NOTES FOR THE SECOND MATE

TOPIC:

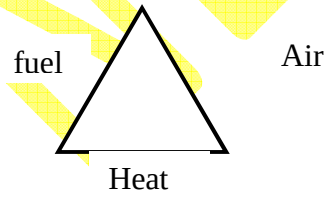
FIRE FIGHTING APPLIENCES CODE

FIRE FIGHTING EUIPMENTS

- Introduction of fire
- Fire wallet
- Fire control plan
- Fire locker
- Fire hydrant
- Fire hose
- Fire nozzle.
- Main fire pump
- Emergency fire pump
- Portable fire extinguisher.
- Fixed fir fighting installation (co2, foam)
- ISC
- Fire man's suit.
- HRU
- Safety equipment(SEQ) check list

FIRE

F – find
I – Inform
R – Restrict
E – Extinguish



Types of fire: A, B, C, D, E.

A Type:
By solid material carbonation, organic compounds. Eg. Wood, pulp, paper, textiles etc.

B type:
By liquids such as petroleum, oil, paint etc.
Extinguish medium: foam, AFFF foam, Co2, Halon, DCP.

C type:
Gaseous fire, LPG, LNG, Etc.
Extinguishing medium : DCP, Halon.

D type:
Metal fire eg: aluminum, sodium etc.
Extinguishing medium: water, foam, AFFF, DCP.

E type:
Electronic fires, it considered to be possible cause of fire, rather than a type. Fires involving electricity will therefore because one of the previously mentioned classes of fires, once the power is shut off.

FIRE WALLET

- Muster list and location of muster pt.
- Crew list (no of crew).
- General arrangement plan
- Safety plan
- Cargo plan
- Trim stability booklet.
- Details of fired firefighting system.
- Details of w/t doors and ventilation.
- Details of emergency fire pump.
- Important telephone nos.
- Pumping arrangement.

Kept near the gangway along with – ISC and l/buoy lit for the easy and nearest access to.

FIRE CONTROL PLAN

- Location of control stations.
- Remote controls.
- Firefighting equipment
- Detection systems.
- Fire zones.
- Ventilation system.
- Access to spaces.

A spare set of the plan are to be kept in a water tight container on the deck house. (for fire brigade)

FIRE LOCKER

DCP (powder) extra cartridges, foam detergent, spare hose.
Spare nozzle, safety harness, line, scba cylinders, fireman outfit, torch, fire bucket, fire arc.
Location of fire locker to be well marked in the fire plan, and any changes in fire plan and any changes in fire plan would require to be reconstructed.

INFO TO FIRE BRIGADE.

- Where is the fire (location).
- Means of access.
- Ways of ventilating
- Details of cargo together with stowage plan.
- What fire steps have taken?
- Any persons missing.
- What fixed installation is in use?
- Condition of ships services.
- General arrangement plan.
- Stability data.

HYDRANTS:

- Two jets of water on any part of the ship and 1 jet from a single length of hose.
- For tankers: isolating v/v's at end of accommodation and every 40 mtrs.

Fire hoses:

- One hose for every 30 m length (not less than 5)
- Total hoses length at least 60% of length over All.
- One spare hose.
- In E/R and machinery spaces at least 2 hydrants.
- 1 port and stbd. (hose and nozzle at each hydrant)
- All nozzles to be spray / jet with shut off facility.
- Hoses to be max 18 m length.
- Hose dia 64mm if unlined.
- Hose dia 45 mm if lined.

FIRE PUMPS:

- Two pumps each capable of delivering at least one jet of water simultaneously from each of any two hydrants, hoses, nozzles.
- In addition to above one other pump such as general service bilge, ballast pump shall be capable of delivering water to the fire main.
- If a fire in any one compartment could put all fire main out of action.
- An independently driven power operated emergency fire pump outside machinery space
- (Must be able to deliver at least one jet of watch from each of any two hydrants).
- Cargo ships and tankers –
    - 1000t or greater – 2 pump,
    - 500t – 1000 – 1 pump.
- Passenger ships; >4000t – 3 pumps, <4000t – 2 pumps.
- Total capacity should not exceed 180 m^3/hrs
- Each pump capacity not less than 80% of total capacity divided by total no of pumps but not in case less than 25 m^3/hrs

EMERGENCY FIRE PUMPS:

- **Pumps capable of delivering at least one jet of water simultaneously from each of any two hydrants, hoses, nozzles.**
- **Capacity –**
    - **40% of total capacity**
    - **2000t or greater – not less than 25m^3/hrs**
    - **Less than 2000t 15m^3/hrs**
- **Should be capable to start 6 times in 30 min and at least 2 time in first 10 min**

PORTABLE FIRE EXTINGUISHER

- **All of approved type and capacity not more than 13.5 ltrs and not less than 9 ltrs.**
- **Spare charges for 100% of extinguisher.**
- **Portable foam applicator consists of air foam nozzle of an indicator type capable of being connected to the fire main by a fire hose and portable tank of 20 ltrs.**
- **Rate of foam 1.5 m3/min.**
- **FIRE EXTINGUISHERS**

Fire extinguishers:

- 500t – 1 accm, s.space, c.station.
- 500t – 1000t – min 3 + 1 spare charge per ext.
- 1000t or over – min 5.

For tankers:

- >2000t – mobile foam appliance in pump room.

Water type extinguisher

- **We use water as medium**
- **Hydraulic Test pressure of extinguisher is 24 bar**
- **Second time Hydraulic test pressure is 17 bar**
- **Its color is red**
- **Range will be 6 mtr for 30 sec and total discharge to be in 90 sec**
- **Co2 cartridge we use generally 63 grm**
- **It gives cooling effect**
- **We attack direct swiping effect**
- **Capacity generally 9 ltr**

FOAM TYPE EXTINGUISHER

(A)Mechanical type

- **Use afff (aqua film forming foam)**
- **Afff is solution of soap water,glue,oxidiging agent**
- **Hydraulic Test pressure of extinguisher is 24 bar**
- **Second time Hydraulic test pressure is 17 bar**
- **Its color is yellow**
- **Range will be 6 mtr for 30 sec**
- **It gives cooling and smothering effect**
- **We attack not direct we through at wall**
- **Capacity generally 9 ltr(8ltr water +I ltr foam solution)**

(B) Chemical type

- **We use sodium by carbonate and aluminum sulphate**
- **Hydraulic Test pressure of extinguisher is 24 bar**
- **Second time Hydraulic test pressure is 17 bar**
- **Its color is yellow**
- **Range will be 6 mtr for 30 sec and complete discharge in 90 sec.**
- **Max rage should be in 2.5 to 5 mtr.**
- **It gives cooling and smothering effect**
- **We attack not direct we through at wall**
- **Capacity generally 9 ltr(8.5ltr sodium by carbonate with water +0.5 ltr aluminum sulphate)**

DRY CHEMICAL TYPE

- **Use DCP (dry chemical powder)**
- **DCP is solution of sodium or potassium by carbonate and magnesium stearate**
- **Hydraulic Test pressure of extinguisher is 24 bar**
- **Second time Hydraulic test pressure is 17 bar**
- **Its color is blue**
- **Range will be 1.2 to 1.5 mtr**
- **It gives smothering effect**
- **Total discharge period is 10-15 sec.**
- **Capacity generally 9 ltr**
- **These are of 2 type**
  - **Gas cartridge type**
  - **Stored pressure type**

Co_2 type

- **Use co2 as smothering effect.**
- **It's colour is black**
- **Can't refill on board**
- **Use on metal fire**

Fixed firefighting installation (foam, co2 ,water sprinkler)

Fixed deck foam system.

- **Capable of delivering foam to ensure cargo tank area as well as into cot.**
- **Control station outside and away from cargo area and readily accessible, simple and rapid operation.**
- **Rate and foam not less than 0.6 ltrs/m^2 min.**
- **Sufficient foam concentrates to produce foam for at least 20 min.**
- **Foam supplied through foam monitors/applications.**
- **Capacity of any monitors at least 3 ltrs/ m^2 min.**
- **Capacity of any application not less than 400 ltrs / min and turn not less than 15 mtrs.**

INERT GAS

- **Cargo hold : 25% of gross volume of cargo hold. Production in 72 hrs.**

- **TANKERS:**
  - 125% max discharging volume
  - O2 level 5%
  - Maintain tank O2 level – 8%.

FIXED CO2 SYSTEM

- Should have sufficient co2 cylinders
- 40% of gross volume of the largest machinery space excluding machinery part
- 35% of gross volume of the largest machinery space including machinery part
- 30% of gross volume of the largest cargo space or hold of the ship.
- Should be discharge 85% of total capacity within 2 min.
- Should be providing 2 discharge points.

INTERNATIONAL SHORE CONNECTION

- Common link between the vsl and shore for pressuring fire main line.
- One to be used on each side of the ship.
- Outside dia-178mm, inside dia 64mm, washer – 8
- Bolts and nuts – 4 nos (16mm dia: 150 mm in length, thickness flange – min 14.5 mm)

FIRE MAN'S OUTFIT

- Fire proof protective clothing outer surface water proof.
- Boots and gloves of rubber or nonconductive electricity.
- Rigid helmet.
- Electric safety lamp (min for 3 hrs).
- An axe (approved with cover)
- Breathing apparatus
- SCBA at least 1200 ltr capacity, function for 30 mins (40 ltrs/min).
- Fire proof line attached to safety harness.

SCBA PREPARATIONS

- Don the apparatus then adjust the harness for comfortable fit.
- Open cylinder valve, put on mask and adjust to fit.
- Inhale 2-3 times to ensure that the air is flowing freely from the demand valve and that the exhalation valve is functioning correctly.
- Hold breath and make certain that the demand valve is shutting off on exhalation or that leakage if any is slight.
- Close cylinder value and inhale until the air in the apparatus is exhausted. Listen for the low level audible alarm, and watch the pressure gauge return to zero. The mask should also crush onto the face indicating air tight fit.
- Re open cylinder values.

SCBA MONTHLY CHECKS

- By pass central is fully closed.
- Open cylinder valves. The whistle should be heard as the pressure raises in the gel. Check cylinder or fully charged.
- Check for leaks.
- With mask on face close cylinder value and hold breath. Observe pressure if it does fall more than set is not leak tight.
- Check rubber part, o-rings and mask.
- Clean mask with weak solution of teepol and dried out.

LIFE LINE SIGNALS

- 1 – pulls-moving ahead
- 2 – pull - more line
- 3 – pulls - get me out
- 3 – pulls from operator – came out now

HRU (Hydrostatic release unit)

- Easy way to release life rafts, EPIRB's and other systems from a sinking ship.
- Light weight.
- Expiry every 2 years.
- After installation it remains on board without maintenance or service ashore for up to two yrs.
- (other approved HRU requires annual torting)
- it will release at all angles and needs only the required water pressure to activate.
- Designed to activate at a depth of between 1.5 to 4.0 mtrs.
- Weak link system, if used shall break under a strain of 2.2 +or- 0.4 kn (kilo Newton)

CHECK LIST FOR SEQ

- Lifeboat
- Lifeboat davits.
- Life raft
- Launching instructions both l/boat, l/raft.
- Portable radio equipment.
- Lifebuoys
- Life jackets.
- Pyrotechnics.
- Emergency lighting and alarm systems.
- Fire control plans and other posters.
- Fire/smoke detecting systems.
- Fire pump and emg fire pump.
- Fire hoses, nozzle, is couplings.
- Fixed firefighting system, portable fire extinguisher.
- Vents, doors, skylights, remote stops, switches etc.
- Fire man's outfits, breathing apparatus, including scba.
- Pilot ladders.
- Navigation equipment, gmdss equipment.
- Record / maintenance of safety equipment.
- Official log book

Additional for tankers:

- Fixed firefighting equipment/systems of the cargo p/p room.
- Deck foam and sprinkler system.
- Inert gas system.