism. As the lever is operated from inside, it is safe to free the boat without going of the out lifeboat, when there is a fire on ship.



## FREE-FALL life boat:

Free-fall lifeboats shall comply with the requirements of totally enclosed lifeboats described above.

- The carrying capacity of a free-fall lifeboat is the number of persons that can be provided with a seat without interfering with the means of propulsion or the operation of any of the lifeboat's equipment.
- The width of the seat shall be at least 430 mm. Free clearance in front of the backrest shall be at least 635 mm. The backrest shall extend at least 1,000 mm above the seat pan.
- Each free-fall lifeboat shall make positive headway immediately after water entry and shall not come into contact with the ship after a free-fall launching against a trim of up to 10° and a list of up to 20° either way from the certification height when fully equipped and loaded with:
  - **its full complement of persons;**
  - **occupants so as to cause the centre of gravity to be in the most forward position;**
  - **occupants so as to cause the centre of gravity to be in the most aft position;**
  - **its operating crew only.**
- Each free-fall lifeboat shall be of sufficient strength to withstand, when loaded with its full complement of persons and equipment, a free-fall launch from a height of at least 1.3 times the free-fall certification height.
- Each free-fall lifeboat shall be fitted with a release system which shall:
  - have two independent activation systems for the release mechanisms which may only be operated from inside the lifeboat and be marked in a color that contrasts with its surroundings;

- be so arranged as to release the boat under any condition of loading from no load up to at least 200% of the normal load caused by the fully equipped lifeboat when loaded with the number of persons for which it is to be approved;
- be adequately protected against accidental or premature use;
- be designed to test the release system without launching the lifeboat;
- be designed with a factor of safety of 6 based on the ultimate strength of the materials used.

**In addition to the requirements for fully enclosed lifeboat certificate of approval for a free-fall lifeboat shall also state:**

- free-fall certification height;
- required launching ramp length; and
- launching ramp angle for the free-fall certification height.....



*So Friend these are all about "LIFE SAVING APPLIANCE", I hope you will understand easily and if you have any doubt just go through the L.S.A code book, or any reference if you have. I just share what I know from my side.*

**"Correction Accepted"**

**PREPARED BY:  
KUNJAL S. SHAH**

*In next page you have FIRE FIGHTING APPLIANCE, PORTABLE , FIXED, DETECTOR, you all have CO<sub>2</sub> fixed fire fighting system onboard, and surveyor most most most important topic also this. I will try to explain each and every thing, also about sprinkler, hypermist, fire main and some amount of Foam.*