10.2 PROJECTS: CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD
First Phase
1,2,3,4,7

Appendix 3

IMU

DECK CADET

STRUCTURED SHIP BOARD TRAINING PROGRAMME

PROJECT FILE

NAME: ANUPAM KUMAR SINGH

IMU ENROLMENT No. 1642813007

INDoS No. 16NL2240

Deck Cadet Record Book No. 29101815

DATE: From - 12.09.2019

To - 19.08.2020

SWARNA MALA
CHIEF OFFICER

P:

PROJECT WORK

INDEX

Sr. No	PROJECT NAME	Page Nos.	Date
1	Draw plan views of the decks showing all LSA and FFA with the proper IMO symbols and also the sounding pipes with their colour coding		05.02.2020
2	Locate the sounding pipes and air pipes of all the tanks on the ship, including ballast tank, bunker tanks, cofferdam and peak tanks. Also locate	–	–
	the sounding pipe of hold bilges. Draw a colour coded plan indicating the location of all these items.		11.03.2020
3	Draw the ventilation arrangement on-board and state clearly the natural and forced type of ventilators		04.04.2020
4.	Draw the bilge and ballast pumping plan showing the outline of pumps ejector, ballast tank, non-return valves and cross over valves in the system. What sort of bilge pumping arrangement is used? write down	—	–
	the procedure of how would you pressure test the bilge line and non-return valve		28.05.2020
7.	State how many mooring ropes and wires are on-board. Describe where they are kept, their sizes and lengths, characteristics, strength, advantages,	—	–
	and disadvantages and weather and where any spares are carried. Describe the precautions you would take to prevent damage to a coil of polypropylene rope		15.06.2020

STO Signature,date and stamp to be taken prior sign off from each vessel :

SWARNA MALA
CHIEF OFFICER

Date : 19.08.2020

Project Work

Name :- Anupam Kumar Singh

Batch No :- IMU-36

Enrol. No :- 1642813007

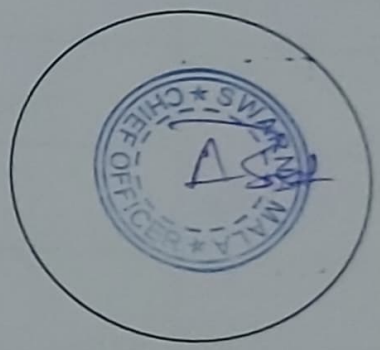
INDOS No :- 16NL2240

PHASE :- I

Project No :- 10.2.1

Project Topic:- CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD

STO SIGN

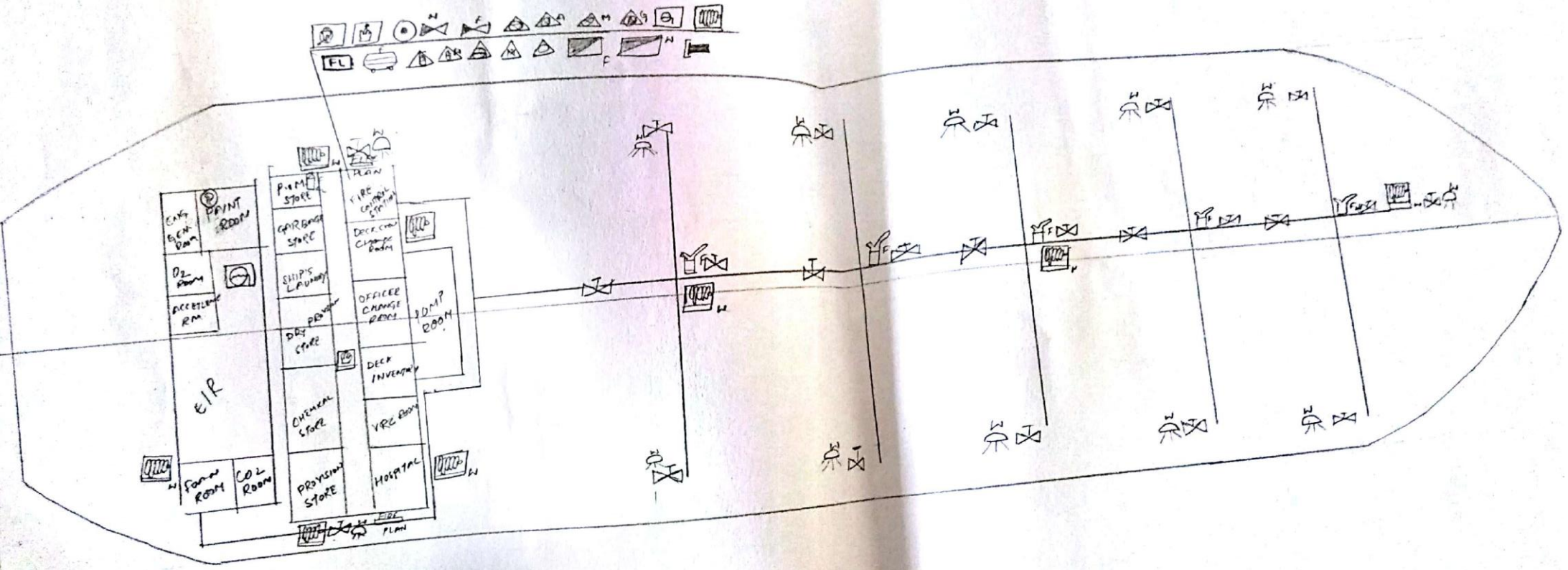


PROJECT NAME:-

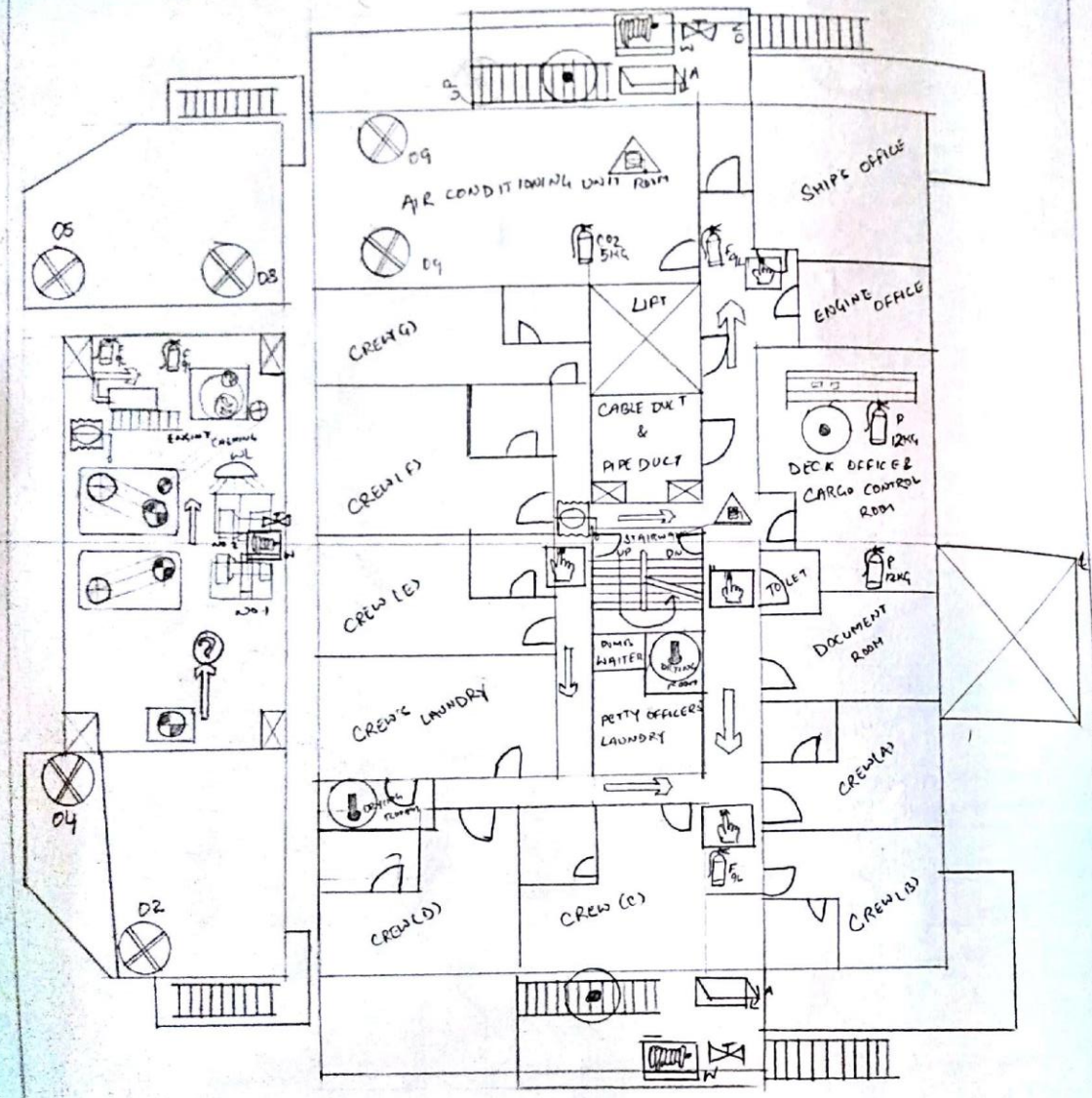
Draw plan views of the decks showing all LSA and FFA with the proper IMO symbols and also the sounding pipes with their colour coding.

FFA PLAN.

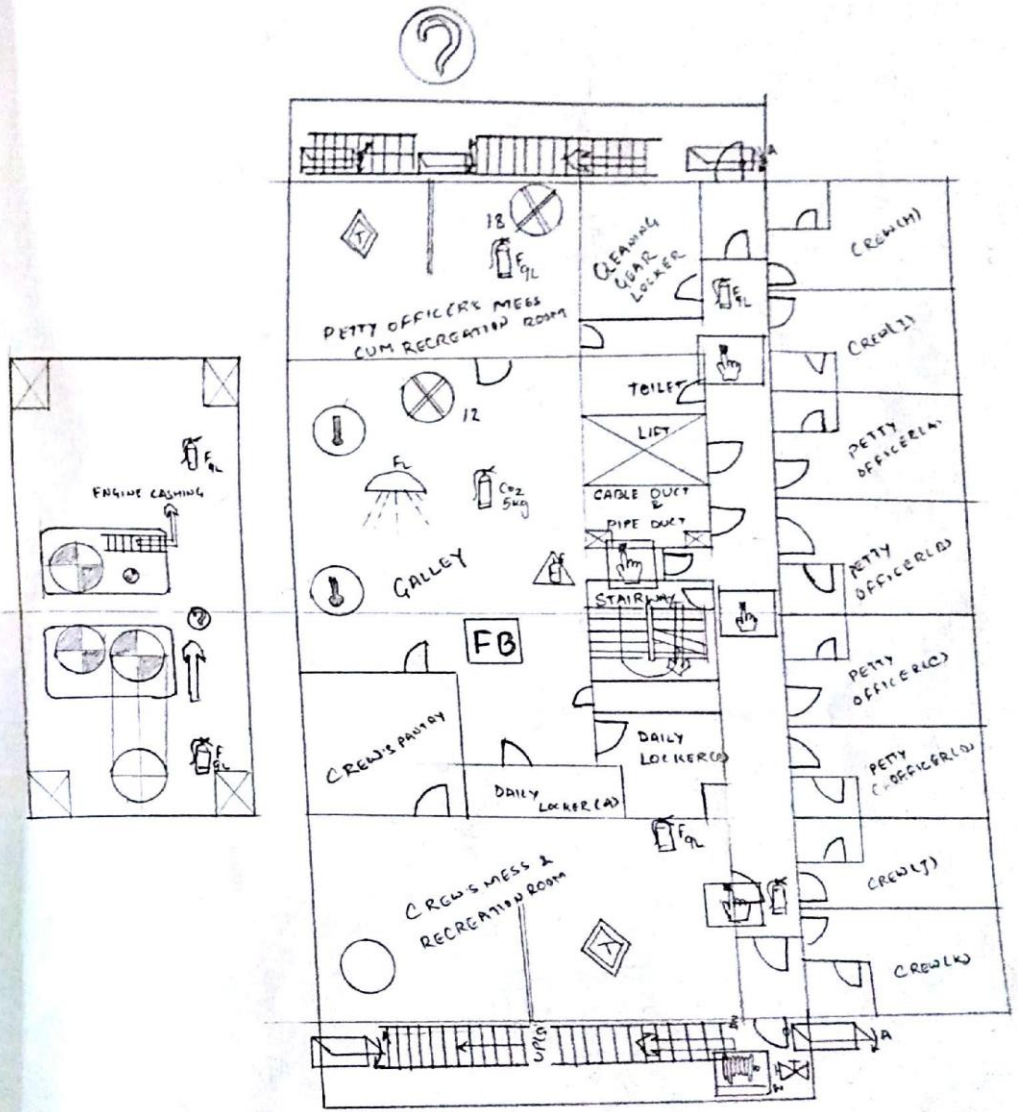
UPPER DECK.



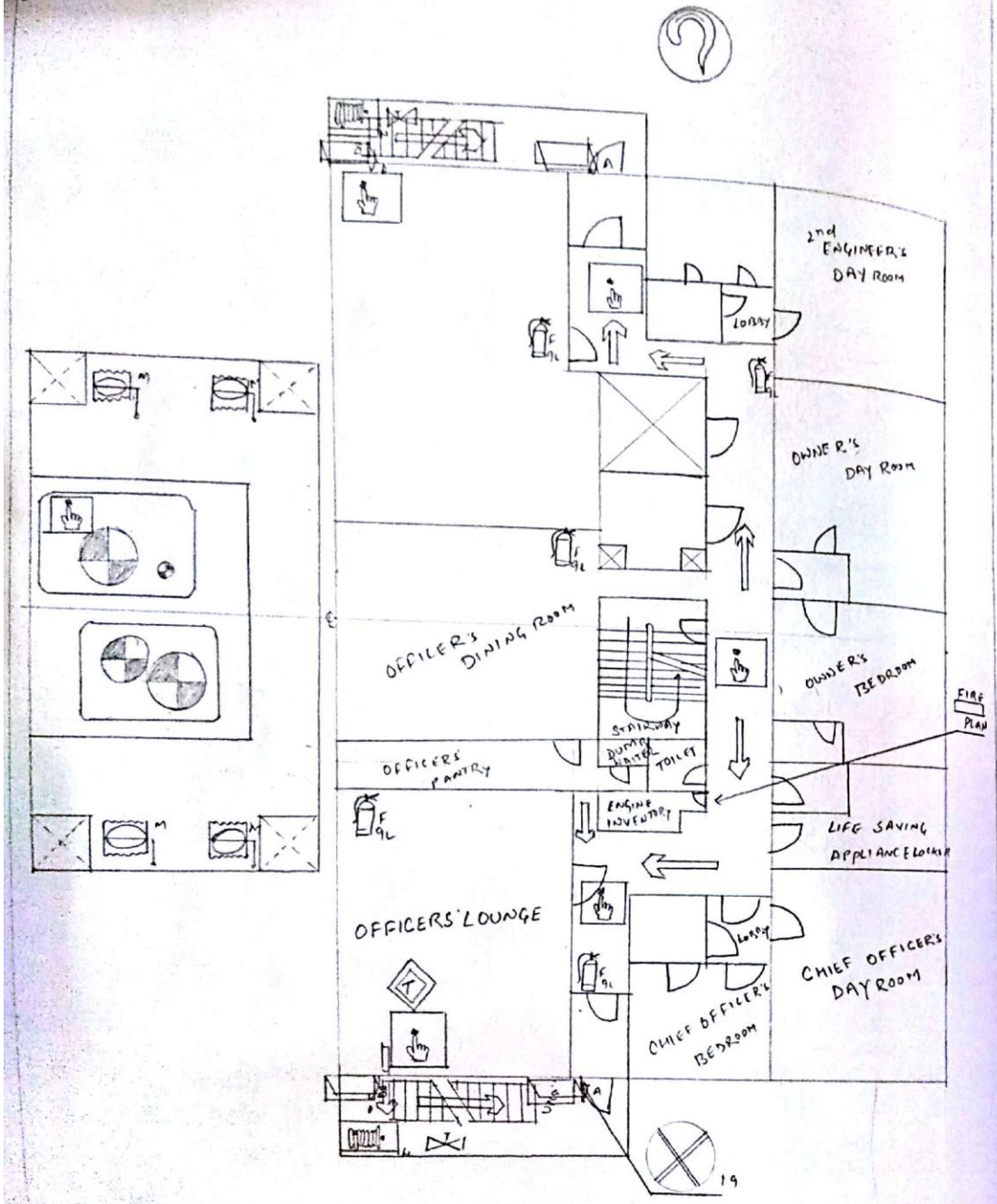
A- DECK



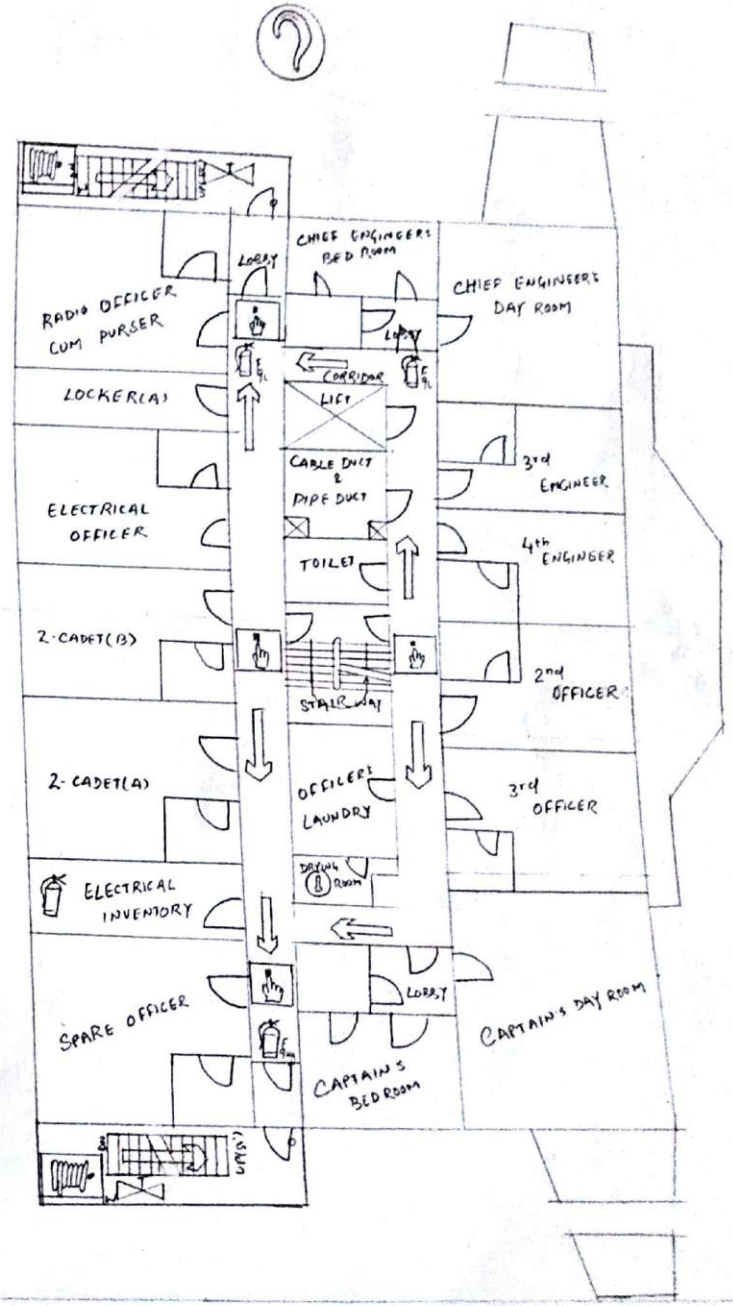
B- DECK



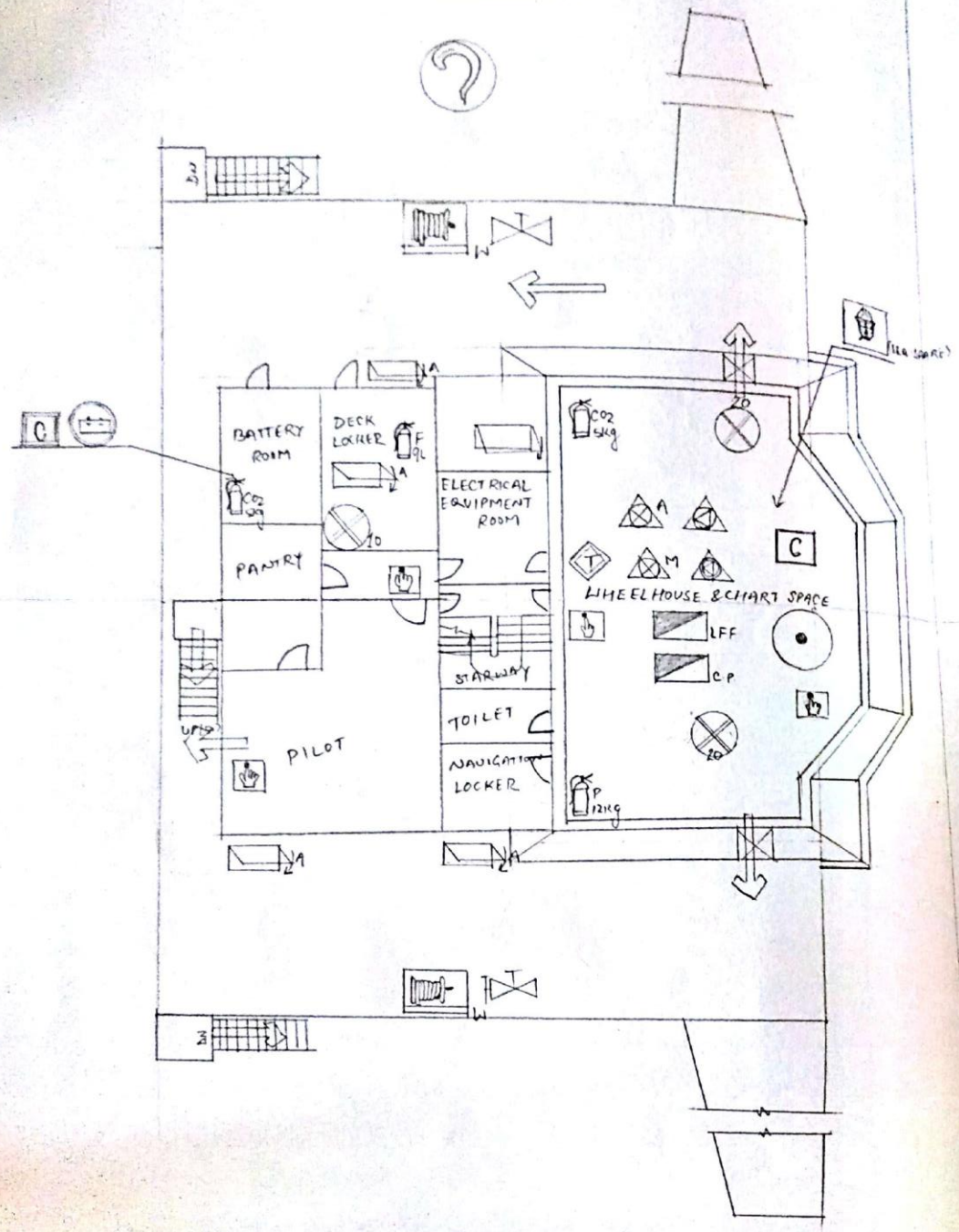
C- DECK



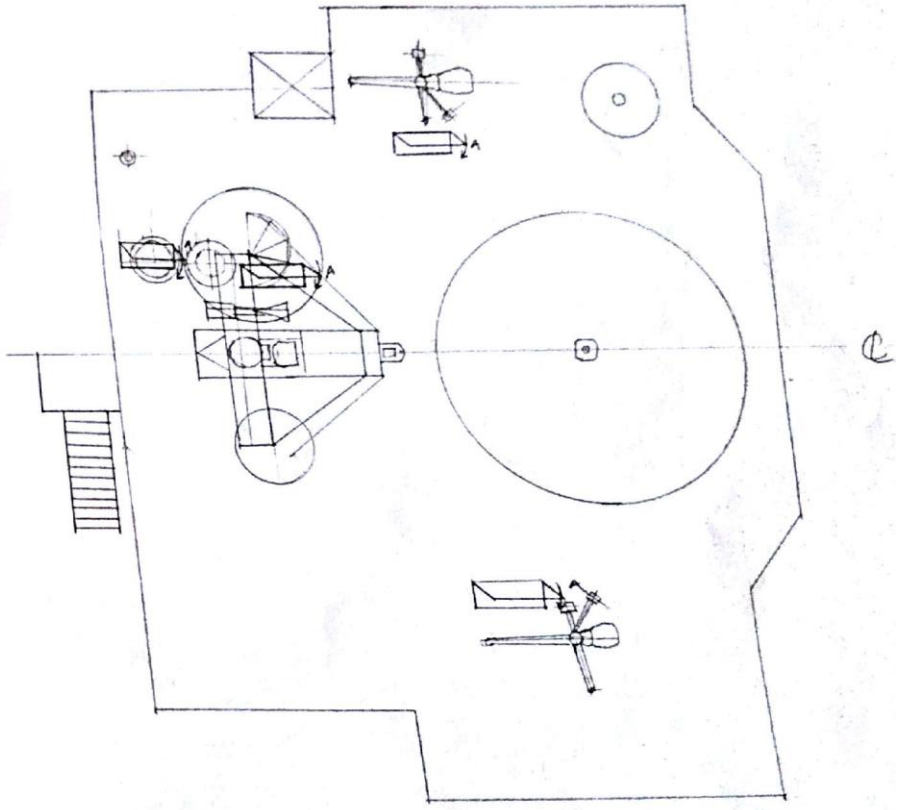
D - DECK



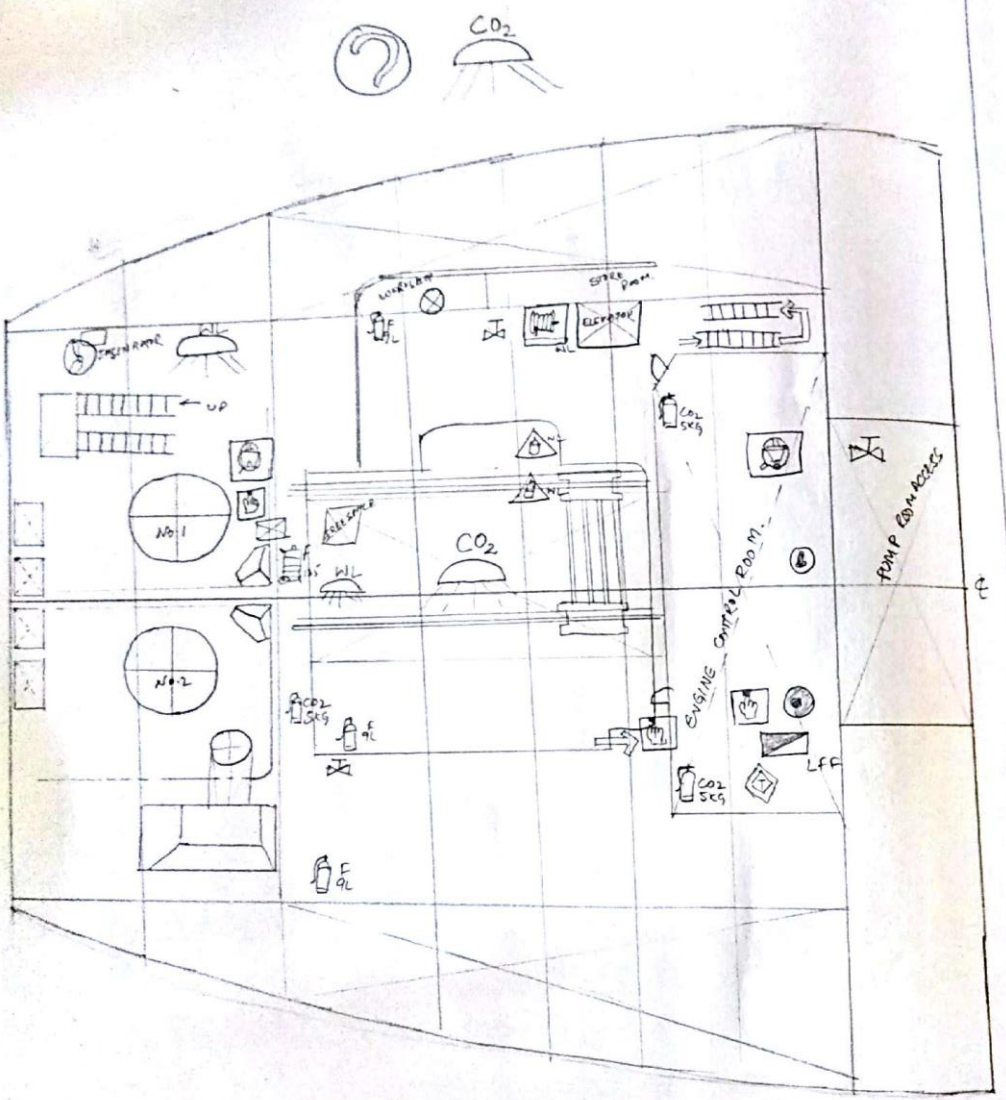
NAV- DECK



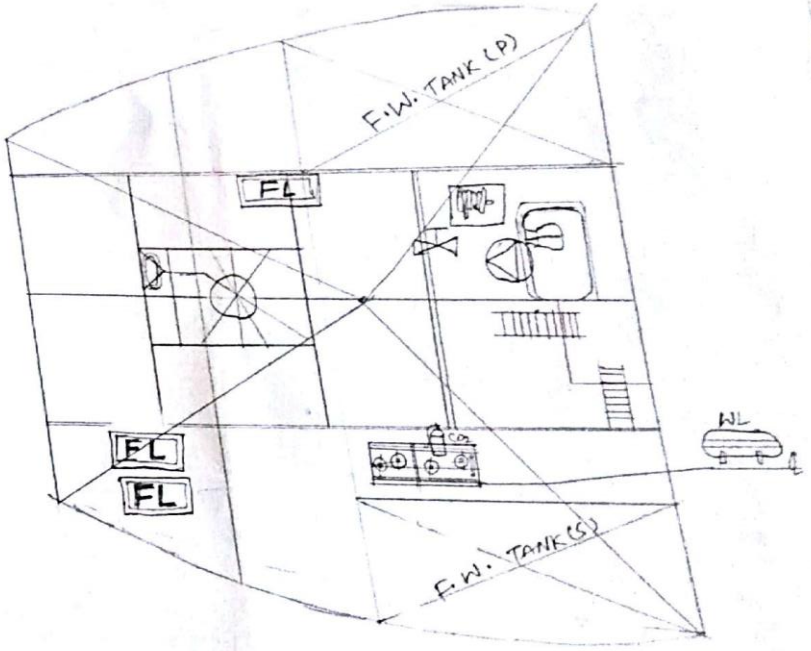
COMPASS DECK



ENGINE ROOM 2nd DECK.

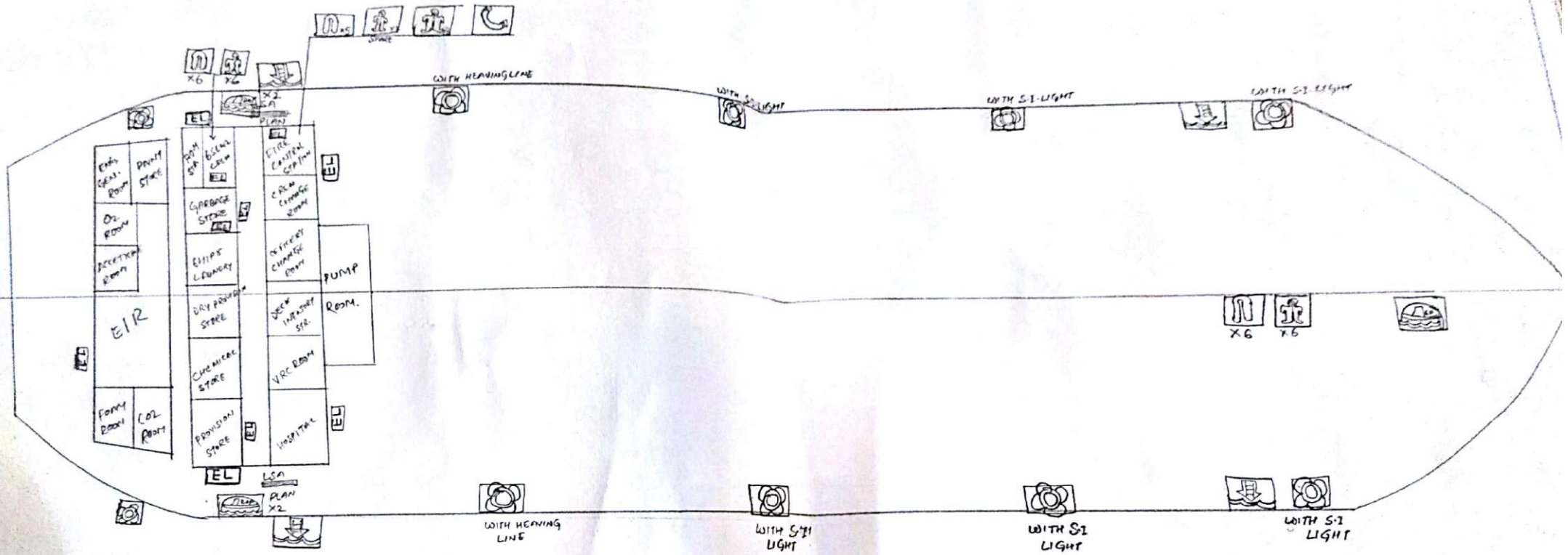


STEERING GEAR ROOM.

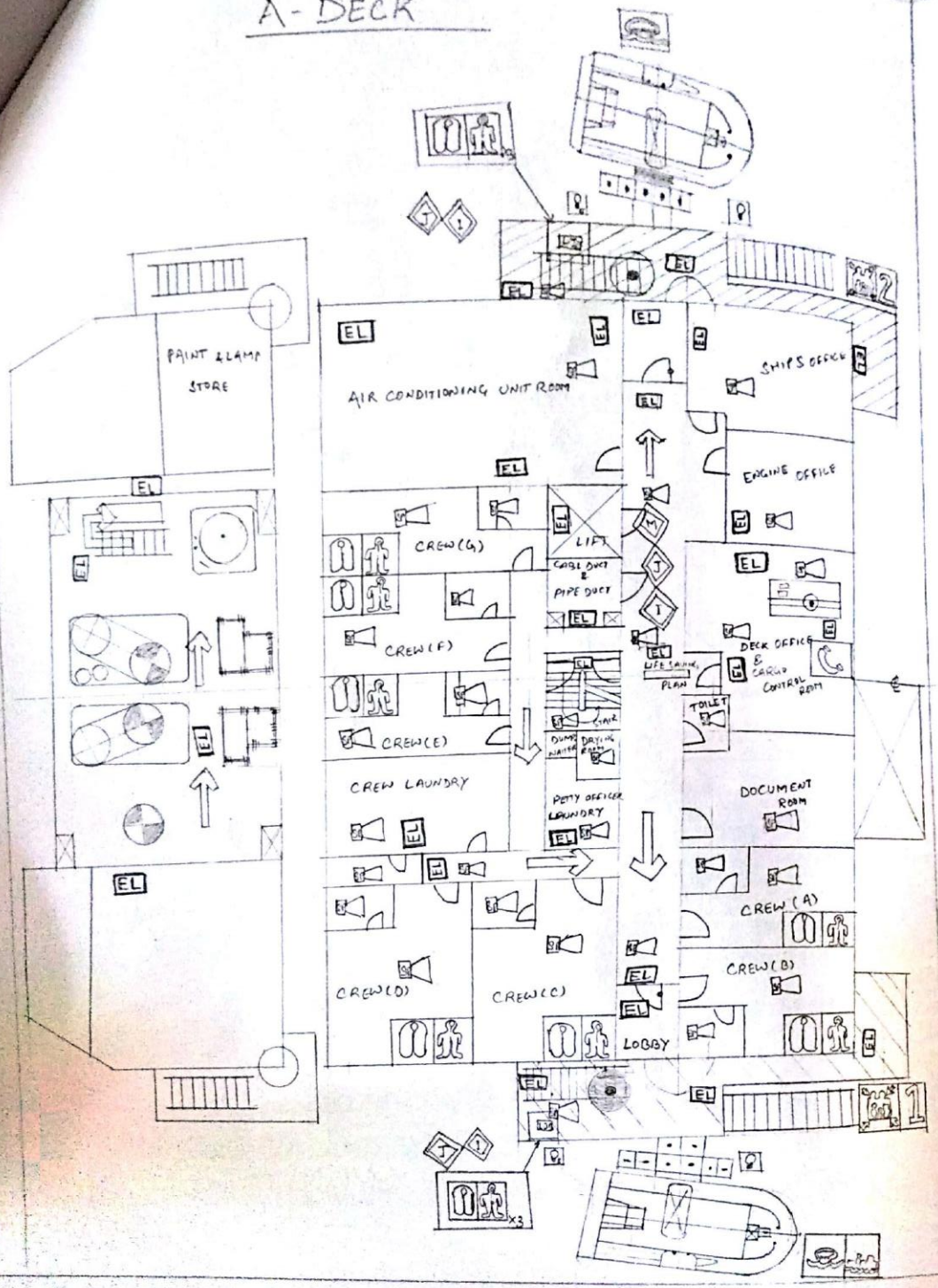


LSA PLAN

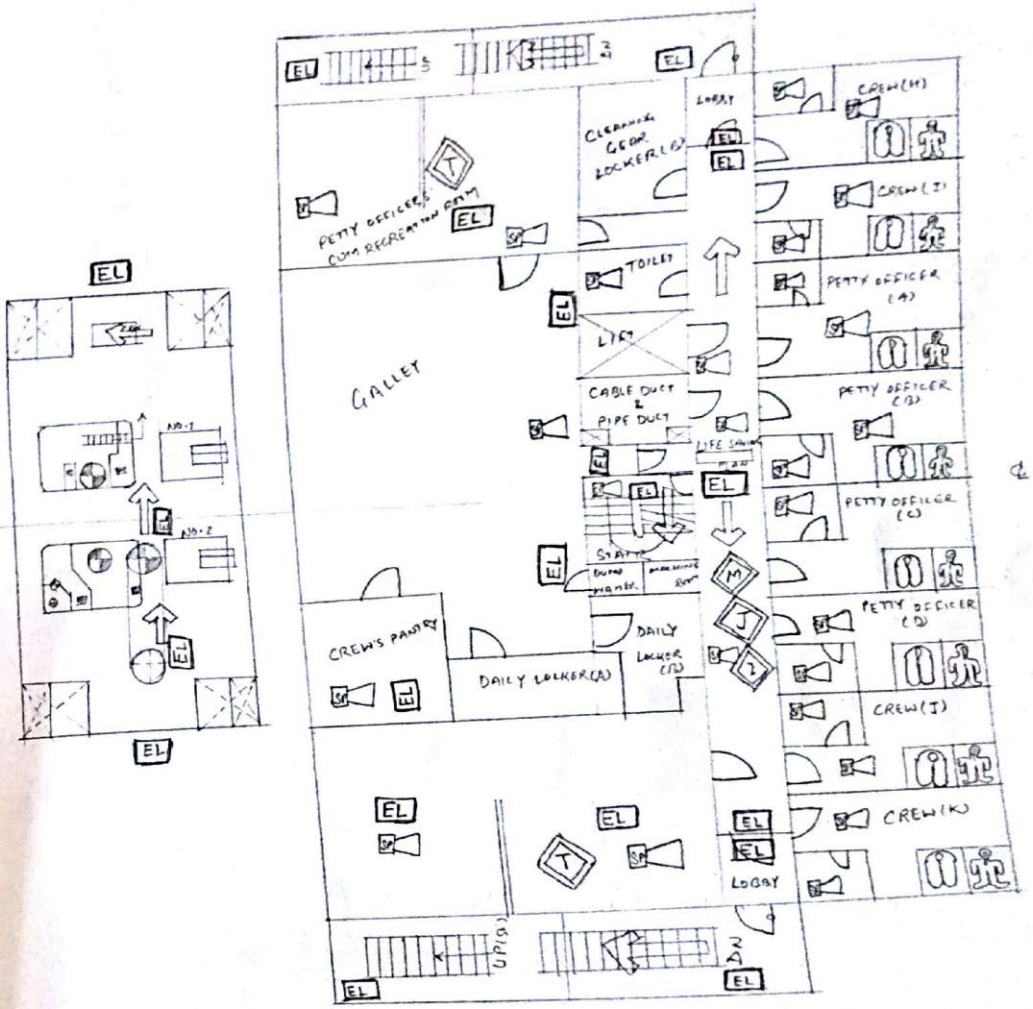
UPPER DECK



A-DECK



B-DECK



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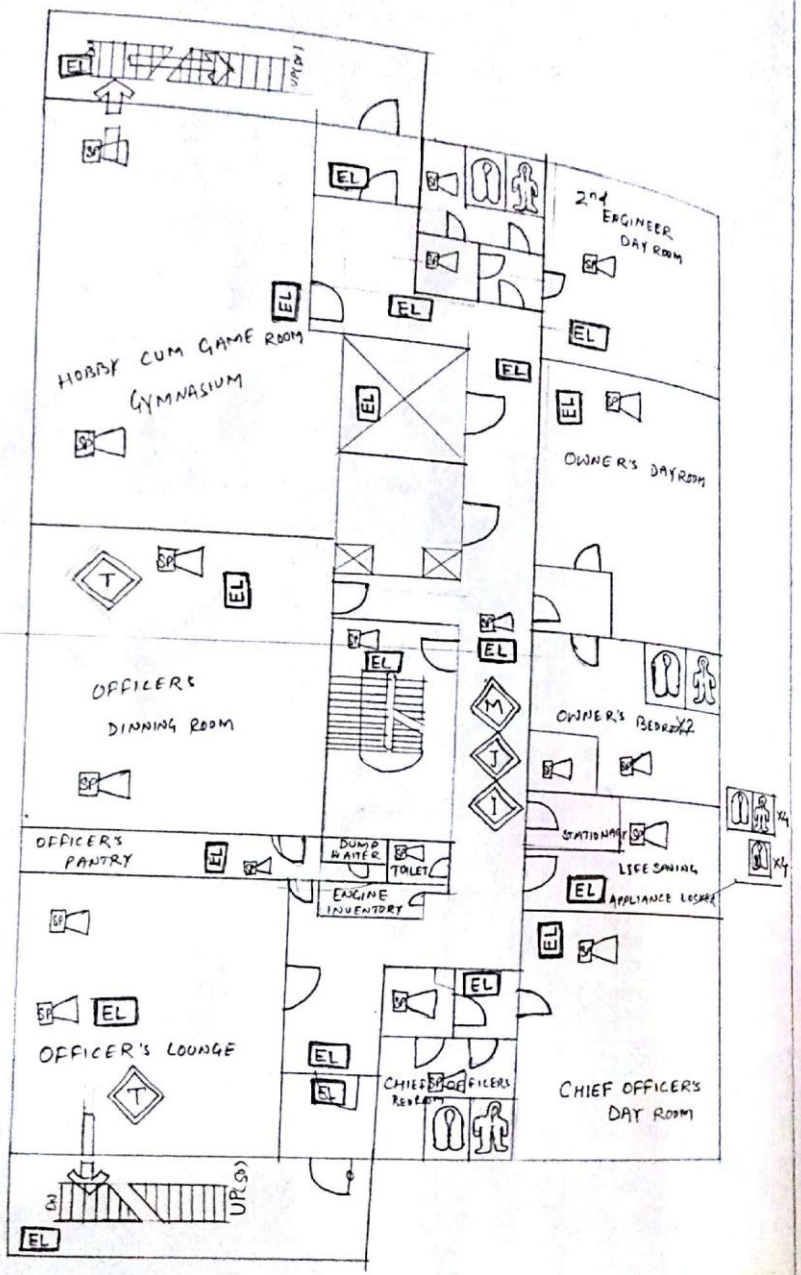
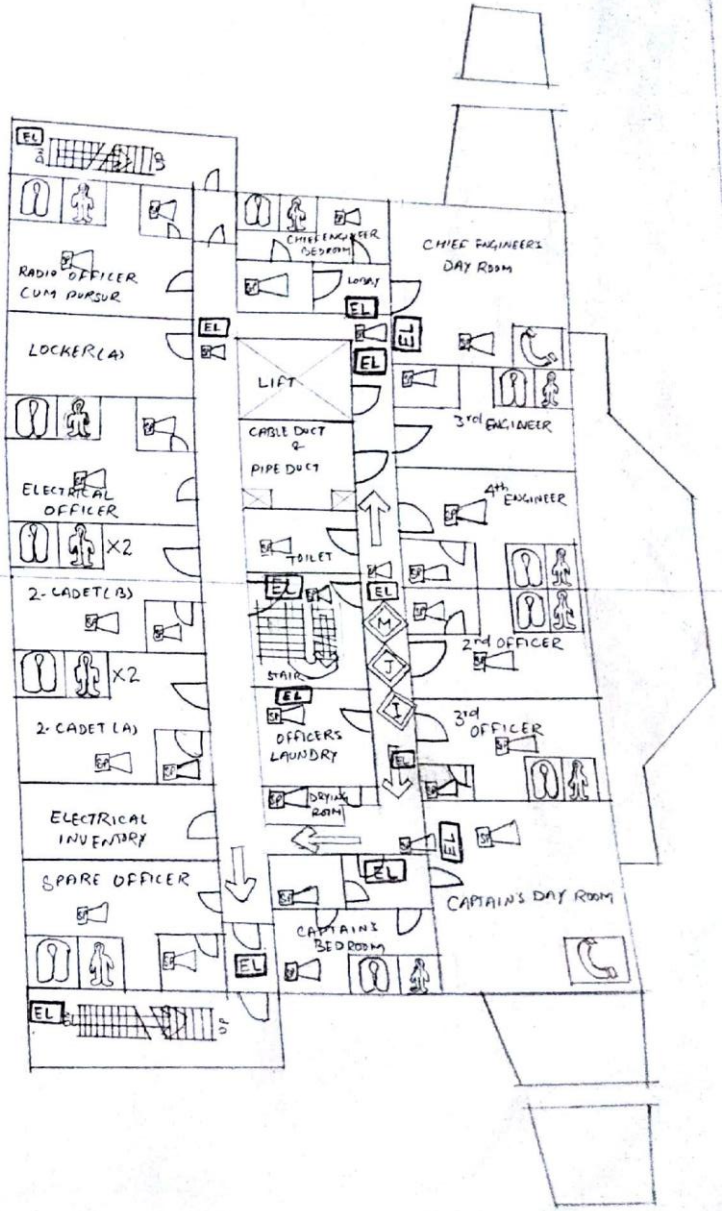
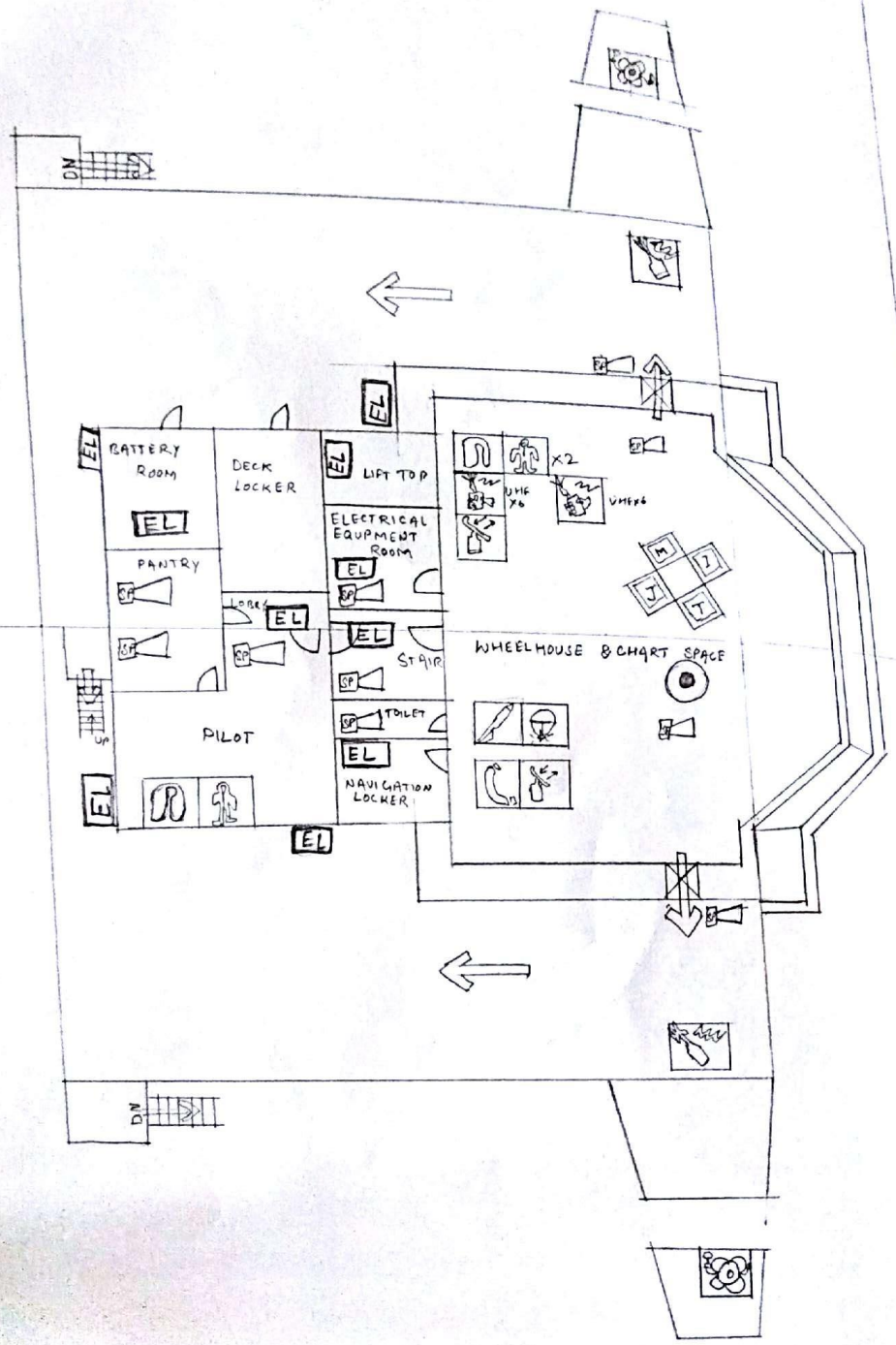


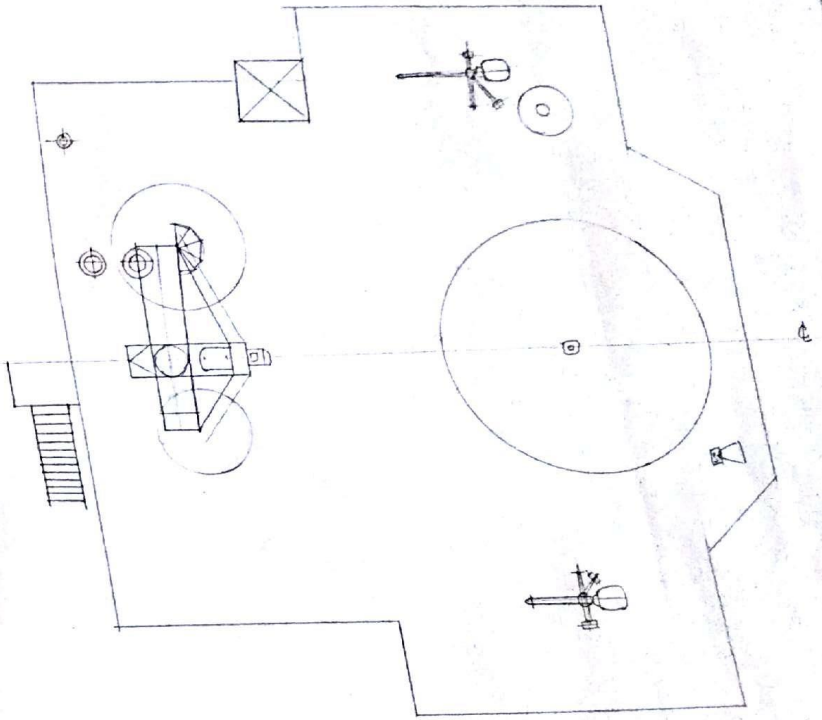
D- DECK



NAV - DECK

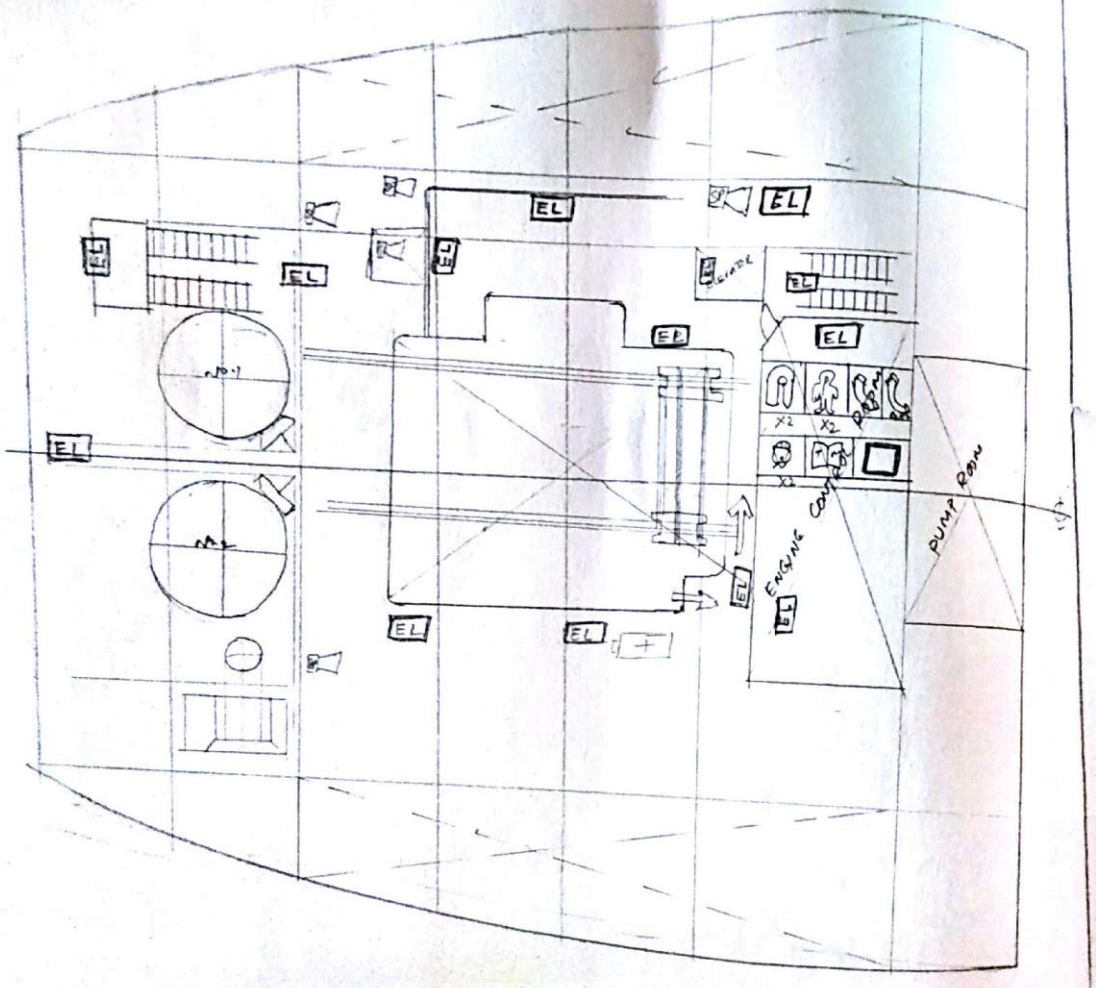


COMPASS DECK

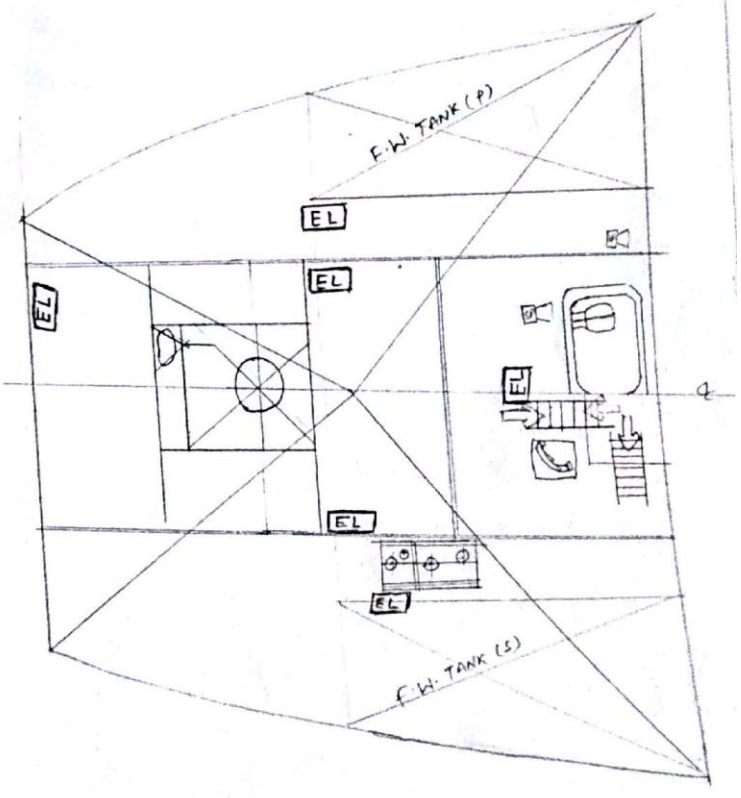


LSA PLAN

ENGINE ROOM 2ND DECK.



STEERING GEAR ROOM



Project Work

Name :- Anupam Kumar Singh

Batch No :- IMU-36

Enrol. No :- 1642813007

INDOS No :- 16NL2240

PHASE :- I

Project No :- 10.2.2

Project Topic:- CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD

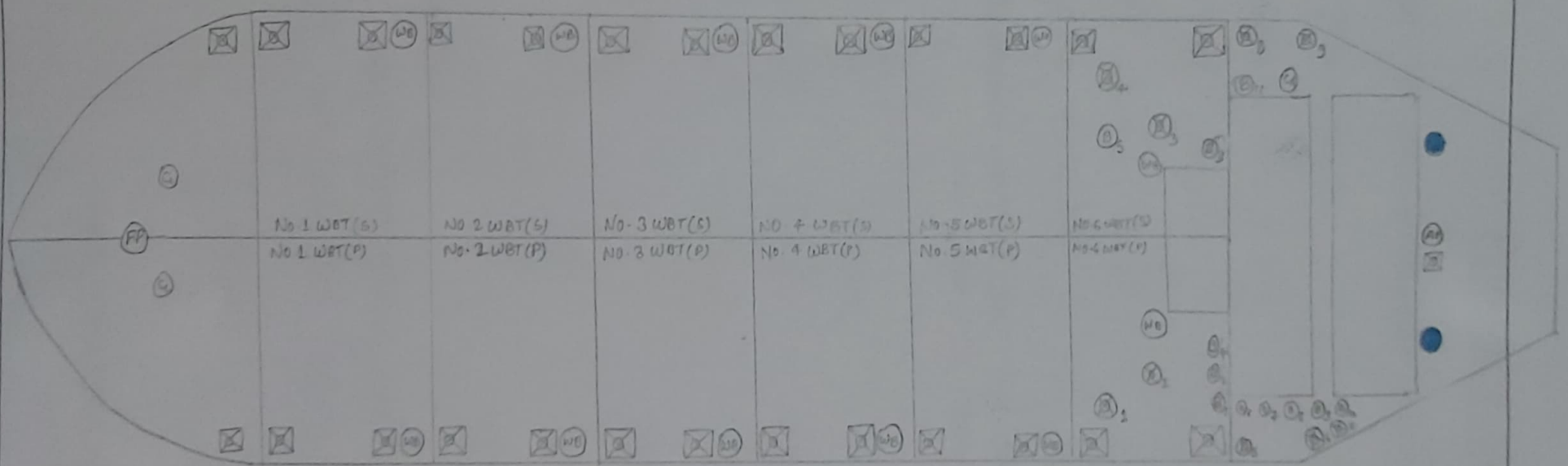
STO SIGN

PROJECT NAME:-

Locate the sounding pipes and air pipes of all the tanks on the ship, including ballast tanks, bunker tanks, cofferdams and peak tanks. Draw a colour coded plan indicating the location of all these items.

M.T. SWARNA MALA

STARBOARD



WB	Sounding pipe for W.B Tanks
AP	Sounding pipe for Aft Peak Tank
FP	Sounding pipe for Fore Peak Tank
Cd	Sounding pipe for cofferdam
B	Sounding pipe for bunker tanks
	Air vent for bunker tanks
	Air vent for bunker tanks
	Sounding pipe for F.W tanks

Sounding pipe of bunker tank		Air vent of bunker tank	
B_1	NO 1 HFO TANK (P)	V_1	NO 1 HFO TANK (P)
B_2	MDO SETT TANK	V_2	NO 1 HFO TANK (P)
B_3	MDO STORE TANK	V_3	NO 1 HFO TANK (S)
B_4	MDO SERVICE TANK	V_4	NO 1 HFO TANK (S)
B_5	NO 1 HFO TANK (S)	V_5	HFO/LSMGO STORE TANK (P)
B_6	LSFO/LSMGO STORE TANK	V_6	MDO SETT TANK
B_7	HFO SETT TANK	V_7	MAIN L.O SETT TANK
B_8	HFO SERV TANK	V_8	NO 2 LSMGO TANK (S)
B_9	LSMGO SERV TANK	V_9	NO 1 LSMGO TANK (S)
B_{10}	LSMGO SETT TANK		
B_{11}	NO 1 LSMGO TANK (S)		

Page No

Project Work

Name :- Anupam Kumar Singh

Batch No :- IMU-36

Enrol. No :- 1642813007

INDOS No :- 16NL2240

PHASE :- I

Project No :- 10.2.3

Project Topic:- CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD

STO SIGN

PROJECT NAME:-

Draw the ventilation arrangement onboard and state clearly the natural and forced types of ventilators

M.T. SWARNA MALA

* Natural ventilation

Natural ventilation is a type of ventilation which relies on air circulation driven by convection, with outside air entering and inside air exiting through vents. The driving force of the natural ventilation is the difference in air pressure inside and outside the vessel, caused by the difference in air pressure inside and outside of vessel and/or the velocity and current pattern of air surrounding the vessel.

* Forced or mechanical ventilation

Mechanical system is a type of ventilation which blows air inside the space mechanically.

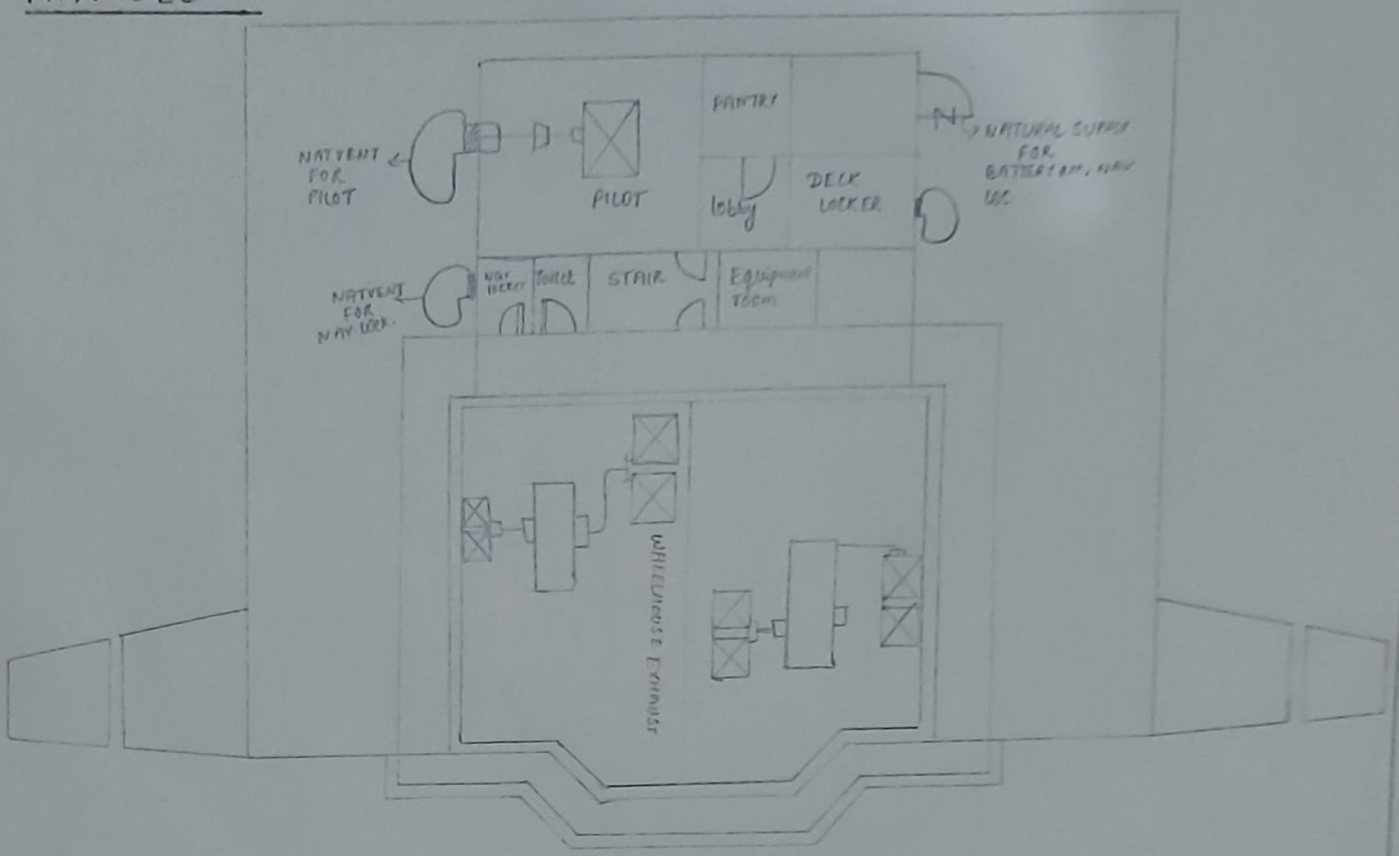
The mechanical ventilation system may be of mechanical supply/natural exhaust type, mechanical exhaust/natural supply type or mechanical supply/mechanical exhaust type, depending upon the location of the fan.

The mechanical supply/natural exhaust type will maintain a slight positive pressure within the spaces served.

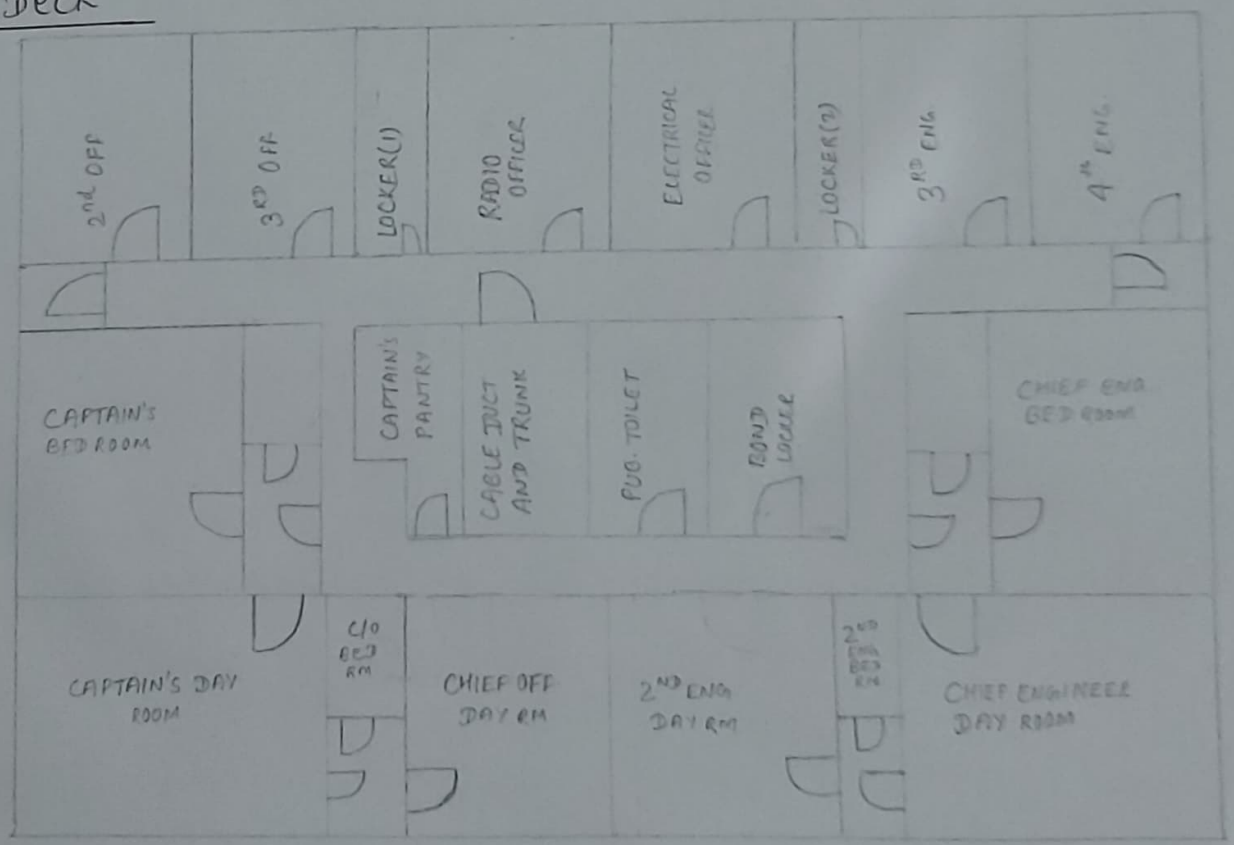
The mechanical exhaust/natural supply type will maintain a slight negative pressure within the spaces served; this type of system is used in spaces such as galleys, toilets and pantries where a positive pressure might displace the heat and odour to adjacent space.

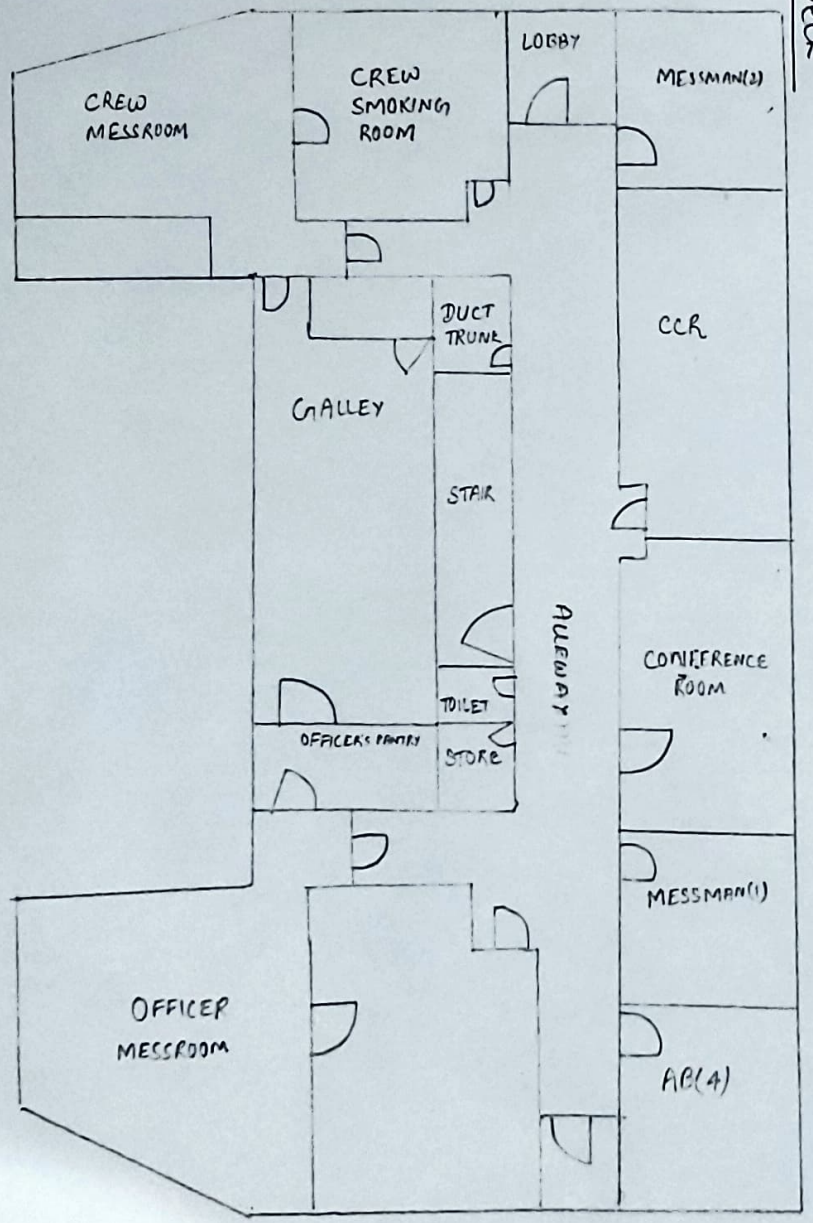
The mechanical exhaust/mechanical supply type may produce either a slight positive or negative pressure within the spaces served depending upon the relative rating of the supply and exhaust fan.

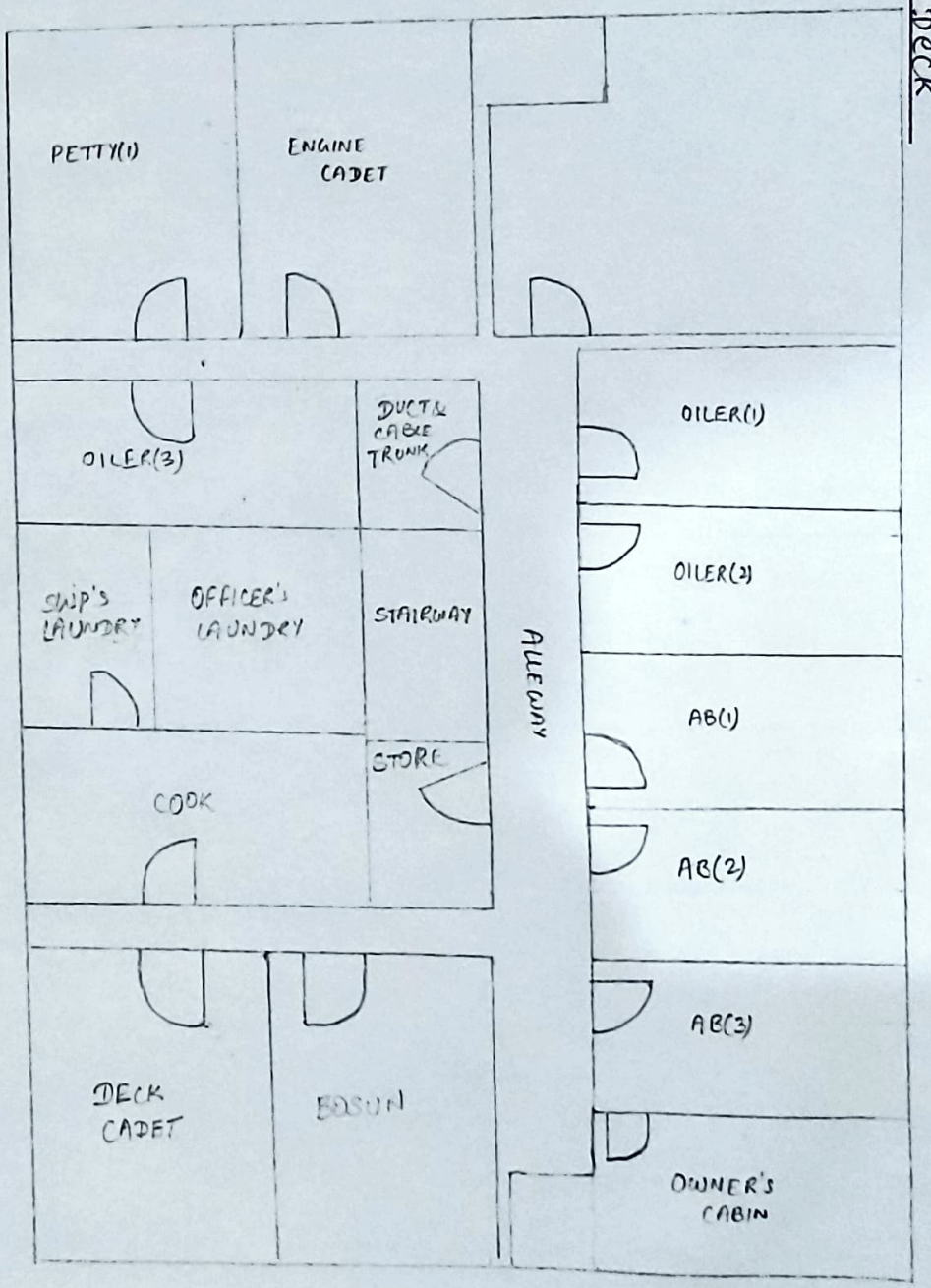
NAV DECK



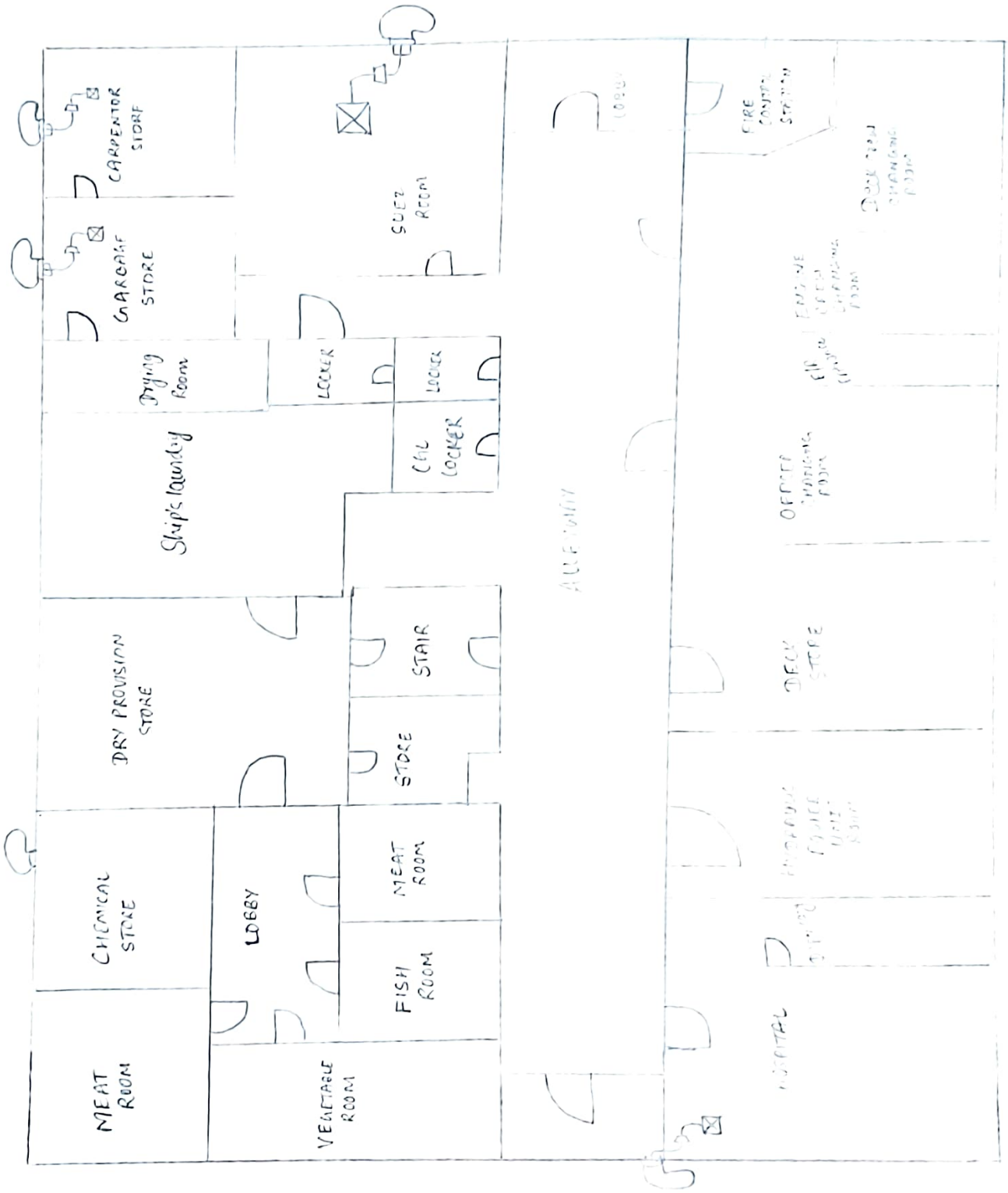
"C" Deck




A-Deck
CREW MESSROOM
CREW SMOKING ROOM
LOBBY
MESSMAN(2)
DUCT TRUNK
CCR
GALLEY
STAIR
ALLEWAY
CONFERENCE ROOM
TOILET
OFFICER'S PANTRY
STORE
MESSMAN(1)
OFFICER MESSROOM
AB(4)


B-Deck
PETTY(1)
ENGINE CADET
OILER(3)
DUCT & CABLE TRUNK
OILER(1)
OILER(2)
SHIP'S LAUNDRY
OFFICER'S LAUNDRY
STAIRWAY
ALLEWAY
AB(1)
STORE
COOK
AB(2)
AB(3)
DECK CADET
BOSUN
OWNER'S CABIN

UPPER DECK


MEAT ROOM
CHEMICAL STORE
DRY PROVISION STORE
LOBBY
VEGETABLE ROOM
FISH ROOM
MEAT ROOM
STORE
STAIR
Ship's laundry
Drying Room
GARAGE
STORE
CARPENTER SHOP
LOCKER
LOCKER
CEL LOCKER
SUEZ ROOM
ALLEYWAY
OFFICE
DECK STORE
HOSPITAL
FIRE CONTROL STATION

Project Work

Name :- Anupam Kumar Singh

Batch No :- IMU-36

Enrol. No :- 1642813007

INDOS No :- 16NL2240

PHASE :- I

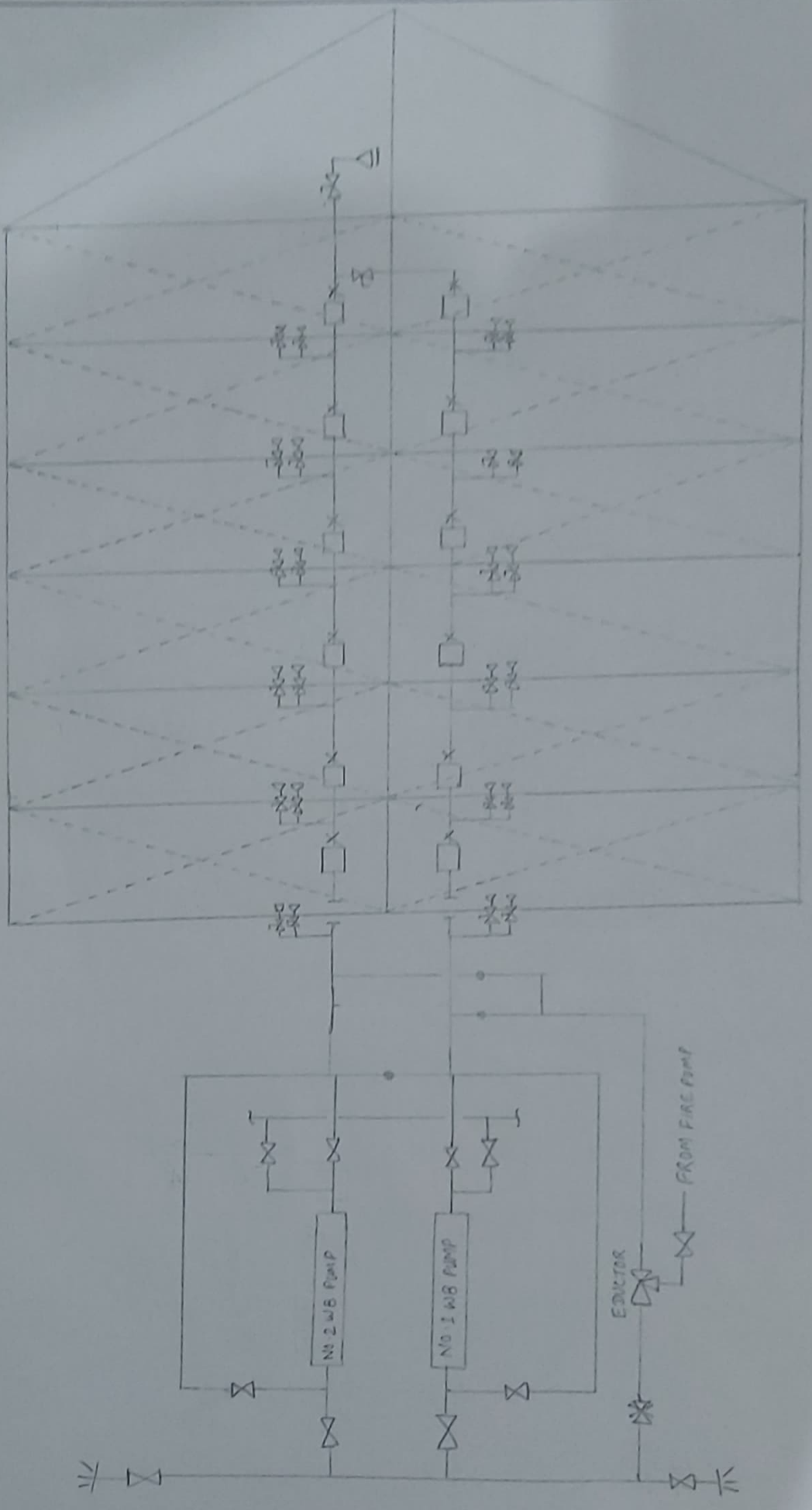
Project No :- 10.2.4

Project Topic:- CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD

STO SIGN

PROJECT NAME:-

Draw the bilge and ballast piping plan showing the outline of pumps, eductor, ballast tank, non-return and crossover valves in the system. What sort of bilge pumping arrangement is used? Write down the procedure of how would pressure test the bilge line and the non-return valve.


NO 2 WB PUMP
NO 1 WB PUMP
EDUCTOR
FROM FIRE PUMP

The procedure for testing a bilge non-return valve,-

- The easiest way to test the non-return valve is to stop the pump(eductor) and allow water to flood back into the bilge line upto the non-return valve
- The bilge line can be easily filled up by gravity and if no water enters the hold bilge, then the non-return valve is working correctly.
- However if water flows into the hold bilge, the non-return valve, normally situated in stool spaces or duct keel is not working properly
- The non-return must be opened and cleaned and checked for wear, deformation, dents or damage to any of the structure or fitting.
- The bilge line and the non-return valve can also be pressure tested to check the above

10.2 PROJECTS: CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD
First Phase 5,6

Appendix 3

IMU

DECK CADET

STRUCTURED SHIP BOARD TRAINING PROGRAMME

PROJECT FILE

NAME: ANUPAM KUMAR SINGH

IMU ENROLMENT No. 1642813007

INDoS No. 16NL2240

Deck Cadet Record Book No. 29101815

DATE: From - 26.12.2018

To - 18.05.2019

17.05.2019

P. K. V D

PROJECT WORK

INDEX

Sr. No	PROJECT NAME	Page Nos.	Date
5.	List all the safety precautions to be taken when working aloft and when working overside		13.01.2019
6.	Describe the precautions to be taken when entering a double bottom ballast tank for inspection.		18.03.2019

STO Signature,date and stamp to be taken prior sign off from each vessel :

17.05.2019

Project Work

NAME:- Anupam Kumar Singh

BATCH No:- IMU-36

ROLL No:- 3607

E.C. No:- 597520

CDC No:- MUM280594

PHASE:- I

PROJECT TOPIC:- CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD

PROJECT No:- 10.2(5)

STO SIGN

CHIEF OFFICER
SCI NALANDA

PROJECT NAME:-

(5) List all the safety precautions to be taken when working aloft and when working overside.

M.V SCI NALANDA

-The whistle, radar/radio and tx aerials been isolated

i. The responsible officer should inform the officer on watch and the duty engineer officer to isolate the requi-red equipment & must post the safety poster.

Precautions to be taken when working overside:-

a. Permit to work for working overside to issued & grant by authorised person & checklist should be complied before commencement of work.

b. Proper PPE should be worn by personnel.

c. Proper communication should be established beetween bridge, responsible officer & personnel overside.

d. Responsible officer should always observe the overside operation and frequently report to bridge.

e. The weather condition to be observed sharply, if there is any abrupt change the work shall be stopped & the personnel should be brought on-board.

f. Confirm the condition of bosun chair are in good condition.

g. Risk assesment to be carried out.

h. Lifebuoy with sufficient line should be kept ready for immediate use.

i. Overside work to be aroided when vessel is underway, if in emergency, lifeboat and rescueboat should be ready for emergency use.

j. Safety nets to be rigged where applicable.

k. If the personnel is feeling unwell or uncomfortable, the work should be immediately stopped & the personnel to be brought back to ship.

(5) List all the safety precautions to be taken when working aloft and when working overside.

Precautions to be taken when working aloft are:-

a. Permit to work for working aloft to be issued & grant by authorised person & checklist should be compleed before commence of work.

b. Proper PPE like safety helmet, safety harness, lifevest to be worn by personnel who is working aloft.

c. Proper communication link to be set beetween the personnel, responsible officer and the bridge.

d. Safety harness should be attached to a strong point with a line.

e. The bosun chairs, stage boards, scaffoldings & ladders whichever must be suitable for use and are in good condition.

f. The weather condition including wind speed, rolling period, sun born should be considered for safe operation.

g. Risk assesement to be carried out

h. If using portable ladders, they have been set correctly at suitable places.

i. All the necessary tools to be taken alot by bucket to avoid any sort of injury.

j. If aloft work is on funnel, following been considered:
- The whistle has been isolated
- The boiler soot blowing has been agreed

k. If aloft work is near Radar scanners/radio aerials/mast, following been considered:
- The radar/scanner has been isolated

Project Work

NAME:- Anupam Kumar Singh

BATCH NO:- IMU-36

ROLL NO:- 3607

E.C. NO:- 597520

CDC NO:- MUM280594

PHASE:- I

PROJECT TOPIC:- CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ONBOARD.

PROJECT NO:- 10.2(6)

STO SIGN

CHIEF OFFICER
SCI NALANDA

PROJECT NAME:-

(6) Describe the precautions to be taken when entering a double bottom tank for inspection.

6) Describe the precautions to be taken when entering a double bottom tank for inspection.

Precautions to be taken when entering a double bottom tank for inspection are :

(a) Personnel should be wearing proper PPE and are properly equipped.

(b) Permit to entry in enclosed space to be given by responsible officer and the checklist to be complied.

(c) The arrangement should be made for the space to be continuosly ventilated throughout the period of occupation and during the break.

(d) The adequate illumination should be provided.

(e) Rescue and resuscitation equipment (SCBA set, EEBD etc.) to be kept on entrance of the space for immediate use.

(f) An attendent team/responsible person to be designated to stand by the entrance of the space and should frequently ask the personnel about the condition inside and same to be reported on bridge.

(g) An effective communication system to be set up and tested beetween the person at the entrance and those entering the space.

(h) All emergency and evacuation procedure established and understood by all personnel involved with.

(i) Ensure all equipment will be used are in good condition and inspected prior to entry.

(j) The frequent atmosphere checks to be made while the space is occupied and after work break.

(k) All personal entering the space have been provided with rescue harness and where practicable, lifelines.

(l) The officer-on-watch (bridge, engine room, cargo control room) should be advised of the planned entry.

(m) Personal gas detector to be carried by the personnel entering the double bottom ballast tank for inspection.

(n) The number of person entering the space should be limited to those who actually need to work within the space.

(o) Pre-entry and periodic atmosphere tests should be done. The following gases to be checked:

- Oxygen (% vol)
- HC (% LEL)
- H_2S (ppm)
- CO (ppm)
- Benzene (ppm)

10.2 PROJECTS: CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON-BOARD
Second Phase 8,9,10,11,13

Appendix 3

IMU

DECK CADET

STRUCTURED SHIP BOARD TRAINING PROGRAMME

PROJECT FILE

NAME: ANUPAM KUMAR SINGH

IMU ENROLMENT No. 1642813007

INDoS No. 16NL2240

Deck Cadet Record Book No. 29101815

DATE: From - 12.09.2019

To - 19.08.2020

SWARNA MALA CHIEF OFFICER

P: A.V.D

PROJECT WORK

INDEX

Sr. No	PROJECT NAME	Page Nos.	Date
8.	Draw a figure to show the mooring arrangments at your last port of call and explain why such configuration was used. what does the mooring plan of the ship indicate? Sketch the snap back zone on the forcastle mooring drawing.	01 to 04	11.11.2019
9.	Draw a block diagram of the steering system & explain the operation of the emergency steering.	05 to 08	18.01.2020
10.	Draw the outline of the fixed fire-fighting system and explain its operation	09 to 16	16.02.2020
11.	Observe the loadline marks, make a detailed sketch of these marks and explain the function of each mark	17 to 20	24.04.2020
13	List the procedure and checks to be carried out before and after flooding in dry dock. Draw a plan view of all bottom plugs	21 to 24	19.05.2020

STO Signature,date and stamp to be taken prior sign off from each vessel :

SWARNA MAA
CHIEF OFFICER

Date : 19.08.2020

Project Work

Name :- Anupam Kumar Singh

Batch No :- IMU-36

Enrol. No :- 1642813007

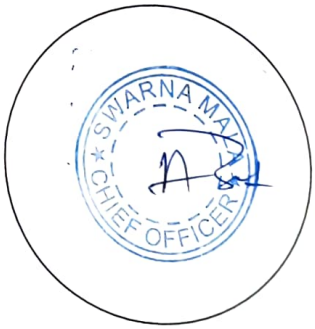
INDOS No :- 16NL2240

PHASE :- II

Project No :- 10.2.8

Project Topic:- CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD

STO SIGN

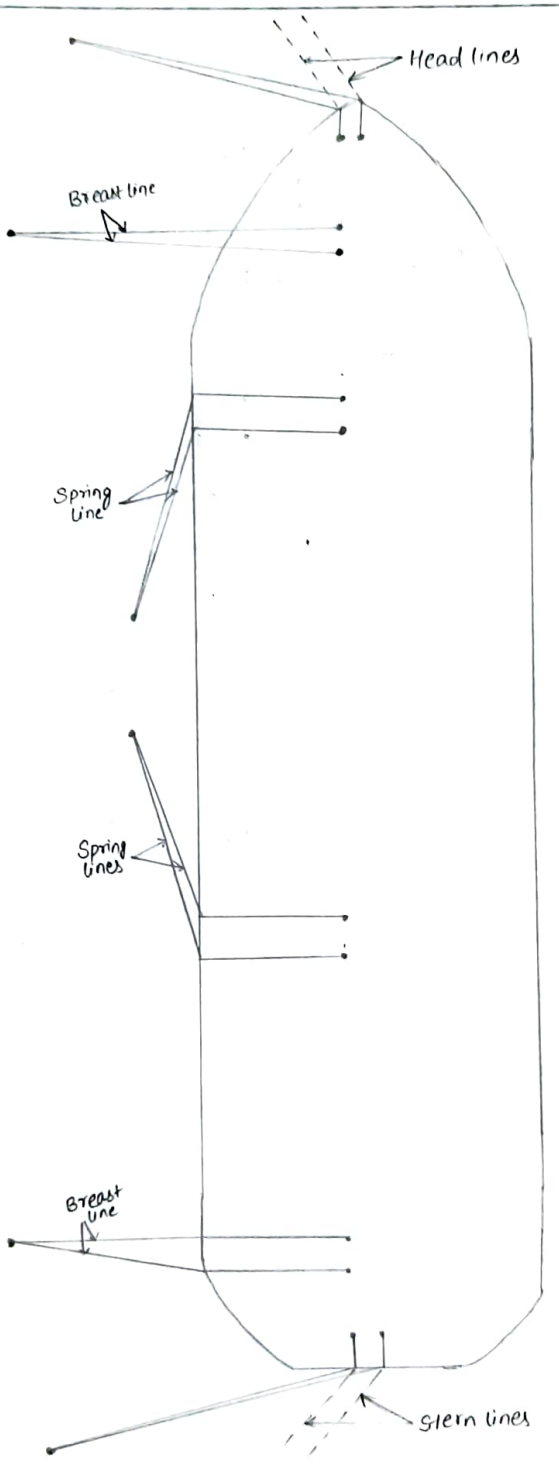


PROJECT NAME:-

Draw a figure to show the mooring arrangements at your last port of call and explain why such configuration was used. What does the mooring plan of the ship indicate? Sketch the snap back zones on the forecastle mooring drawing.

M.T. SWARNA MALA

MOORING ARRANGEMENTS AT LAST PORT OF CALL



In my tanker, M.T SWARNA MALA, all ropes were 32mm, 8 strand hausers of MBL 24900 including 4 headline, 4 spring line (2 fwd & 2 aft), 4 breast line (2 fwd & 2 aft) and 4 stern line. On my ship, generally 4-2-2 fore & aft pattern was used for berthing. While in fully loaded condition, all mooring hausers are used to keep the vessel alongside The 220M headline and sternline & 4 breast line to keep the vessel alongside and to avoid the unrequired movement of the ship. The 4 spring line was used to avoid the ship's movement in fore & aft direction. and as to maintain the chickson alignment. It is also required to check the status of the rope regularly as any slack and over tightness of rope can lead to dangerous accident

ues:- What does the mooring plan of the ship indicate?

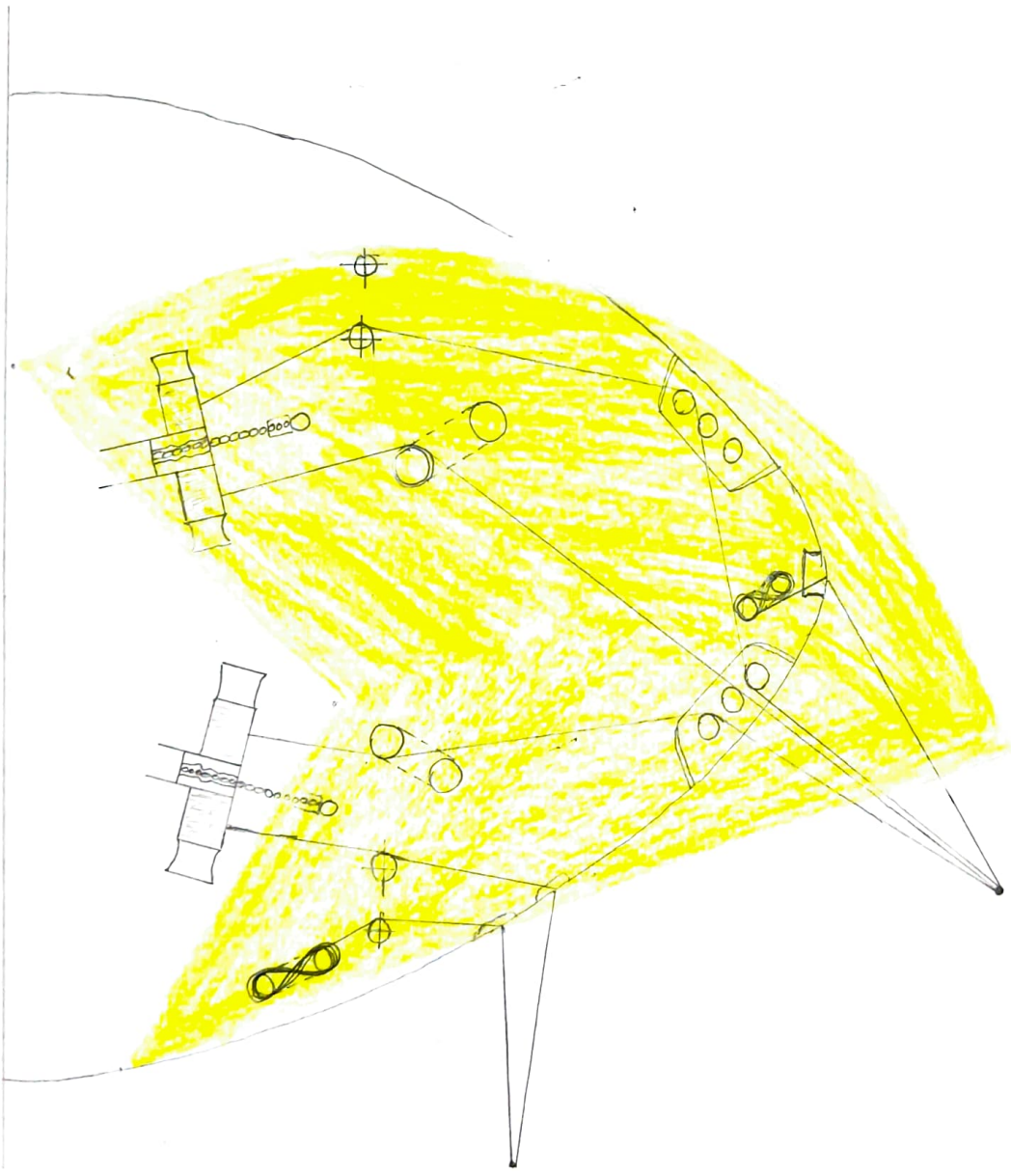
ns:- A mooring system management plan (MSMP) is part of the requirment to ensure risks are managed through the safe design and operation of mooring systems. It should be kept on board at all time and should be available for vetting inspection. It should contain the following:-

- Part A - General ship particulars
- Part B - Mooring equipment design philosphy
- Part C - Detailed list of mooring equipment
- Part D - Inspection, maintenance and retirement strategies
- Part E - Risk and change management, safety of personnel & human factors
- Part F - Records and documentation
- Part G - Mooring System Management Plan register (MSMPR)

Sketch of snap back zone on the forecastle mooring drawing

FORECASTLE DECK

Snap back area in yellow



Project Work

Name :- Anupam Kumar Singh

Batch No :- IMU-36

Enrol. No :- 1642813007

INDOS No :- 16NL2240

PHASE :- II

Project No :- 10.2.9

Project Topic:- CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD

STO SIGN

SWARNA MALA
CHIEF OFFICER

)JECT NAME:-

raw a block diagram of the steering system and explain
e operation of the emergency steering

M.T. SWARNA MALA

The steering gear system can be operated by following methods:-

(i) Auto steering
(ii) Hand steering
(iii) NFU
(iv) Remote control

(i) Auto steering :- In this mode, the course is automatically kept with the course fed in the autopilot unit

(ii) Hand steering :- In this mode, the rudder follows the order of steering wheel of the steering stand.

(iii) NFU mode :- NFU mode is a back-up method of steering that can be used in the event that the follow-up mode fails. In NFU mode, a tiller switch can be moved to left or right, which moves the rudder towards port or starboard. In this mode, helsman must hold the tiller switch until the rudder reaches the required angle and then release the tiller switch to stop the rudder's move-ment. In this event that external forces or other condition move the rudder from desired angle, the helsman must manually repos-ition the rudder using tiller switch.

(iv) Remote control :- This rudder angle will adjust accordingly to alter course as per laid in ECDIS.

The steering system on-board my good vessel M.T. SWARNA MALA is rotary vane type steering gear.

- Rotary vane steering gear is usually fitted with 3 fixed vanes and 3 moving vanes and can turn to 70° of total rudder movement i.e. 35° on each side
- It consist of a rotor, stator & a rudder stock.

- The rotor is fitted and keyed to a tapered rudder stock, the stator is secured to the ship's structure
- Fixed vanes secured equidistantly in the stator bore and
vanes secured equidistantly in the rotor; from two sets of
chamber in the annular space between the rotor & stator
- They are interconnected by a manifold. Fluid supplied at pr
to one set of these chambers will rotate rotor clockwise and
the rudder will turn to port or to starboard if the alternate
set is put under pressure.

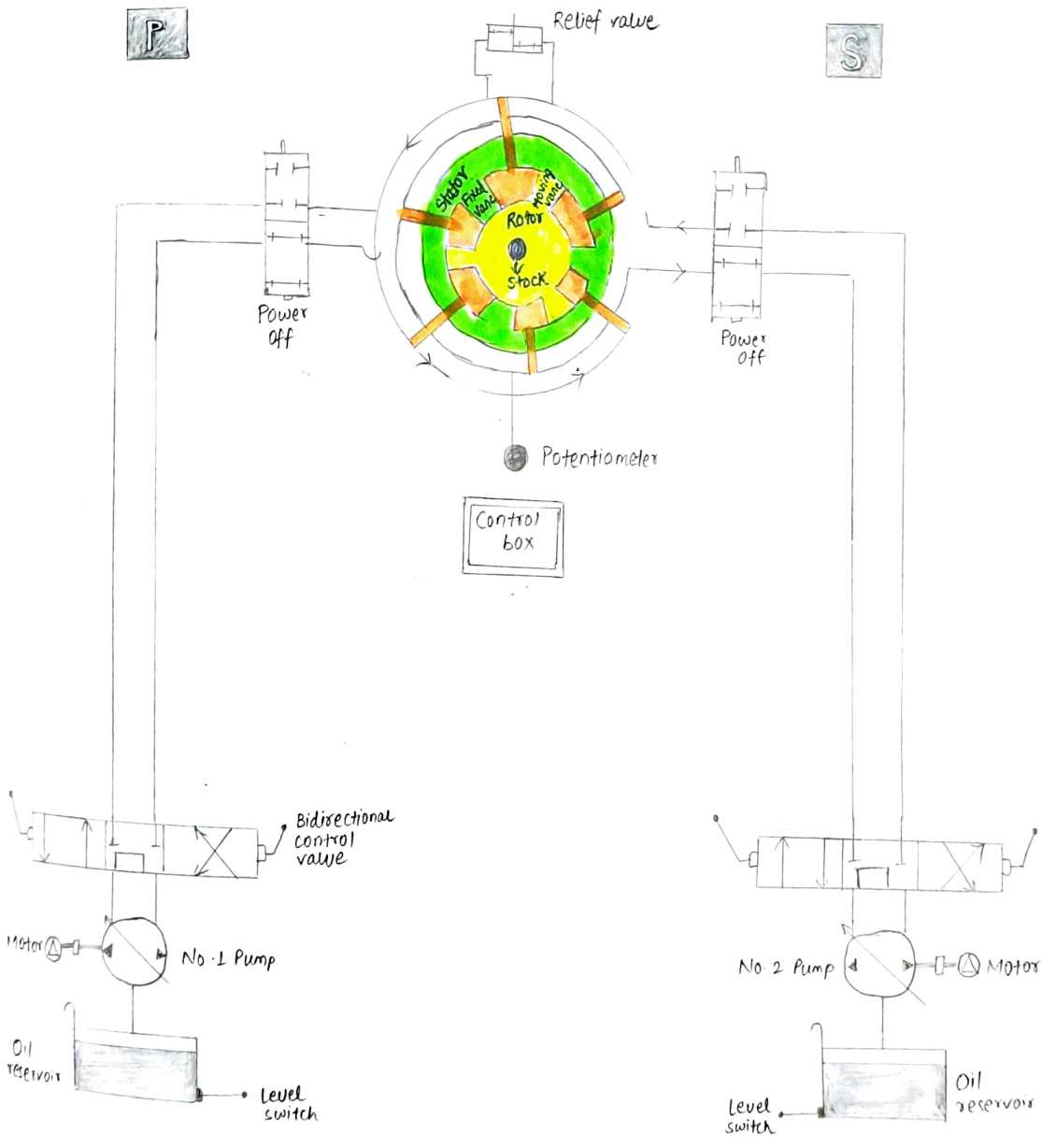
- Operation of steering

2 set of hydraulic pump & electric motor are provided and each
has enough capacity to operate the rudder within the time required
the classification society.

When at open sea, only one motor is usually in
operation, while other is acting as standby unit. During manoeuvring,
the shortest steering time and continuous rudder movement are require
It is required to run both the motors so that there is less load on each

- Operation of emergency steering

- Set up efficient communication with bridge
- Change the steering mode to NFU from bridge and steer with
non-follow up steering lever from bridge.
- Change over the steering gear mode to local control from
control
- Push the manual button of solenoid control valve and lock it by
means of lock nut
- Operate the steering gear by turning


P
Relief valve
S
Stator
Fixed vane
Moving vane
Rotor
Stock
Power off
Power off
Potentiometer
Control box
Bidirectional control valve
Motor
No. 1 Pump
Oil reservoir
Level switch
No 2 Pump
Motor
Oil reservoir
Level switch

Project Work

Name :- Anupam Kumar Singh

Batch No :- IMU-36

Enrol. No :- 1642813007

INDOS No :- 16NL2240

PHASE :- II

Project No :- 10.2.10

Project Topic:- CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD

STO SIGN

OJECT NAME:-

Draw the outline of the fixed fire fighting system and Explain its operation.

M.T. SWARNA MALA

The fixed fire fighting system on-board my good vessel M.T. SWARNA MALA are as follows:-

(a) CO_2 system
(b) Fixed deck foam system
(c) Hypermist system

(a) CO_2 fixed fire fighting system: The CO_2 system is installed to extinguish the fire from Engine room or pump room. It is a flooding system which act as a fire supression agent. It has a high rate of expansion which allow it to work fast. It provides a heavy blanket of gas that reduces the oxygen level to a point where combustion cannot occur.

- Operation and working:- As mentioned above, CO_2 system floods the space under fire with carbon dioxide, which displaces air, thereby removing one leg of fire traingle for the extinction of fire. CO_2 system consist of main CO_2 bottles, common manifold, master valve and distribution pipelines with nozzles.

Main CO_2 bottles contain carbon dioxide in liquid state with a press of 56 bar at 20°C. CO_2 from the main bottles is released by a 'CO_2 release cabinet'

- Procedure to release the CO_2 system:-

1) First, CO_2 release cabinet door is opened using the key
2) As soon as the release cabinet door is opened, a micro switch is activated. The microswitch will ensure the activation of CO_2 warning alarms and ventilation shut off
3) CO_2 release cabinet consist of two pilot CO_2 bottles containing CO_2

gas inside. The pressure of CO_2 inside these pilot bottles is same as that of main CO_2 bottles, only quantity of gas is different.

4) For releasing CO_2 to the space, one of the pilot bottle valve is opened.

5) Now CO_2 reaches two valves marked 1 and 2

6) First valve 1 is to be opened, then CO_2 passes through a NRV and opens pneumatically operated master valve. Now master valve is opened.

7) Next, open valve 2 which supply CO_2 to main CO_2 bottle head assembly through a NRV & time delay unit → it give time delay of 60 to 120 sec to escape all personnel in the space after operation

CO_2 bottle head assembly consist of a pressure operated cylinder valve. As CO_2 reaches the head assembly from pilot bottle, pneumatic actuator in the head moves and opens the pressure operated cylinder valve

8) Then CO_2 from main bottles escape to the common manifold via NRV

9) Each of the main CO_2 cylinder have a head assembly and a NRV. The CO_2 line is connected to all these heads. All the CO_2 from the main bottles now release to common manifold.

10) Since the master valve is already open before, CO_2 from manifold is released to the protected space through distribution lines and nozzles.

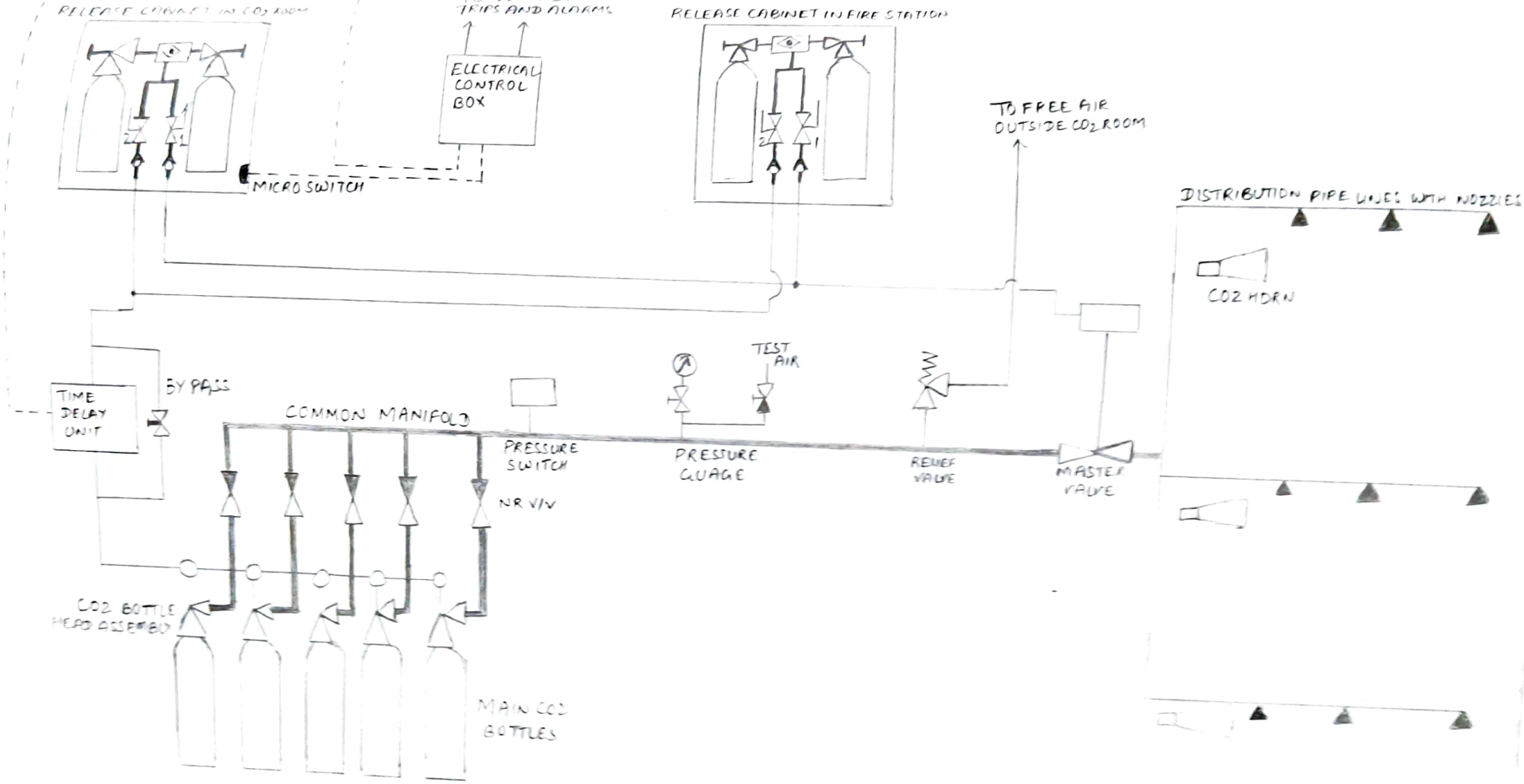
Diagram in Page No. 12

(b) Fixed Deck foam system: The fixed foam system are very effective and can be used in open areas like deck as well as closed areas like engine room. Foam gives smothering and cooling effect to the applied area. It is cost effective, minimal & easy maintenance and easy operation. The deck foam fire extinguishing system consist of

(a) Fibre glass foam tank (b) Foam pump

(c) Proportioner (d) Seawater Pump (e) Foam monitors

(a) Foam tank:- It is a storage tank of foam solution having a level guage to check the level of foam solution. There is a filler



CO2 fixed fire fighting system

cap to refill the foam solution. Also, a vent is provided for over & under pressurisation of the tank. A drain is also provided to check the solution and drain out the whole solution if seems to be damaged.

(b) Foam Pump:- It's a centrifugal pump having suction from foam tank and fire line. The suction from fireline is only for flushing and testing purpose of the pump.

(c) Proportioner: Improper water and foam mixture can't make a proper foam. Water and foam mixing ratios can be adjusted using this.

(d) Sea water pump: This can be a fire pump or emergency fire pump which will give enough water in the foam line.

(e) Foam monitors: Mixing of air takes place in foam monitors. Foam monitor can be rotated to 360 degress & have an elevation of -45° to 70°.

- Operation and working: > Line up the fire pump to the foam line
  > Start fire pump
  > Open the suction and discharge valve of foam pump. Make sure that valves in flushing lines are closed.
  > Start foam pump
  > Open the monitor or foam hydrant valve as required & fight the fire.
- Low, medium & high expansion foam of system

The ratio of mixing with water determines whether the foam generated is high expansion foam, medium expansion foam or low expansion foam

> low expansion foam are used in open areas because of its having heavier density. (If high expansion foam is used, bcz of low density it may get thrown by wind)
> High expansion foam are used in closed space like engine room.
> The foam with expansion ratio beetween 1:2 and 1:20 is low expansion foam
> The foam with expansion ratio beetween 1:20 and 1:200 is medium expansion foam
> The foam with expansion ratio above 1:200 is high expansion foam.

* Diagram in Page NO. 15

* Hypermist System:- The hypermist system is installed for all important Ship's machinery system in the engine room like ME, AE, purifier, boiler etc. This system is independent of any other fixed fire fighting system such as foam or CO_2 system. A fresh water pump takes suction from fresh water tank to supply high pressure water to sprinkler system. Each area is isolated by valves which can be operated during emergency including fire. This system have cooling effect, oxygen replacement effect, shut-off effect & smoke eliminating.

- Operation & working: High pressure water is injected through a special nozzle working within pressure range of 4 to 10 MPa, which breaks the water droplets into fine mist. The diameter of the water mist particles range from 50 to 200 μm which improves the fire extinguishing effect and efficiency of system. The distance beetween any two nozzles is very critical as area covered by one nozzle must be such that no space is left unsprayed in the fire affected area.

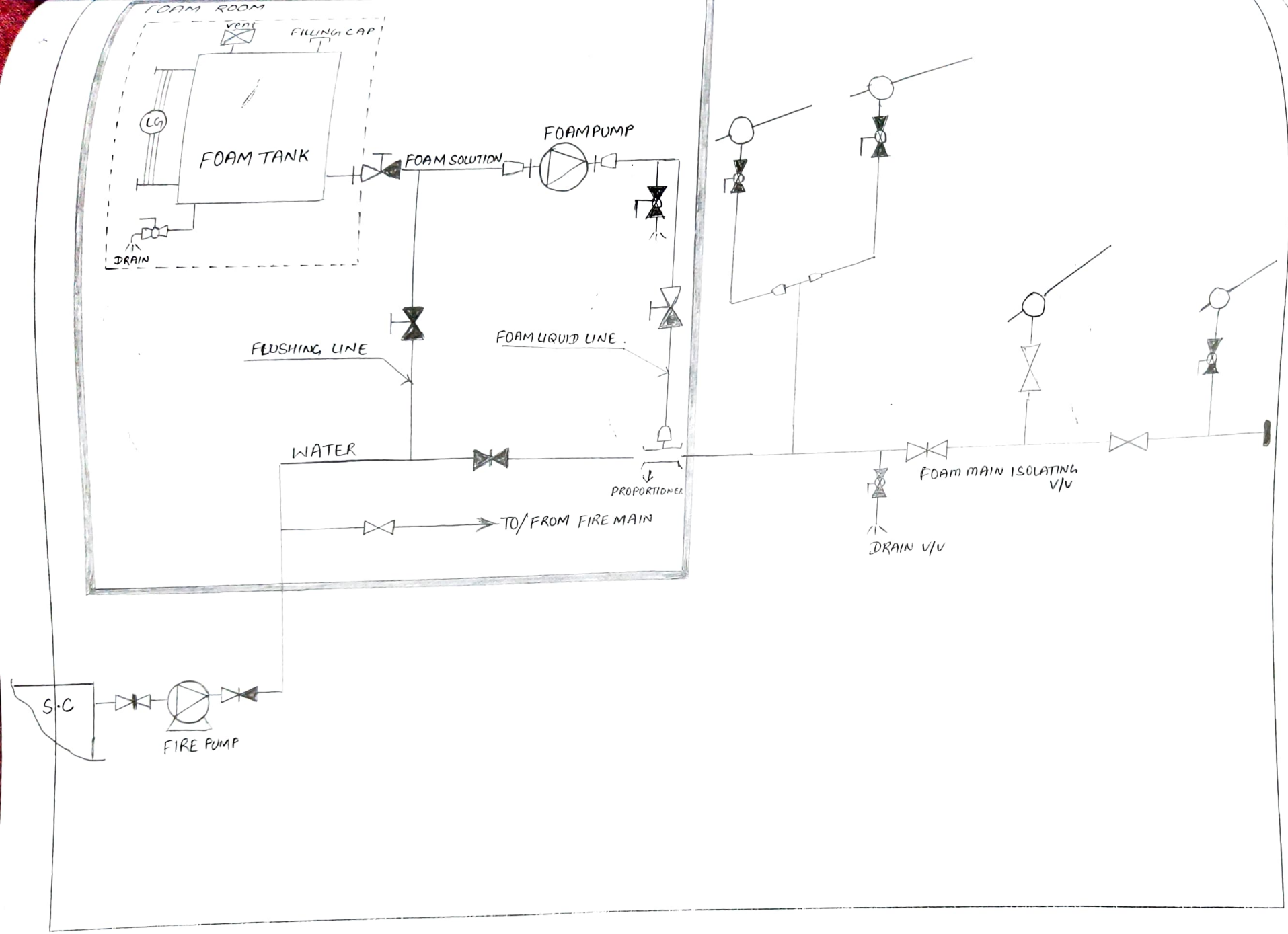
The system start select switch on the main control panel must be set to AUTO & MANUAL position for automatic start.

Automatic start :- Water mist system will be automatically released into the protected area where fire is detected by fire alarm system and an audible & visual alarm is activated in that protected area.

Manual start :- Water mist system can be started manually from the control panel and from the local points whenever needed, independent of fire alarm system.

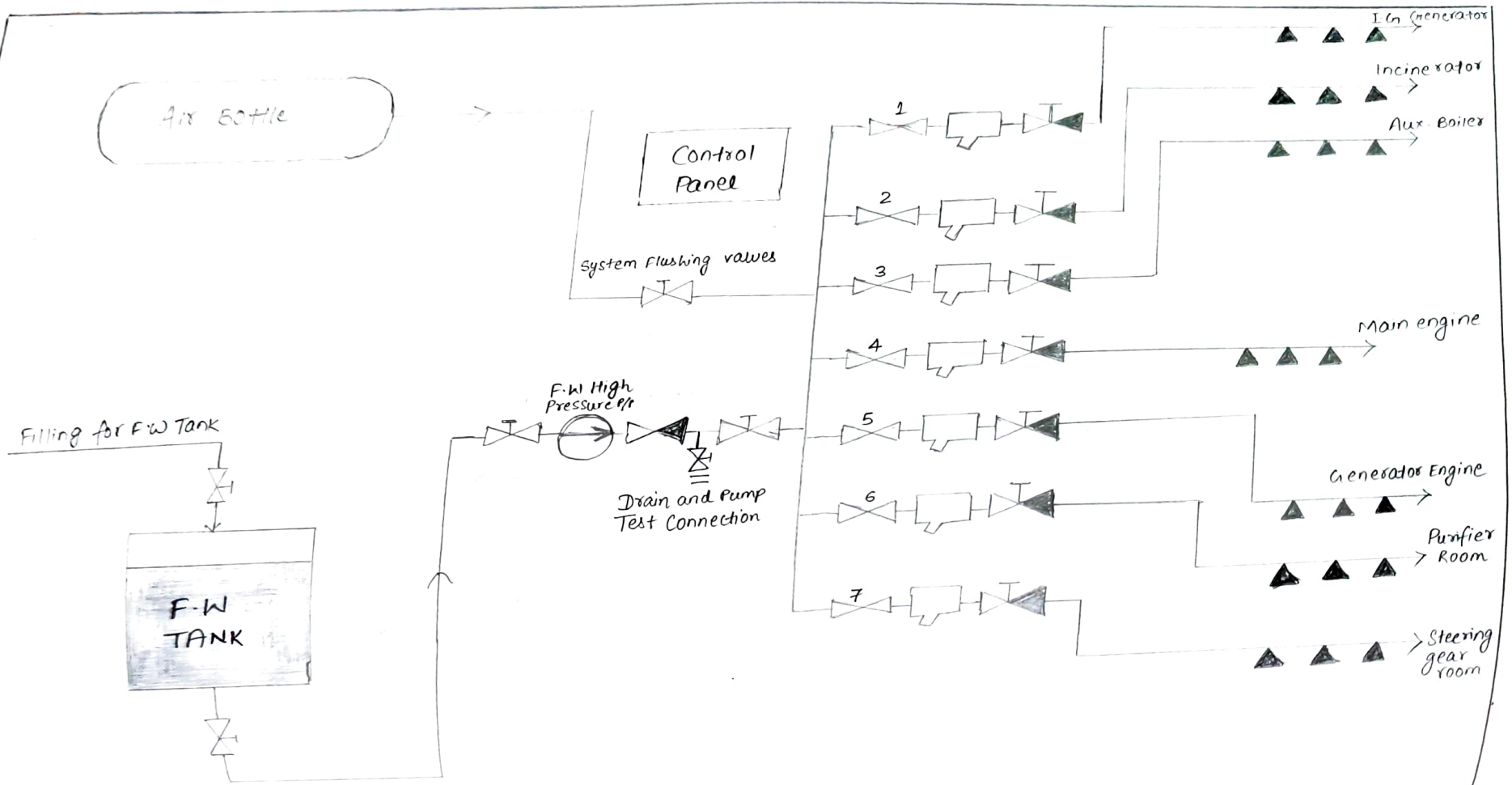
Stopping :- After confirmation extinction of fire, the water mist system can be stopped manualy by cancelling the signal from fire alarm system and pressing the STOP button on the control panel or local point.

* Diagram in Page No. 16



Fixed deck foam fire fighting system

Hydrmist System



Project Work

Name :- Anupam Kumar Singh

Batch No :- IMU-36

Enrol. No :- 1642813007

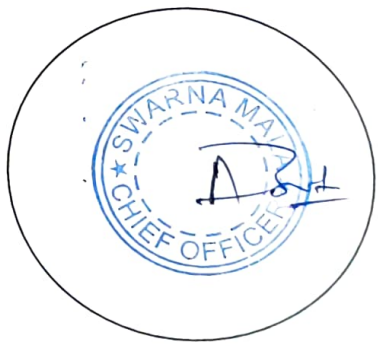
INDOS No :- 16NL2240

PHASE :- II

Project No :- 10.2.11

Project Topic:- CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD

STO SIGN



OJECT NAME:-

Observe the loadline marks, make a detailed sketch of these marks and explain the function of each mark.

M.T. SWARNA MALA

A load line, also called Plimsoll Mark is a marking indicating the extent to which the weight of a load may safely submerge a ship. The fundamental purpose of a load line is to allow a maximum legal limit upto which a ship can load a cargo. By prescribing such limits, the risk of having the vessel sailing with inadequate freeboard and buoyancy can be limited.

* Load line markings

These marks shall be punched on the surface of the hull, making it visible even if the ship side paint fade out. The mark shall be painted with white on dark background; or black on light background. The complete load line consist of 3 vital parts:-

1. Deck line :- It is horizontal line measuring 300mm by 25mm. It is line from where freeboard is measure.
2. Plimsol line :- It is a 300mm diameter and 25mm thick round shaped disc. It is intersected by a horizontal line. The upper edge of the horizontal line marks the "Summer saltwater line".
3. Load line :- It is horizontal lines extending forward and aft from a vertical line placed at a distance of 540mm from the center of the disc. They measure 230mm x 25mm. The upper surface of the loadline indicate the maximum depth to which the ships may be submerged in different seasons.

S - Summer - It is the basic freeboard line at the same level as the Plimsoll line. Other loadlines are marked based on this summer freeboard line.

T- Tropical - It is 1/48th of the summer draft marked above the summer load line

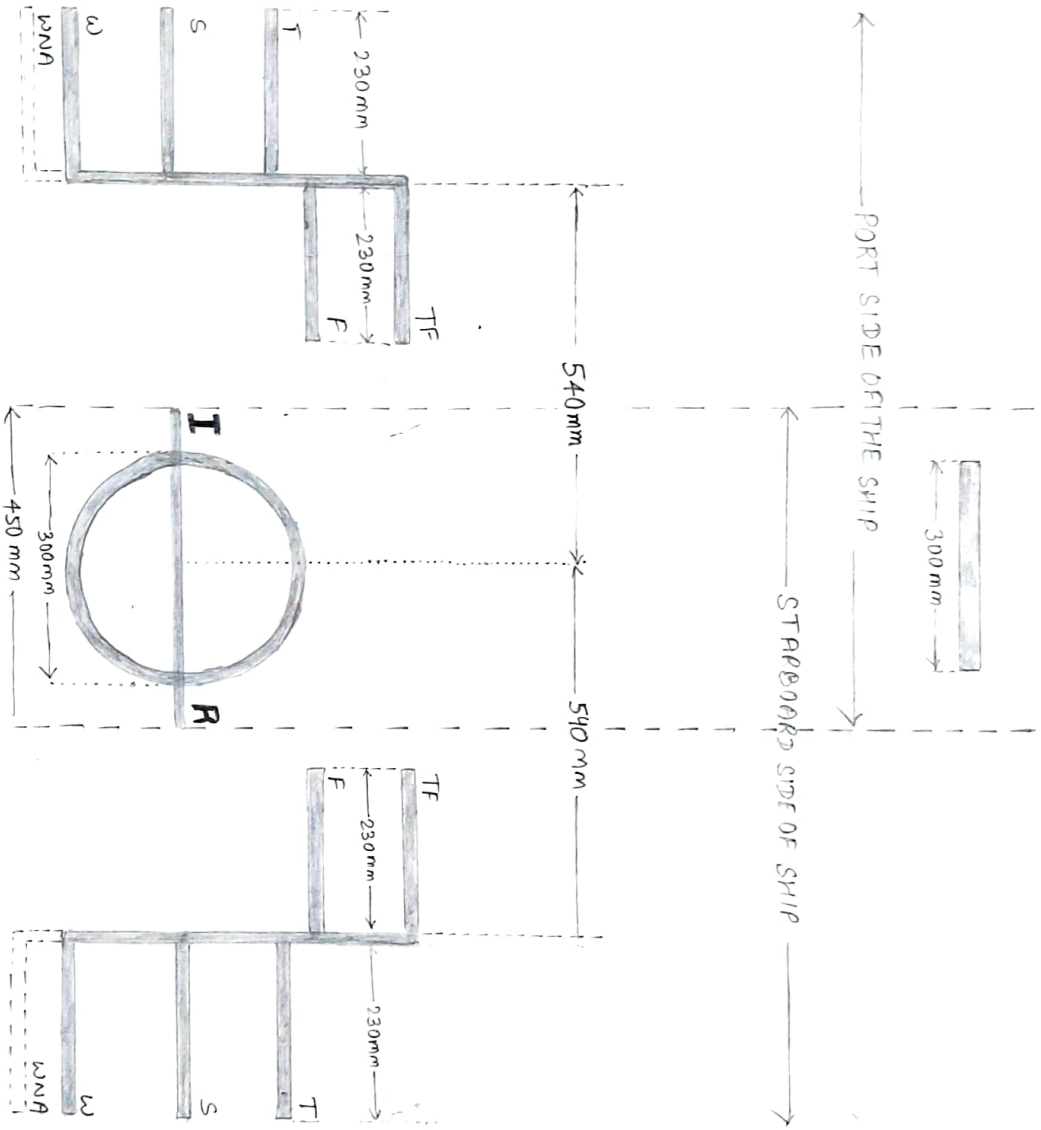
W- Winter - It is 1/48th of the summer draft marked below the summer load line

WNA - Winter north atlantic - It is marked 50mm below the winter load line. It applies to voyages in North Atlantic (above 36° latitude) during the winter months.

F- Fresh water - It is the summer freshwater loadline. The distance b/w S & F is Fresh water allowance (FWA)

TF- Tropical fresh water - It is the fresh water loadline in tropical It is marked above the T at an amount equal to FWA

LOADLINE MARKS



Note:- The following diagram shows the port and starboard side loadlines of a cargo ship. To see the port side loadlines, cover up the right 1/3 of the sketch. To see the starboard side loadline, cover up the left 1/3 of the sketch.

Project Work

Name :- Anupam Kumar Singh

Batch No :- IMU-36

Enrol. No :- 1642813007

INDOS No :- 16NL2240

PHASE :- III

Project No :- 10.2.13

Project Topic:- CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD

STO SIGN

PROJECT NAME:-

List the procedures and checks to be carried out before and after flooding in drydock.

Draw a plan view of all bottom plugs.

M.T. SWARNA MALA

The following checks to be carried out before flooding in dry dock :-

(i) Record sounding of all tanks before flooding.

(ii) Checks and ensure distribution of weight on-board same as before drydocking.

(iii) Calculate and ensure sufficient positive stability duly taking into account. Any structural change that have been affecting during dry-docking. The stability calculation to overcome the critical loss of metacentric heights during flooding operation.

(iv) Ensure that all tanks bottom plug are in position.

(v) Ensure all other opening including the seachest and all overboard valve are inspected and well secured to prevent any accidental ingress of water.

(vi) Seachest grating well in place. Seachest vent valve open.

(vii) Checks integrity of all sea water line.

(viii) Ensure all staging used for underhull fwd or aft repairs have removed, hull free from obstruction.

(ix) Rudder & propeller well secured, tried out and free to move (no obstruction)

(x) Propeller shaft tashing system to be checked.

(xi) Ensure both anchor cables and anchors are picked up and secured in hawse pipe.

(xii) Ensure all ballast, fuel oil, cargo oil tank manhole are covered and secured

(xiii) Confirm all dry dock job completed, no unleft job and all unauthorised personnel left the vessel before flooding.

(xiv) Ensure all items are well secured.

(xv) Mooring wire/ropes and mooring winches are ready for mooring operation.

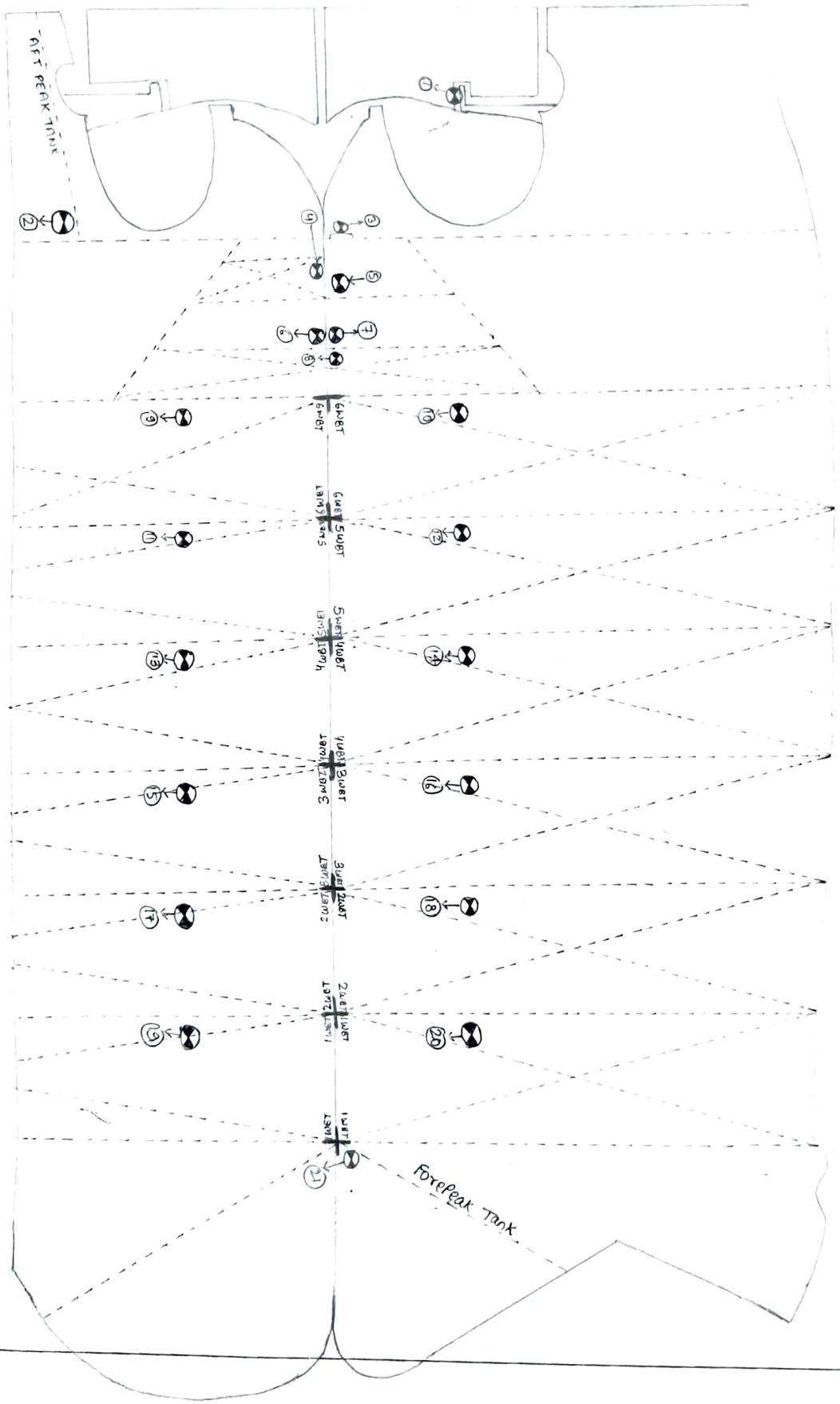
(xvi) Ensure main air bottle are kept fully pressurize to fasciate standing of main engine

(xvii) Ensure emergency generator are standby. Emergency air bottles are kept pressurized for immediate use.

The following checks to be carried out after flooding in dry dock:-

(i) Check sounding of all tanks to confirm there is no leakage.
(ii) Check all sea openings to confirm no leaks
(iii) Confirm vessel is not list either port or starboard
(iv) Visual draft forward and aft compared with calculated draft & confirm
(v) Confirm main sea water pump is lined up for/to supply water to generator and no leakage
(vi) Assure getting of electrical supply after starting auxiliary engine. Disconnect shore electrical supply
(vii) Prepare vessel for sea
(viii) Try out main engine and confirm satisfactory operation.
(ix) Try out all engine room, deck, bridge, radio machinery equipment and confirm working satisfactory.
(x) Carry out black out and confirm working of critical equipment under emergency sources of power. Restore normal power supply.
(xi) Once, the above equipments are working satisfactory, prepare to leave the dock.

an view of all bottom plugs



10.2 PROJECTS: CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON-BOARD
Third Phase 12,14

Appendix 3

IMU

DECK CADET

STRUCTURED SHIP BOARD TRAINING PROGRAMME

PROJECT FILE

NAME: ANUPAM KUMAR SINGH

IMU ENROLMENT No. 1642813007

INDoS No. 16NL2240

Deck Cadet Record Book No. 29101815

DATE: From - 31.07.2021

To - 21.11.2021

P: A.V D

PROJECT WORK

INDEX

Sr. No	PROJECT NAME	Page Nos.	Date
12.	Prepare a monthly report on the maintai-nence carried out on a LSA and FFA	01 to 03	15.08.2021
14.	Make a table of the various areas of the vessel with the type of paint coating used as per the paint scheme provided by the paint manufacturer	04 to 09	28.10.2021

STO Signature,date and stamp to be taken prior sign off from each vessel :

M.V. VISHVA VIJAY SCI LTD. CHIEF OFFICER

21.11.2021

PROJECT WORK

NAME :- Anupam Kumar Singh

BATCH NO :- IMU-36

ENROL. NO :- 1642813607

INDOS NO :- 16NL2240

CDC NO :- MUM280594

PHASE :- III

PROJECT NO :- 10.2(12)

PROJECT TOPIC :- 10.2 PROJECTS : CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON-BOARD

STO SIGN :-

M.V. VISHVA VIJAY CHIEF OFFICER M/s. SCI LTD

PROJECT NAME :-

Prepare a monthly report on the maintainence carried out on the LSA and FFA

M.V. VISHVA VIJAY

Life Saving Appliances (LSA)

	Equipment	Maintenance
(i)	Bridge Pyrotechnic	Visualy checked all are in good condition, placed back in own respective place
(ii)	MOB marker	Visually inspected & tested.
(iii)	Line throwing apparatus	Visualy inspected. All are in good condition.
(iv)	EPIRB	Visualy inspected monthly and tested. Found in working condition
(v)	SART	Visualy inspected & tested and are in place
(vi)	Life rafts	Visualy checked. HRU unit, painter line all are in good condition and are in place
(vii)	Lifejackets	Monthly inspection for retro reflective tape and general condition, whistle & light (renew if not working)
(viii)	SCBA	Air bottles pressure checked, audible & visual alarm for low pressure tested & other general inspection
(ix)	EEBD	Visualy inspected general condition, alarm tested.
(x)	Resuscitator	Visualy inspected
(xi)	Lifeboat sprinkler	Tested every 6 month
(xii)	Lifeboat engine and rudder	Tried out every week for 3 min ahead & astern, also rudder port & starboard.

Fire Fighting Appliances (FFA)

	Equipment	Maintenance
(i)	Fire Control Plan	Update crew list whenever there is a crew change. Check any water ingress
(ii)	Public adress & fire alarm speaker	Tried out during drills. Found in working condition
(iii)	Fire alarm manual callpoint	Visualy inspected all safety glass & tried out
(iv)	Fire detection system	Check all sensor by activating, fire alarm panel indicator checked. All are in order & functioning.
(v)	Dry chemical powder extingwisher	Extingwisher are inspected for any leakage, nozzle checked.
(vi)	CO_2 type portable extingwisher	Checking proper spacing and good condition. All extingwisher are checked for proper location as per FFA plan.
(vii)	Fire damper + Fire doors	Test for free movement and local operation.
(viii)	Fire pump + Emergency fire pump	Operation-check for any leakage. Pressure generating upto 6 bar. All are in good working condition.
(ix)	Fire main line, hydrants, foam line monitor, fire hose box and nozzles	Checked that are in place properly and arranged in good condition, VJ coupling checked. Hydrants checked all are in good order.
(x)	Fixed foam/CO_2 system for engine & pump room	Checked all valves are in correct way. Open or close position. No leakage found.
(xi)	Fire man outfit and breathing apparatus	Fireman outfit visualy checked in proper condition. Checked pressure of every bottles.

PROJECT WORK

NAME :- Anupam Kumar Singh

BATCH NO :- IMU-36

ENROL. NO :- 1642813607

INDOS NO :- 16NL2240

CDC NO :- MUM280594

PHASE :- III

PROJECT NO :- 10.2(14)

PROJECT TOPIC :- 10.2. PROJECTS: CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON-BOARD

STO SIGN :-

M.V. VISHVA VIJAY • CHIEF OFFICER • SCI LTD.

PROJECT NAME :-

Make a table of the various areas of the vessel, with the type of paint coating used (including primer, number of coats, type of surface preparation must suited) - as per the paint scheme provided by the paint manufacturer.

M.V. VISHVA VIJAY

Table showing area of the vessel, no of coats, type of paint coating, surface preparation and name of manufacturer/supplies.

SR. NO.	PAINTING AREA	TYPE OF SURFACE PREPARATION	NO. OF COAT	PAINT COATING USED	NAME OF MANUFACTURER
			2	Tar epoxy anti corrosive	CMP (CHUGOKU
		Sand/Grit		paint 200 mic	MARINE PAINTS PTE LTD)
1	BOTTOM	ballasting &	1	Binder Coat (Vinyl Tar	Sigma coating
		Fresh water		Anti corrosive paint) 75 mic	singapore
		(high pressure)	3	Self polishing and fouling	Sigma coating
				paint 300 mic	singapore
			2	Tar epoxy anti corrosive	CMP (CHUGOKU MARINE
		Sand/Grit		paint 200 mic	PAINTS PTE LTD)
2	BOOT TOPPING	ballasting & Fresh water	1	Binder coat (vinyl corr	Sigma coating
		(high pressure)		-osive paint) 70 mic self polishing	singapore
			3	Antifouling paint 300 mic	Sigma coating singapore
3.	TOP	Grit ballasting	2	Pure epoxy primer 200 mic	CMP (CHUGOKU MARINE PAINTS PTE LTD)
	side	& fresh water	2	Pure epoxy paint 200 mic	CMP (CHUGOKU MARINE PAINTS PTE LTD)
		Needle chipping	1	2 line silicate paint 70 mic	CMP (CHUGOKU MARINE PAINTS PTE LTD)
4	UPPER DECK	buffing, high	1	Pure epoxy seater 70 mic	CMP (CHUGOKU MARINE PAINTS PTE LTD)
		press hydroblasting	2	Epoxy paint 300 mic	CMP (CHUGOKU MARINE PAINTS PTE LTD)
5	FRESH WATER TANKS	Chipping, scrapping, fresh water washing	3	Epoxy paint 300 mic	CMP (CHUGOKU MARINE PAINTS PTE LTD)
6	BALLAST WATER TANKS	Needle chipping, scrapping, buffing, fresh water washing	3	Tar epoxy paint 350 mic	CMP (CHUGOKU MARINE PAINTS PTE LTD)
7	CARGO HOLD/ TANK	CHIPPING, SCRAPPING, HIGH PRESS. HYDROBLASTING	3	Tar epoxy paint 350 mic	CMP (CHUGOKU MARINE PAINTS PTE LTD)
	Forepeak	Chipping, scrapping,			CMP (CHUGOKU MARINE
8.	Tank & Aft	buffing, high	3	Tar epoxy paint 350 mic	PAINTS PTE LTD)
	Peak Tank	press hydroblasting			

As per the paint scheme of the ship, descaling, shop, primming, derusting and painting work to be carried out in accordance to the makers reccomendation and the current builder practice as accepted by the owner.

The colour of finish for hull to be accordance with owners colour scheme. The colour of each coat other than finish coat to be decided by the builders. Painting for the spare parts are not especially specified in the painting scheme of this plan, it is similiar to surrounding space. The surface of materials and permanently enclosed spaces not to be painted.

Machinery, electrical equipment, fitting valves, deck machinery, navigation equipment, furniture etc to be painted in accordance with makers standard Time schedule for painting of each coat to be decided according to builder's construction schedule & re-coating interval beetween coat reccommended by paint's manufacturer.

- Paint is not to be applied in rain, snow, fog or mist in open air and also not to be used when weather condition may cause condensation when humidity is above the dew point.

In case of application of paint in winter season, the builder may use the winter type paint recommended by the paint maker. Subject to owner's approach, damaged part after instalation of machinery to be touch up with coat of primer and one coat of finish paint.

* Surface preparation

(a) Generaly the hull surface are steel plates section fabricated by the shipyard

and are of 6mm & above in thickness which are to be painted later, but immediately cleaned & primed with one coat of primer. Zinc silicate type shop primer (1218 2) applied to dry film thickness of 15.

The steel surface of fittings such as pipes above 250 mm dia, masts, pipe support, grating support, auxilary machinery seats etc. to be generally blast cleaned or powertool cleaned with wire brush prior to main coating.

Pipes below 250mm dia or 150mm dia and small seats to be power tool cleaned with wire brush prior to main coating.

Secondary surface preparation

PAINTING AREAS	SHOP PRIMER	SURFACE PREPARATION	COAT	Product code & its colour shade
			1	EH2350 (Grey 1151)
			2	EH2350 (Grey 1128)
Flat bottom upto bridge keel level	SPR	B_3	3	EH2540 (Alumunium)
			4	AIF 795 (Dark brown)
			5	AIF 798 (Red brown)
			1	EH2350 (Grey 1151)
			2	EH2350 (Grey 1128)
Side bottom and boot (From bilge keel level to scantling draught seachest, Rudder topside)	SPR	B_3	3	EH2540 (Alumunium)
			4	AIF 795 (Dark brown)
			5	AIF 798 (Red brown)
Various mark on Topside, Ship's name, draft mark/free -board, Port of Registry	NSP	T_3	1	AIF 730 (white)

General Parts exposed to weather

PAINTING AREAS	SHOP PRIMER	SURFACE PREPARATION	COAT	Product code & its colour shade
Upper Deck	SPR	B_3	1	EH 2350 (Grey 1151)
			2	ET 5740 (Green 155267)
Non slip area on upper deck	SPR	B_3	1	EH 2350 (Grey 1151)
			2	ET 5740 Non-Slip (Green 1551)
Bulwark Inside	SPR	B_3	1	EH 2350 (Grey 1151)
			2	ET 5740 (Green 155267)
Cargo gear locker (Inside)	SPR	B_3	1	EH 2350 (Grey 1151)
			2	ET 5740 (Green 155267)
Cargo gear locker (Outside)	SPR	B_3	1	EH 2350 (Grey 1151)
		T_3	2	FW 5740 (White 1000)
Funnel (outside)	SPR	T_3	1	EH 2350 (Grey 1151)
			2	EB 5740 (Black 1999)

Outfittings

Foremast, antenna mast, Radar mast, provision crane	NSP	B_3	1	EH 2350 (Grey 1151)
			2	EH 5740 (It buff 155)
Machinery deck, winches, wind-lass, anchor, anchor chain	NSP	T_3	1	EH 2350 (Grey 1151)
			2	ET 5740 (Green 155)
Piping system, supports, flanges & miscellaneous outfitting	NSP	T_3	1	EH 2350 (Grey 1151)
			2	Sorrounding Finish paint

Cargo hold (tank top & upto 1 meter)	SPR	B_3	1	EH 2250 (Grey 1151)
			2	EH 2351 (Grey 11281)
Cargo hold (remaining area)	SPR	N_P	1	EH 2350 (Grey 1151)
			2	EH 2351 (Grey 1125)
Ballast tanks above lowest Stringer level	SPR	T_3	1	MP120 (Grey 1105)
			2	LT 313 (Green/55267) - 2 coat

* SPR - Shop primming

NSP - NO shop primming

* Stage surface symbol	Block Stage On shop primed surface Burnt damage area	Dock Stage Block joint link Burnt damage area
B_3	Blasting	Power tooling
T_3	Power tooling	Power tooling
T_2	Power tooling	Power tooling
R_2	Builder's practice	Builder's practice
N_P	NO preparation	NO preparation