NINTY DAYS

(Oral for class II, III and IV)
Complete set
Version 5.0

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(CLASS II)

ACKNOWLEDGEMENT

This is hard to tell any of your fellows that I don't pass in exam and easy to say I do all that in first attempt .To over come problems in Pakistani system I prepared a set pattern of question according to master Asiatic mind examiners.

May be any of reason lose in first attempt cause to make my assignment but this effort inshallah will overcome all problem which are facing by new seaman while giving ORALS for class III and IV in Pakistan.

I dedicate my all work to my great and honest teacher **CAPT ASAD ALI KHAN (Master Mariner, MNI)**

NOTE TO SECOND EDITION

Legimate answers for previous work

What New
Compass Work
Radar Fog actions
Chief mate and master orals

- Business and law

Pakistan COC Class IV ,III And II Oral Notes
PASSING AND FAILING CRITERIA

Serial .No		Percentage Accuracy
1	SEXTANT	100
	Practical taking horizontal sextant angle between chain and container. Placement of index bar on the arc and off the arc.	
2	RULE OF ROADS	100
	• Word to word only thorough concepts of Rules 1 - 19	
3	CARDS	100
	• What she is? (Describe all possible cases) • What she is doing? (Making way or underway) • How She heading? (Her possible heading by visual aspects of lights with out assistance of ARPA). • Relate situation with radar plot? • What is your action?	
4	BOUYAGE	100
	• What it is Top mark Lights Signal Retro reflector • What is your action?	
5	GENERAL	
	• LSA FFA requirements • Duties, Handling in case of Emergencies (Fire, Oil Pollution, Receiving Distress) • Passage Planning • IMDG label specification, MFAG and EMS • Practical knowledge of orders for dropping anchor in case of absence of master	100 100 80 80 80
6	CONFIDENCE	80
	• Answering Style (Break after asking question = 15 sec, words delivered by candidate =1 word per second, Avoidance of lose talk)	

INSTRUMENTS

METROLOGICAL NAVIGATIONAL INSTRUMENTS

1. What are principle of aneroid barometer, barograph and hygrometer?
   ANEROID BAROMETER
   - It used to measure barometric pressure
   - Corrections: height above sea level, Index error (Found by certificate)
   - Corrected reading = Uncorrected reading ± IE + $\frac{\text{Height above sea level (m)}}{10}$ + Diurnal Range
     - Principle A metal box partially exhausted of air will undergo changes of shape as the outside pressure varies. By a system of levers these small movements of the box are transmitted to a pointer moving over a graduated dial.

   BAROGRAPH
     - An instrument provides permanent record, in graphical form, of continuous changes in atmospheric pressure.
     - Principle A metal box partially exhausted of air will undergo changes of shape as the outside pressure varies. By a system of levers these small movements of the box are transmitted to a pointer moving over a graduated dial.

   HYGROMETER
   - It consist of two thermometers (Wet bulb, dry bulb)
   - It used to measure relative humidity of air.
     - Principle Evaporation causes loss of heat which occurs in wet bulb when muslin is immersed in capillary

2. Is depression of hygrometer wet bulb increase at afternoon?
   Yes, because hygrometer works on evaporation principle which makes reading lower than dry bulb, maximum in hot weather afternoon.

SIGHT NAVIGATIONAL INSTRUMENTS

SEXTANT

1. Put sextant on 1 10' 30" off the arc,0 20'20" off the arc,1 20' 10" on the arc
   Rotate 1 turn micrometer clockwise 0 to 0 then align 50 with top line of vernier then align 30" to near vernier line.
   Rotate 1 turn micrometer clockwise 0 to 0 then align 40 with top line of vernier then align 40" to near vernier line.
   Rotate 1 turn micrometer anticlockwise 0 to 0 then align 20 with vernier line then align 10 to near vernier line.

   CAUTION:
   - For minutes of arc in off the arc alignment should from top of vernier because turn start from top of vernier.
   - For seconds of arc in off the arc alignment from bottom of vernier.

2. Take a horizontal sextant angle between chain and container
   CAUTION:
   Always use micrometer to take small horizontal angles because in oral it is between 2 and 5 degrees i.e. it depends upon the distance between you and the chain with container

3. What is the Principle and parts of sextant?

PRINCIPAL:

LAW OF REFELECTION:

Angle of incidence is equal to the angle of reflection

LAW OF DOUBLE REFLECTION:

If a ray of light suffers two successive reflections in the same plane by two mirrors, the angle between the first and last direction of the ray is twice the angle between the mirrors.

PARTS:

- Frame
- Handle
- Telescope
- Arc
- Index Arm
- Clamp
- Micrometer Drum.
- Micrometer Vernier
- Index Mirror
- Horizon Mirror
- Horizon shades, Index Shades
- First, Second, third adjustment screws.

4. What is Error of perpendicularity? What is 1st adjustment screw and where it is fitted?
   - It caused if the index mirror is not perpendicular to the plane of the instrument.
   - 1st adjustment screw is used to adjust index mirror to perpendicular position. It is on the centre line (top, middle or bottom) of index mirror.

5. What is Side error? What is 2nd adjustment screw and where it is fitted?
   - It caused if the horizon mirror is not perpendicular to the plane of the instrument.
   - 2nd adjustment screw is used to adjust horizon mirror to perpendicular position. It is on the centre line top of horizon mirror.

6. What is Index Error? What is 3rd adjustment screw and where it is fitted?
   - It caused by the horizon mirror not parallel to the index mirror when index arm is at zero.
   - 3rd adjustment screw is used to adjust horizon mirror parallel to index mirror when index arm is at zero. It is on the edge of horizon mirror.

7. What is collimation error?
   - It caused by axis of telescope spectacles is not parallel to the plane of instrument.
   - Special collimating telescope fitted with spider threads (cross wires) in the eye piece used to adjust collimation error.

8. Sextant errors checking and correction?

PERPENDICULARITY ERROR:

CHECKING:

- Remove telescope
- Turn away the shades
- Set Index arm about the middle of arc

- Look into mirror so the true arc is visible and reflected arc seen in mirror
- If true and reflected arcs are not in a straight line error is present.

CORRECTION:

- To remove perpendicularity error makes adjustment the first adjustment until true and reflected arcs are appear in a straight line.

SIDE ERROR:

CHECKING:

- Remove telescope
- Turn away the shades
- Set Index arm and micrometer exactly at zero.
- Hold the sextant horizontally and look through the horizon mirror at horizon.
  If true and reflected arcs are not in a straight line error is present.

  Or

  Hold sextant in vertical position and look directly 2nd magnitude star through telescope.
  If true and reflected images pass to the side by side error is present.

CORRECTION:

- To remove error makes adjustment the second adjustment until true and reflected horizon or image of star are appear in a straight line.

INDEX ERROR

CHECKING:

- Set Index arm and micrometer exactly at zero.
- Hold sextant vertically and look through the telescope and horizon mirror at horizon or 2nd magnitude star. If true and reflected horizon is not in a straight line then there is index error .To find index error adjust micrometer until they appear in a straight line.

  Or

  Adjust micrometer at 32' off the arc
  Hold sextant vertical position and look through the telescope at the sun. Move the micrometer until lower limb of reflected image just touches the upper limb of the true image.
  Note reading and label it "off" the arc.

  Adjust micrometer at 32' on the arc
  Hold sextant vertical position and look through the telescope at the sun. Move the micrometer until upper limb of reflected image just touches the lower limb of the true image.
  Note reading and label it "on" the arc.

$$\text{Index Error} = \frac{\text{Greater reading - Smaller reading}}{2} \text{ (name index error same as greater reading)}$$

Checking accuracy of an observation:

$$\text{Sun's Semi - Diameter} = \frac{\text{Greater reading + Smaller reading}}{4}$$

CORRECTION:

- To remove error makes adjustment the third adjustment until true and reflected horizon or image of star are appear in a straight line.

COLLIMATION ERROR

CHECKING:

- Place sextant on level table

- Look in line midway between the telescope and plane of instrument and check telescope is parallel to the plane of instrument.

  CORRECTION:
  - Observed low altitude star and cross wires set parallel to the plane of instrument
  - Observed another 2 celestial bodies 90 – 120 apart and true and reflected images are brought into coincidence on the left cross wires
  - From different position bring the two bodies into coincidence on the right cross wire.
  - If images separate when transferred from left to right error is present.
  - By attaching telescope collar make telescope parallel to the plane of the instrument by adjustment screws also consult manual.

9. Why the index error of the sextant is subtracted when it is "ON THE ARC" and added when it is "OFF THE ARC"?
   When we take altitude of any terrestrial, celestial bodies or horizontal angle of terrestrial bodies then angle start at point where true and reflected image appear in a straight line.
   "ON THE ARC" reading is in between the arc of 0 to 120.Therfore it should be subtracted
   "OFF THE ARC" reading is away from the arc of 0 to 120.Therefore it must be added.

10. What are fixed error?
    They are also called as non-adjustable errors which can't remove.
    - Centring Error. When Index's Arm centre of rotation not at the centre of the arc.
    - Graduation Error. When graduation arc is not accurate.
    - Shade Error. When the faces of each shade are not ground to exactly parallel.
    - Prismatic Error. When the faces of each mirror are not ground to exactly parallel

PELOROUS

1. What is pelorous?
   It is alternative of azimuth mirror which enables the navigator to obtain off shore objects true and relative bearings by "graduated bearing plate" manually aligned with constant ship's head, when line of sight of azimuth mirror on compass is obscured by obstructions such as funnel, deck erections etc.

ELECTRONIC NAVIGATIONAL INSTRUMENTS
COMPASS

1. Detail errors of magnetic course and how they corrected?

$$\partial_\theta = A + B \sin\theta + C \cos\theta + D \sin 2\theta + E \cos 2\theta$$

	A	B		C		D	E	HE	
Definition	Constant Deviation	Semi Circular Deviation		Semi Circular deviation		Quadrantal Deviation	Quadrantal Deviation	Semi Circular deviation	
Nature	$\partial_\theta = A$	$\partial_\theta = B \sin\theta$		$\partial_\theta = C \cos\theta$		$\partial_\theta = D \sin 2\theta$	$\partial_\theta = E \cos 2\theta$	$\partial_\theta = HE \cos\theta$	
Cause (Due to)	Un-symmetric H.S.I. in adjacent quardrant (i) Athwartship S.I. in F& A line (ii) F & A S.I in athwartship line	F & A magnetic field		Athwartship magnetic field		F & A SI in F & A line Or Athwartship SI in Athwartship line in continuous or broken through compass	Symmetric H.S.I. about diagonal in opposite and same quardrant (i) Athwartship S.I. with F & A line (ii) F & A S.I. with athwartship line or Diagonal line	Vertical magnetic field	
		Permanent B	Induced B	Permanent C	Induced C			Permanent HE	Induced HE
		Force **P**	VSI Pole with F& A line	Force **Q**	VSI Pole with Athwartship line			Force **R**	VSI Poles beneath or above compass
Correction (by)		F & A		Athwartship		SI Spheres	SI Spheres		
		Magnet	Vertical Flinder Bar	Magnet	Vertical Flinder Bar				
Change Of Lat	No change	$\partial \alpha \frac{1}{H}$	$\partial \alpha \frac{Z}{H}$	$\partial \alpha \frac{1}{H}$	$\partial \alpha \frac{Z}{H}$	No change	No change		

2. What is deviscope, heeling error and causes?

2. Principle of Gyro compass?

3. How to stop and start gyro compass?
   STOPPING OF GYRO:
   - Follow maker's instructions
   - Follow ISM checklist
   - Switch off all repeaters (Gyro, Course recorder, radar)
   - Place gimbals system horizontal and lock it.
   - Switch off main Gyro power
   - Switch off pulse generator

   STARTING OF GYRO:
   - Follow maker's instructions
   - Follow ISM checklist (Check ship head, liquid level, sphere position)
   - Switch on pulse generator
   - Switch on main gyro power
   - Unlock horizontal gimbals system
   - Switch on all repeaters

4. How will you remove bubble from lifeboat Magnetic compass and what liquid is Present in Magnetic compass?
   - Turn the bowl on its sides, in the gimbals arrangement system
   - Unscrew the expansion chamber
   - Top up the fluid by gin with a clear alcohol spirit. If surgical Suring use then put into needle in the alcohol mixture because to avoid air bubble clouds.

RADAR

1. How you check radar performance? What is use of radar log book?
   - Press the performance monitor button
   - Plume will appear
   - Measure the plume and compare it with the maker's reading at the time of radar installation
   - Note down the plume difference, EBL and visual bearing difference, radar status in radar log book.

2. How to confirm radar is working when no any target around?

   Change radar range to minimum, if own ship echo display around the PPI centre then radar is working properly.

NAVIGATION LIGHTS

1. What is the requirement of navigation lights?

   Alternative of each navigational and all around lights.

2. How to check all navigation lights are working?

- Circuit Test
- Buzzer Test (Of all navigational and alternative lights)

ECHO SOUNDER

1. How to confirm echo sounder is working? How to measure the depth?

Depth Measurement: It emits a pulse of sound energy from a transmitter, and the time this pulse takes to reach the seabed and be reflected back to the vessel receiver.

Distance to the sea bed and back = 2S

Speed of sound through water =1500 meter/second

Distance = speed x time

$$2S = V \times T$$

$$S = \frac{V \times T}{2}$$

2. What is Echo transducer?

RULE OF ROADS

1. What do you mean by ROR?
International Regulations for preventing collisions at sea,

2. How many parts and there section in rules?
PART A - General
PART B - Steering and Sailing Rules
- Section I - Conduct of vessel in any condition of visibility
- Section II - Conduct of vessel insight of one another
- Section III - Conduct of vessel in restricted visibility

PART C - Lights and Shapes
PART D - Sound and Light Signals
PART E – Exemptions

3. Where these rules apply?
Rule 1(a)

4. Which waters can be governed by special rules made by local authorities?
Roadsteads, harbours, rivers, lakes or inland waterways

5. Which vessels lights or whistle signals can be governed by special; rules made by governments?
Special rules made by the government of any state with respect to additional station or signal lights, shapes or whistle signals for ships of war and vessels proceeding under convoy, or with respect to additional station or signal lights or shapes for fishing vessels engaged in fishing as a fleet. These additional signals should be such that they cannot be mistaken for other defined in these Rules.

6. Under what circumstances can a vessel of special construction deviate from the rules?
A vessel of special construction can deviate from the rules in regard to the lights number, position, range or arc of visibility of lights – (also shapes and disposition and characteristics of sound-signalling appliances). When her Government has determined that what is displayed is the closest possible compliance with these rules in respect of that vessel.

7. What is the rule regarding the ordinary practice of seaman?
Rule 2(a)

8. What do you mean by good seamanship?
Those practices which are considered to be mandatory in shipping but rules are silent on that part.

No Set of specific rules could be made that would cover all possible circumstances. When acting in accordance with the rule must show good seamanship and common sense.

1. A vessel underway would be expected to keep clear of a vessel at anchor. But a vessel underway and stopped must comply with the rules, unless she is not under command and is displaying the appropriate signals.
2. When a vessel anchors she must do so without endangering other vessels which may be navigating close by.
   Distance between ships at anchor > diameter of swinging circle (2 ships might swing opposite way)

Sufficient cable must be paid out according to circumstances and a second anchor should be used if necessary.

3. In dense fog a vessel without operational radar may not be justified in being underway at all but should anchor if it is safe and practicable for her to do so.
4. When two vessels are approaching one another at a difficult bend in tidal river it has been held to be the duty of the one having the tide against her to wait until the other has passed.
5. If the Traffic separation scheme applies to international waters compliance would not be compulsory for the ships of all nations but it would be good seaman ship to comply with provision of rule 10.

9.Is a departure from the rules permitted under any circumstances?
Rule 2(b)
In construing and complying with these Rules due regard shall be had to all dangers of navigation and collision and to any special circumstances, including the limitations of the vessels involved, which may make a departure from these Rules necessary to avoid immediate danger.

10. What do you mean by vessel?
Rule 3(a)

11. What is a power driven vessel?
Rule 3(b)

12. Your vessel is at anchored what will you call that vessel?
Vessel at anchor

13. What is making way and underway?
MAKINGWAY:
When the vessels cut through the water and vessel is in control by helm.
If engine is just stopped and she still making wake and cut through water then she is making way.
UNDERWAY:
The water is taking ship from one place to another When she is not at anchor, or made fast to shore, or aground.

14. If current 5 knots / Drifting with a tide from head and ship is stopped is she making way or underway?
Underway

15. If current is 5 Knots from stern and she is going astern with dead astern is she making way or underway?
Making way

16. What is fishing Vessel?
Rule 3(d)

17. What is Not under command (NUC) and Types of NUC?
NOT UNDER COMMAND:
A vessel which through some exceptional circumstances is unable to manoeuvre as required by these rules and is therefore unable to keep out the way of another vessel.
TYPES:
Break down of engine or steering gear
Lost of propeller or rudder

Foul Anchor (anchor weigh with another vessel cable or submarine cable)
Sailing vessel is in calm condition.

18. What is Restricted in her ability to manoeuvre (RAM) and Types of RAM?
Rule 3(g)

19. What is "Vessel Constrained by her draft" (deep draft vessels)?
Rule 3(h)

20. What do you mean by lookout?
Rule 5

21. What is meaning of "All available means"?
All available instruments

- Use of compass bearing
- Use of Binoculars
- Use radar to detect targets.
- Information received by VHF

22. What is meaning of "prevailing circumstances and conditions"?
Prevailing circumstances: Weather and environmental conditions
Conditions: Ship Conditions (UKC, Transfer, Advance, Pivoting point, Tactical diameter, turning circle, Manoeuvring Data)

23. What is safe speed?
Rule 6
With in a distance; Stop with in a half arc of visibility.

24. What is safe distance?
Written in standing order book decided by master
The distance to other ship to avoid collision in case of exceptional circumstances they passed out of their pressure bulbs, even when they are following maximum diameter turning circle.

25. A tanker (loaded) and passenger vessels at sea in same metrological conditions, which one have more safe speed?
Passenger vessel, because it stop in 4 minutes at full speed and loaded tanker takes 11 minutes

26. What is close quarter situation?
The distance to other ship at which in case of exceptional circumstances (engine and steering failure and propeller or rudder lost) we cannot avoid collision with another ship.

$$0 < CPA < \text{Safe Distance}$$

27. What is approaching vessel?
A vessel whose distance is closing.

28. What is collision course?
A course on which vessels collide or may collide.
All courses which crosses safe distance circle.

29. How will you assess the vessel is in close quarter situation and risk of collision exists?

In Sight of one another
Rule 7(d)
In Restricted visibility
Rule 7(d)
When we hear a fog signal (audible range = 2 to 1.5 M) of a vessel apparently

30. What is appreciable change?
It means bold change of compass (bearing or course) while taking action it depends upon the distance of target

$$\text{Appreciable change } \alpha \frac{1}{\text{Distance of target}}$$

31. What is "not to impede the safe passage of another vessel"?

32. If you are power driven vessel for which vessels you are give way?

In Sight of One Another

I will give way to all vessels when there is risk of collision or close quarter situation exist except for overtaking vessels in ample sea room.

Action Taken As

a) KEEP OUT THE WAY VESSEL

1. Starboard Light Sector / Open Starboard:
   All crossing ahead power driven vessels.
2. Masthead Light Sector / Open Masthead:
   Power-driven vessels are meeting on reciprocal or nearly reciprocal courses (approximately 1/4 point from head on either side)
   Vessel being overtaken
   Vessel constrained by her draught
   Approaching a very large vessel or a tow or approaching a vessel at close range.
   All Hampered Vessels
   - Not Under Command
   - Restricted in her ability to manoeuvre
   - Sailing vessel
   - Vessel engaged in fishing

b) STAND ON VESSEL

1. Port Side Light Sector / Open Port:
   All crossing ahead vessels when they don't take action by her self before developing close quarter situation.
2. Stern light Sector / Open Stern:
   In restricted narrow channel for overtaking vessels

c) OTHER REQUIRED NOT TO IMPEDE VESSEL

1. Masthead Light Sector / Open Masthead:
   In narrow channel for crossing vessels.
   In narrow channel and TSS for
   - Vessel engaged in fishing
   - Vessel Length < 20 m
   - Sailing vessel

In Restricted visibility:

All vessels

33. If you are power driven vessel for which vessel you are stand on?

In Sight of One Another

I am stand on for all the vessels in masthead light sector when there is no risk of collision or close quarter situation exist and all overtaking vessels.

3. Starboard Light Sector / Open Starboard:
   Vessel passes on her stbd side at safe range except approaching a very large vessel or a tow or approaching a vessel at close range.
4. Port Side Light Sector / Open Port
   All crossing ahead vessels until they took action by her self before developing close quarter situation.
   Vessel passes on her port side at safe range except approaching a very large vessel or a tow or approaching a vessel at close range.
5. Masthead light Sector / Open Masthead
   In Narrow channel or Traffic Separation Scheme for vessel engaged in fishing, vessel less than 20m in length or a sailing vessel until they take action by herself before developing close quarter situation

   In Narrow channel for crossing vessel until they take action by herself before developing close quarter situation
6. Stern Light Sector / Open Stern
   All vessels.

34. What is crossing vessel?

Except overtaking and head on situations, I will see the mast headlights with an opposite side light of a vessel. (i.e. Port side of other vessel in my starboard side and vice versa).

35. Vessel on your starboard bow heading (350). You are heading N, will she be crossing vessel?

No, Aspect =125^{o} R > 112.5^{o} R. This is vessel to be overtaken.

36. Fishing vessel overtaking you, which is give way vessel.

Vessel engaged in Fishing.

37. What rule says about Narrow channel?

Rule 9

38. Overtaking in narrow channel, what signal on the whistle?

SIGNAL OF NARROW CHANNEL OVERTAKING VESSEL


I am intended to overtake you on your starboard side


I am intended to overtake you on your port side.

SIGNAL OF NARROW CHANNEL VESSEL TO BE OVERTAKEN


(C) If agrees to the operation


If in doubt

STRONG CASE

(N) If don't attempt to overtake

(X) Stop carrying out your intentions and watch for my signals.

39. How will you keep watch in TSS?

Rule 10

40. What is the meaning "This rule apply to Traffic separation scheme (TSS) adopted by organization" in Rule 10?

This rule is applicable only TSS adopted by IMO, Local TSS rule find from sailing directions.

41. What vessel under all circumstances may use the inshore traffic zone?

Rule 10(d)

42. How will you cross a separation zone, line and lane?

Cross on a heading (SHIP'S HEAD i.e. with out current and leeway) as nearly as practicable at right angles to the general direction of traffic flow.

43. Can a vessel engaged in fishing engage her in fishing in the lane?

Yes,

- Shall not impede the passage of any vessel following a traffic lane. If

  - In TSS operate in such a manner that they, or their gear, must not seriously restrict the sea room available to other vessels in a lane

  - Out side outer limit of TSS must not allow her nets to extend into a lane in such a way as to impede the passage of a vessel following the lane.
- Does not proceed against the general direction of flow (If making way and cannot maintain a steady course and speed then their general direction of movement must be in accordance with Rule 10.)

44. What is overtaking vessel?

Rule 13(b)

45. How will you know by day that a vessel is overtaking you and you are overtaking a vessel

OVERTAKING VESSEL
Relative bearing >112.5^{o} G or R

VESSEL TO BE OVERTAKEN
Aspect > 112.5^{o} G or R

46. Is a Not under command is give way, when coming from 2 points abaft the beam?

No, Rule says overtaking when coming up with another vessel from direction more than 2 pt abaft the beam.

47. Self on not under command vessel, fishing vessel on port bow, who is give way?
Vessel engage in fishing

48. Self on not under command vessel overtaking fishing vessel who is give way?
Vessel engage in fishing

49. What is meaning of "Notwithstanding" in rule 13?
Leave all situations for overtaking vessel of Part B steering and sailing rules
Section I conduct of vessel in any condition of visibility
Section II conduct of vessel Insight of one another

50. Vessel right ahead in sight of one another action as per which rule, how much course should you alter?
Broad alteration Action as per which rule?
Rule 14 Head-on-situation
Alter course that we pass it from safe distance (If side lights are visible then alter 3 pts) as much that she can observe red light with open span.
Rule 8(*b*), (d) Action to avoid collision

51. If Power Driven Vessel is give way vessel & not taking action then what is your action? According to which rule?

- Take the series of bearing.
- If bearing is not changing appreciably then there is risk of collision or close quarter situation exist.
- I will give at least 5 short blasts or rapid flashes.
    - If other vessel don't take any action, I will give 1 short blast alter course to starboard, come on her parallel course and watch for other vessel.
    - If other vessel alter course to her stbd come back own course <u>OR</u> the speed of other is more than my vessel let her pass and come back own course from stern of other vessel at safe distance, other wise I will give again 1 short blast / flash alter course to starboard make a round turn and pass well clear from stern of other vessel.

Rule 17 a (ii) Action by stand-on vessel

52. Will you give the fog signal when you are not in fog but near it?
Yes, Rule 19 applies to vessels not in sight of one another when navigating in or near an area of restricted visibility.

53. If you are Power driven vessel what you think yourself in restricted visibility?

- This Rule applies to vessels not in sight of one another when navigating in or near an area of restricted visibility (SOUND APPROPRIATE FOG SIGNAL)
- <u>Every vessel</u> shall proceed at a safe speed adapted to the prevailing circumstances and conditions of restricted visibility. A <u>power-driven vessel</u> shall have her engines <u>ready for immediate manoeuvre</u>.(
(IF I AM A POWER DRIVEN VESSEL THEN I AM GIVE WAY TO ALL VESSELS.
HAMPERED VESSELS, CONSTRAINED BY HER DRAUGHT, TOWING AND PUSHING VESSEL DON'T TAKE EFFICIENT AVOIDING ACTION)
- Every vessel shall have due regard to the prevailing circumstances and conditions of restricted visibility when complying with the Rules of Section I of this Part.
- A vessel which detects by radar alone the presence of another vessel shall determine if a <u>close-quarters situation is developing and/or risk of collision exists.</u> If so, she shall take avoiding action in ample time, provided that when such action consists of an alteration of course, so far as possible the following shall be

avoided:

(i) an alteration of course to port for a vessel forward of the beam, other than for a vessel being overtaken,

. (i.e. DON'T GO TOWARD THE VESSEL BECAUSE IF TARGET IS OUT OF RANGE OF FOG SIGNAL THEN WE DON'T KNOW THE NATURE OF VESSEL)

(ii) an alteration of course towards a vessel abeam or abaft the beam

- Except where it has been determined that a risk of collision does not exist, <u>every vessel</u> which hears apparently forward of her beam the fog signal of another vessel, or which cannot avoid a close-quarters situation with another vessel forward of her beam, shall reduce her speed to the minimum at which she can be kept on her course. She shall if necessary take all her way off and in any event navigate with extreme caution until danger of collision is over.

54. What do you mean by "navigate with extreme caution"?

55. You hear a fog signal of a vessel apparently from starboard bow what action?

Or

Fog signal on port bow one prolong blast action?

- Reduce speed to 50% at which I kept on my course.
- If necessary take all way off and navigate in extreme caution until danger of collision is over.
- Change fog signal from making way to underway
- Confirm the source of fog signal.
- Acquire the target or Plot three echo of target, extends its relative plot and determine the C.P.A.
- Check risk of collision exist or not.
- Resume course when target is passed well clear.

56. Why you not altered course to port for a vessel forward of beam? What is the reason behind it?

57. Echo 4 points on starboard bow 5 miles?

58. Which state of visibility we use the manoeuvring signals?

- Insight of one another
- Around the bend or behind intervening obstruction.

59. What lights would a power driven vessel would be carrying?

Rule 21

60. Power driven vessel arrangements of navigation lights. What is vertical and horizontal distance of masthead lights?

You decide to stop your vessel in mid Atlantic what lights will you show?

<u>MASTHEAD LIGHT</u>

<u>Length ≥ 20m</u>

<u>FORWARD MAST HEAD LIGHT REQUIREMENT</u>

- Height above hull ≥ 6m
- If breadth > 6m then Height above hull ≥ breadth
- Height above hull ≤ 12m

Horizontal distance from stem ≤ 1/4 x L.O.A

<u>AFT MAST HEAD LIGHT REQUIREMENT</u>

- Height of aft masthead light ≥ 4.5m + height of forward masthead light.

- Horizontal distance between mast head light ≥ 1/2 x L.O.A and Horizontal distance between mast head light ≤ 100m

When 1 masthead light, exhibit forward of amidships.

12 < Length < 20m

Height above gunwale ≥ 2.5m

When 1 masthead light, exhibit forward

Length < 12m

Height above gunwale ≤ 2.5m (may carry)

Masthead light in addition to side and stern light ≥ 1m + height of side lights (at least)

When 1 masthead light, exhibit forward

Towing or Pushing

Height of lowest light of aft masthead ≥ 4.5m + height of forward mast head light

SIDE LIGHT

- Height of side light ≤ 3/4 x Height of forward mast head light.

Length < 20m

Height of combined lantern ≤ mast head light – 1m

Length ≥ 20m

Placed near the side of vessel.

61. What lights would vessel a ground more than 100 in length would be carrying, there vertical and horizontal spacing?

LIGHTS AND SHAPES:

Length > 50m

- In the fore part, an all-round white light.
- At or near the stern and at a lower level than above light, an all-round white light.
- Two all-round red lights in a vertical line
- Three balls in a vertical line.

Length < 50m

- An all-round white light where it can best be seen in fore part of vessel.
- Two all-round red lights in a vertical line
- Three balls in a vertical line.

Length< 12m

Shall not be required to exhibit the lights or shapes

LIGHTS SPACING

ANCHOR LIGHT

Length > 50m

- Height of Forward anchor light ≥ (4.5m + height of aft anchor light), Height of Forward anchor light ≥ 6m above hull.

TWO RED LIGHTS IN A VERTICAL LINE

Length ≥ 20m

Distance between lights ≥ 2m

Height of lowest light ≥ 4m above hull.

Length < 20m

Distance between lights ≥ 1m

Height of lowest light ≥ 2m above gunwale.

DAY MARK SPACING

Length > 20 m

Vertical distance between shapes ≥ 1.5m

Diameter of ball ≥ 0.6m

Length < 20m

Dimensions could be smaller than above

62. What are the anchor light and shape for vessel restricted in her ability to manoeuvre at anchor?

LIGHTS AND SHAPES:

- 3 all around lights in a vertical line the highest and lowest of these lights shall be red and middle light shall be white.
- 3 shapes in a vertical line the highest and lowest of these shapes shall be balls and middle one a diamond.
- Horizontal distance of group of lights between masthead lights from fore and aft centreline ≥ 2m

LIGHTS SPACING

ANCHOR LIGHT

Length > 50m

- Height of Forward anchor light ≥ 4.5m + height of aft anchor light, Height of Forward anchor light ≥ 6m above hull.

THREE LIGHTS IN A VERTICAL LINE

Length > 20m

Distance between lights ≥ 2m

Height of lowest light ≥ 4m above hull.

Length < 20m

Distance between lights ≥ 1m

Height of lowest light ≥ 2m above gunwale.

DAY MARK SPACING

Length > 20 m

- Vertical distance between shapes ≥ 1.5m
- Diameter of ball ≥ 0.6m
- Diamond shape consist of two cones having common base
- Diameter of cone base ≥ 0.6m , Height of cone base = diameter

Length < 20m

Dimensions could be smaller than above

63. What is practical angle of cut for navigation lights?

Side Light 1 to 3 from head to other side

Masthead light 1 to 5 from 22.5 abaft the beam toward stern

Stern Light 1 to 5 from 22.5 abaft the beam toward head

All around Light obscured ≤ 6 angular sector except anchor light

64. What is construction of bell?

Length > 20m

Diameter of mouth ≥ 300mm

Mass of striker ≥ 3% of mass of bell.

65. Lights of Power driven vessel when underway and making way?

In both cases she show her Masthead lights, Side Lights and Stern Light

66. Fishing vessel making way, underway and anchor light and their height?

UNDERWAY AND ANCHOR LIGHTS

TRAWLER

- Two all-round lights in a vertical line, the upper being green and the lower white
- A masthead light abaft of and higher than the all-round green light; a vessel of less than 50 metres in length shall not be obliged to exhibit such a light but may do so.

VESSEL ENGAGED IN FISHING, OTHER THAN TRAWLING

- Two all-round lights in a vertical line, the upper being red and the lower white
- When there is outlying gear extending more than 150 metres horizontally from the vessel, an all-round white light in the direction of the gear.

MAKINGWAY LIGHTS

VESSEL ENGAGED IN FISHING (any type)

In addition to her characteristic lights, sidelights and a stern light.

LIGHT HEIGHT SPECIFICATION

Length ≥ 20m

Distance between lights ≥ 2m

Length < 20m

Distance between lights ≥ 1m

Height of lower light above side light ≥ 2 x distance between two vertical lights

OUTLYING GEAR LIGHT

2m ≥ horizontal distance from red over white light ≥ 6m

Height of sides light < height of outlying gear light < height of all around white light

67. Trawler more than 50 m making way lights?

- Two all around lights in a vertical line ,the upper being green and lower being white
- Masthead light abaft and higher than the all around green light.
- Sidelights and stern light.

68. What are purse seine and trawler's gear?

Purse seining

The seine net has float on top to support it near the surface, and a wire passed through rings at its base to enable it to be closed. As in seine netting the end of the net is marked by a Dan-buoy. The net is shot over the stern by vessel encircling a shoal of fish. The Dan is recovered and the wire reeled in to close the bottom of net, which is then hauled on board, and the fish pumped into tanks. The net may be 160m deep and extend in a circle with a diameter of 5 cables.

69. Which vessel shows side lights and stern light in underway?

Power driven vessel

- Submarine
- Aircraft carrier
- Towing or Pushing vessel and vessel being towed or first vessel ahead being pushed
- Constrained by her draught
- Pilot vessel

- Seaplane, WIG, Hovercraft

Restricted in her ability to manoeuvre

- Vessel engaged in replenishment or transferring persons, provisions or cargo while underway.
- Aircraft carrier engaged in launching and recovery operation
- Mine sweeper
- Hampered tow vessel

Sailing Vessel

70. Which vessels show side lights and stern light in making way?

Vessel engaged in fishing

- Other than trawler
- Trawler

Not under command

Restricted in her ability to manoeuvre

- Vessel engaged in laying servicing or picking up a navigation mark, submarine cable or pipeline;
- Vessel engaged in dredging, surveying or under water operations

71. Which vessels not showing masthead light while underway or making way?

- Sailing vessel
- Vessel engaged in fishing other than trawler
- Not under command
- Pilot vessel
- Vessel aground

72. Sailing vessel propelled by machinery day and night signal?

DAY SIGNAL: She exhibit forward where it can best be seen a conical shape, apex downward.
NIGHT SIGNAL: She exhibits lights of power driven vessel according to her length.

73. Sailing vessel less than 20 m in length day and night signal?

DAY SIGNAL: No
NIGHT SIGNAL:

- Sidelight or combined sidelights in a lantern, carried at or near the top of the mast where it can best be seen.
- Stern light.

74. A white light is seen at sea about 2 miles off what possibilities?

- P.D. v/l or S./V underway seen from astern.
- P.D v/l less than 50m.underway out of range of side lights.
- All around lights of:

1. v/l less than 50m at anchor
2. v/l under oars
3. P.D v/l less than 7m,speed not exceeding 7 knots.
4. P.D v/l less than 12m;out of range of side lights.
5. Sailing v/l less than 7m.
6. A life raft showing white light on the outside of canopy.

75. You see Mine Sweeper in mid Atlantic Ocean what would be your action?

- Plot position of both vessels on chart

- Check by plotted navigation warning, ship is in any excising area.
- Communicate with vessel
- Check other minesweeper because they are always in group
- Alter course toward outside the exercising area. Give wide berth and pass more than 1000m from mine sweeper

If Master already inform

- Call master may be he have some other information

If Seen Unexpectedly

- Call master because I am in excising area may be I need him afterwards to take effective action for other mine sweepers.

76. Which vessels don't show any light and shape when at anchor?
    - Vessel engaged in fishing.
- Dredgger with obstruction
    - Vessel less than 7m in length not near narrow channel fairway or anchorage where other vessel normally navigates.

77. You are on watch (2000 – 0000) you receive distress and master told you to go towards the position (SOS) after reaching that position you have posted lookouts for distress what instruction about signals/light will you give to lookout person, that must be reported.

Signal Reported by lookout man

- A gun or other explosive signal fired at intervals of about a minute
- A continuous sounding with any fog-signalling apparatus
- Rockets or shells, throwing red stars fired one at a time at short intervals
- Flames on the vessel (as from a burning tar barrel, oil barrel, etc.)
- A rocket parachute flare or a hand flare showing a red light
- Flash light signalling method consisting of the group ...---... (SOS) in the Morse Code

Signal Observed by duty officer

- A signal made by radiotelegraphy or by any other signalling method consisting of the group ...---... (SOS) in the Morse Code
- A signal sent by radiotelephony consisting of the spoken word "Mayday"
- The radiotelegraph alarm signal
- The radiotelephone alarm signal
- Signals transmitted by emergency position-indicating radio beacons
- Approved signals transmitted by radio communication systems including survival craft transponders.

VIEWS, POSITION OF LIGHTS, SHAPES AND SOUND SIGNALS

Q1. What she is?

- Power driven vessel underway but stop or making way seen end on
- Making way 1 prolonged blast at intervals of not more than 2 minutes
  Underway but stopped 2 prolonged blasts with 2 seconds gap in between at intervals of not more than 2 minutes
- Less than 20m
- No day signal

Q2. What are the horizontal and vertical specifications of masthead and side lights?

MASTHEAD LIGHT

Exhibit aft of amidships

12 ≤ Length ≤ 20m

Height above gunwale ≥ 2.5m

Length < 12m

Height above gunwale < 2.5m (may carry)

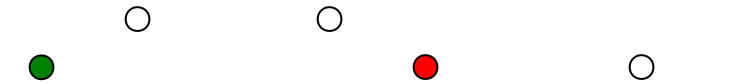
Masthead light in addition to side and stern light ≥ 1m + height of side lights (at least)

SIDE LIGHT

Height of combined lantern ≤ mast head light – 1m

Q3. What she is?

- Power driven vessel underway but stop or making way seen end on
- Making way 1 prolonged blast at intervals of not more than 2 minutes
  Underway but stopped 2 prolonged blasts with 2 seconds gap in between at intervals of not more than 2 minutes
- Less than 50m
- No day signal



stbd side view port side view stern view

Q4. What are the horizontal and vertical specifications of masthead and side lights?

MASTHEAD LIGHT

Length > 20m

Exhibit forward of amidships

- Height above hull ≥ 6m
- If breadth > 6m then Height above hull ≥ breadth
- Height above hull ≤ 12m

12 ≤ Length ≤ 20m

Exhibit aft of amidships

Height above gunwale ≥ 2.5m

Length < 12m

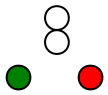
Exhibit aft of amidships

Height above gunwale < 2.5m (may carry)
Masthead light in addition to side and stern light ≥ 1m + height of side lights (at least)

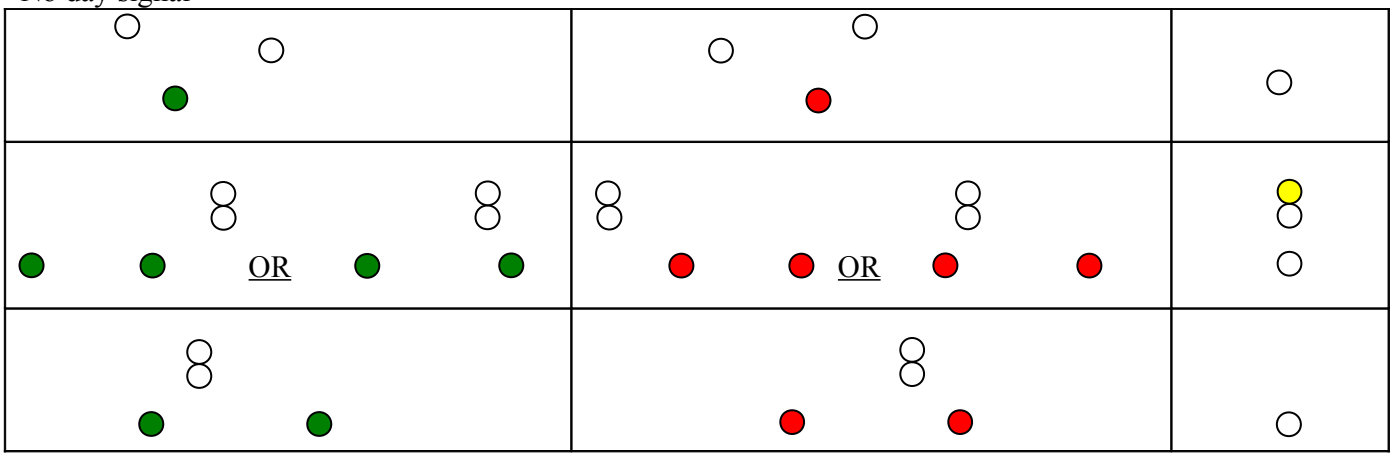
SIDE LIGHT
Placed near the side of vessel.
Height of side light ≤ ¾ x Height of mast head light.

Q5. What is practical angle of cut for navigation lights?
Side Light 1 to 3 from head to other side
Masthead light 1 to 5 from 22.5 abaft the beam toward stern
Sidelight 1 to 5 from 22.5 abaft the beam toward head
All around Light obscured 6 angular sector

Q6. What she is?



- P.D v/l seen end on
  (a) u/w or m/w
(b) Towing or pushing u/w or m/w, tow 200 m or less
- (a) M/w 1 prolonged blast at intervals of not more than 2 min, U/w but stopped 2 prolonged blasts with 2 sec gap in b/w at intervals of not more than 2 min
  (b) 1 prolong and 2 short blast at interval not more than 2 minutes
  Probably 50m or more
  Length < 50 m
- No day signal



Stbd view port view stern view

Q7. What are the horizontal and vertical specifications of masthead and side lights?
MASTHEAD LIGHT
FORWARD MAST HEAD LIGHT REQUIREMENT
- Height above hull ≥ 6m
- If breadth > 6m then Height above hull ≥ breadth
- Height above hull ≤ 12m
  Horizontal distance from stem ≤ 1/4 x L.O.A

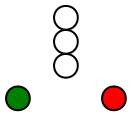
AFT MAST HEAD LIGHT REQUIREMENT

- Height of aft masthead light ≥ 4.5m + height of forward masthead light.
- Horizontal distance between mast head light ≥ 1/2 x L.O.A and Horizontal distance between mast head light ≤ 100m

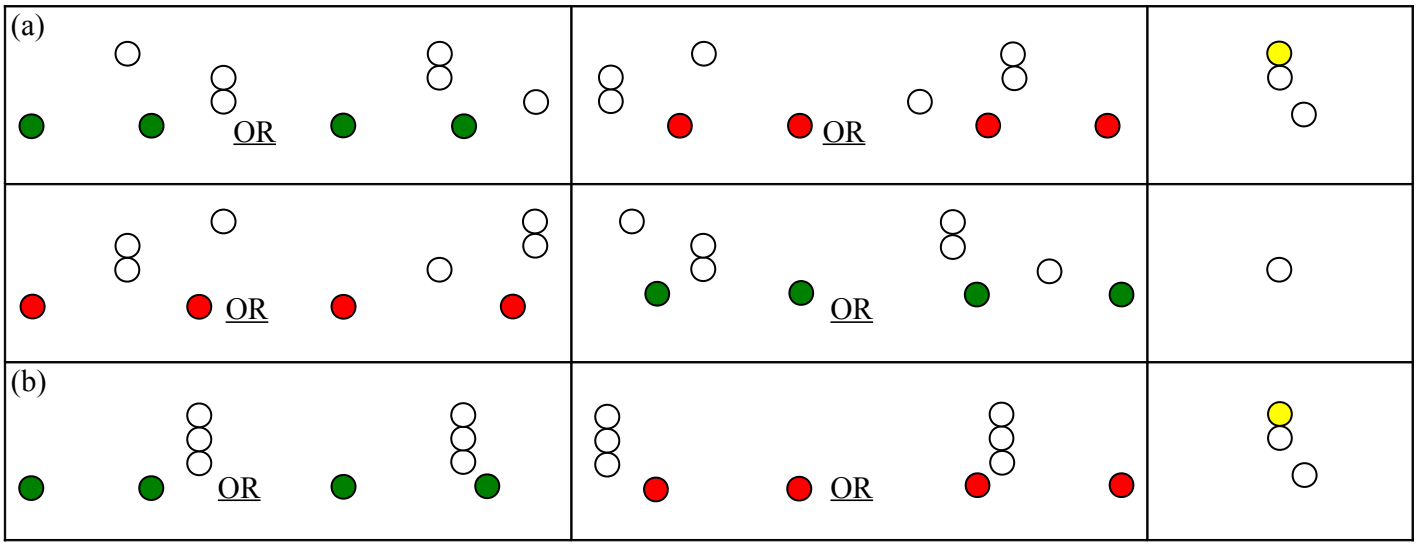
SIDE LIGHT

- Placed near the side of vessel
- Height of side light ≤ 3/4 x Height of forward mast head light.

Q8. What she is?



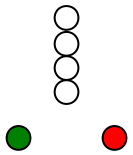
- P.D v/l underway but stop or making way seen end on-
  (a) Towing or pushing, tow 200m or less
  (b) Towing, Tow exceed 200m
- Towing or Pushing vessel 1 prolong and 2 short blasts at interval not more than 2 minutes
  Last Towed Vessel If manned 1 prolong & 3 short blasts immediately after the signal made by towing
- (a) Probably 50m or more
  (b) Less than 50m
- (a) No day signal.
  (b) 1 diamond each on towing and towed vessel (Diamond = 2 cones having common base)



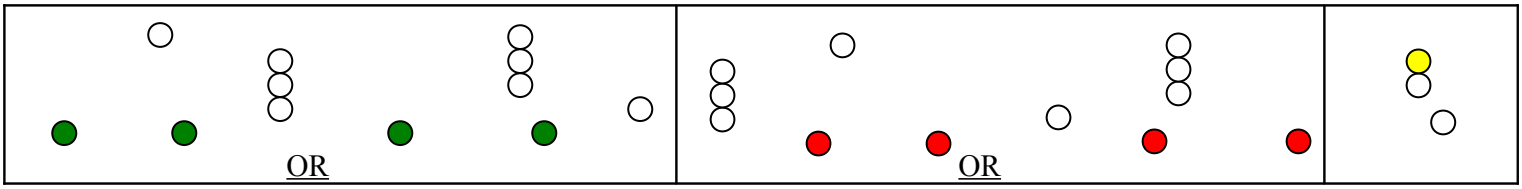
Q9. Where are the towing or pushing vessel masthead lights are placed?
2 or 3 masthead lights in a vertical line shall placed eithier the forward mastheadlight or the aft masthead light.
Height of lowest light of aft masthead ≥ 4.5m + height of forward mast head light

Q10. Where the side lights are placed on vessel being pushed?
Side light are placed at forward end of first vessel from forward.

Q11. What she is?



- P.D v/l Towing underway but stop or making way seen end on, Tow exceed 200m
- Towing 1 prolong and 2 short blasts at interval not more than 2 minutes
  Last Towed Vessel If manned 1 prolong & 3 short blasts immediately after the signal made by towing
- Probably 50m or more
- 1 diamond each on towing and towed vessel (Diamond = 2 cones having common base)

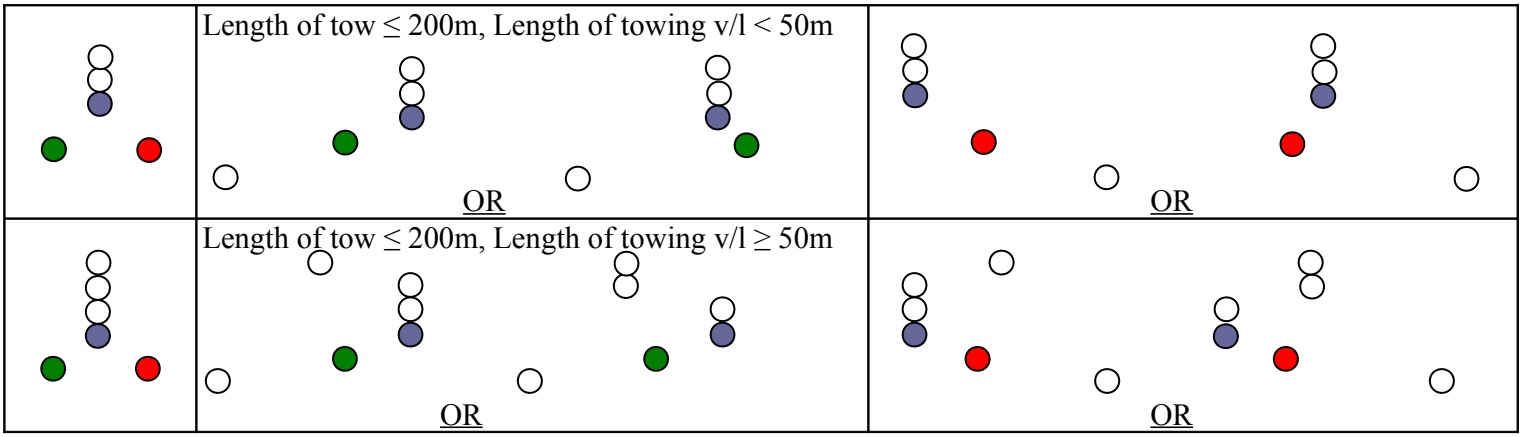


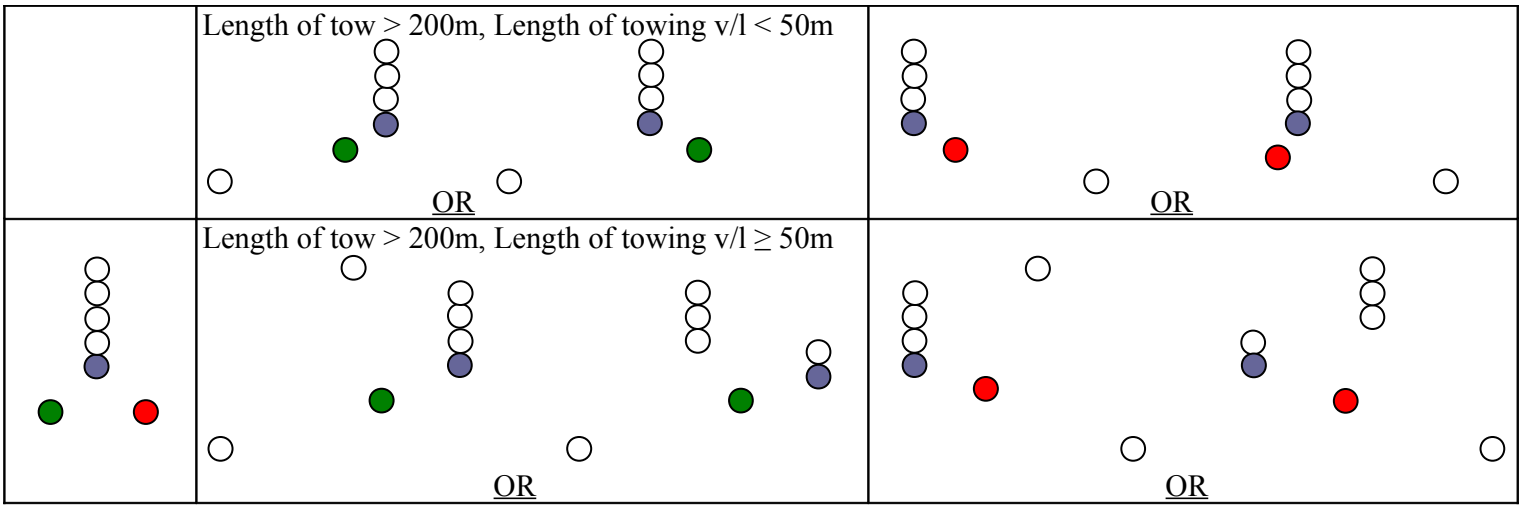
Stbd view port view stern view

Q12. What she is?

- Possible arrangement of power driven vessel engage in towing a dracone less than 25 meters in breadth and less than 100 meters in length, length of tow cannot be detected ,underway but stop or making way ,seen her stern side
- Towing vessel 1 prolong and 2 short blasts at interval not more than 2 minutes
- No indication of length
- 1 diamond shape at or near the aftermost extremity of dracone (Diamond = 2 cones having common base)

Q13. Where ofen towing vessel carry blue light for dracone?
Japan

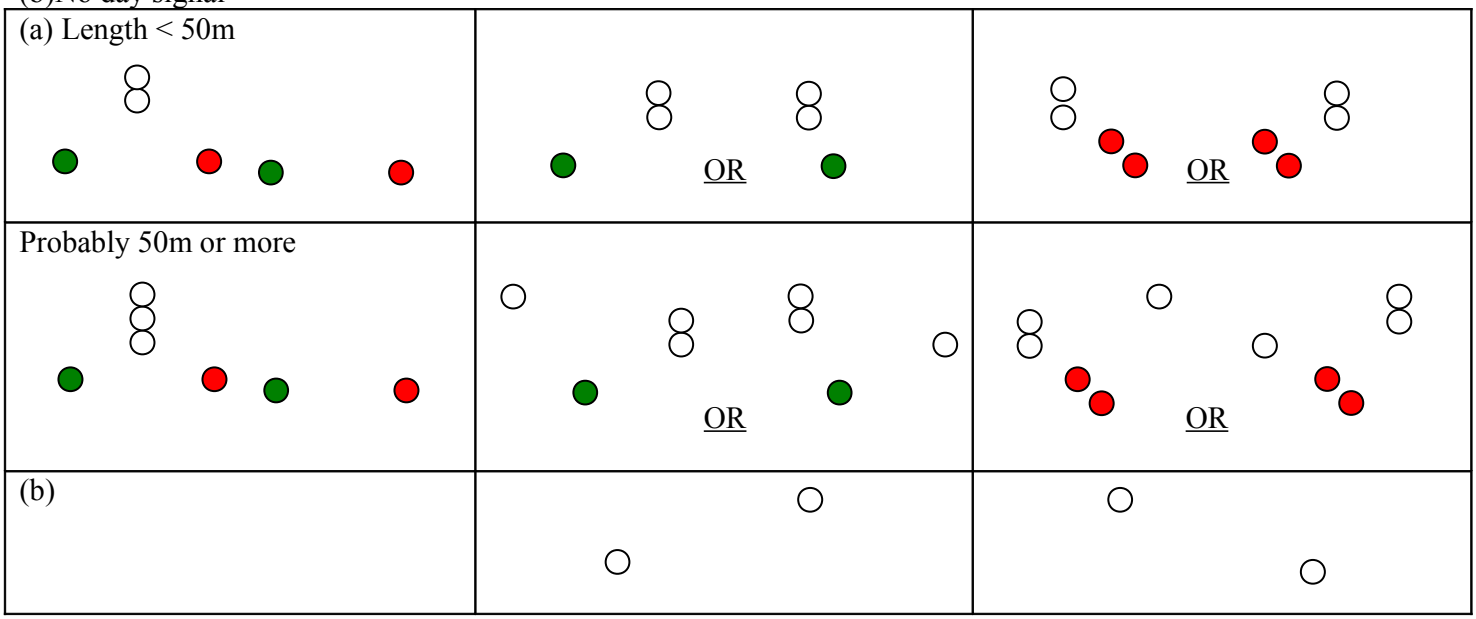




End –On Stbd View Port View

Q14. What is she?

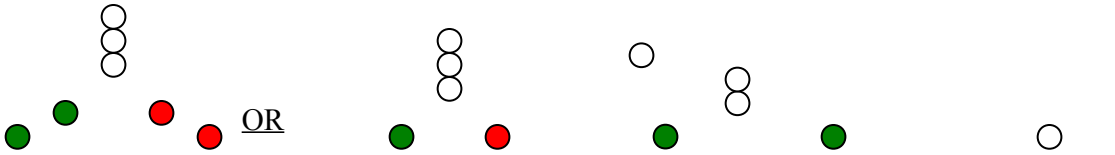
- (a) P.D v/l Towing alongside underway but stop or making way seen her stern
  (b) Possible distribution of air craft carrier at anchor, seen her head or stern
- (a) Towing v/l 1 prolong and 2 short blasts at interval not more than 2 minutes
  (b) At interval not more than 1 minute rapid ringing of bell for 5 seconds in forepart. In a vessel of 100m or more in length immediately gong shall be sounded for 5 sec in aft part of vessel.She may give warning signal 1 short ,1 prolong and 1 short blast.
- (a) No indication of length
  (b) Probably 50m or more but less than 100m
- (a) A ball in fore part (Diameter of ball ≥ 0.6m)
  (b)No day signal



End on stbd view port view

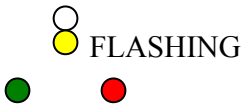
Q15. What she is?

- P.D. v/l pushing 1 or more v/l ahead not a part of composite unit, u/w or m/w seen her port side
- Pusing v/l 1 prolong & 2 short blasts at interval not more than 2 min
- Probably 50m or more
- No day signal

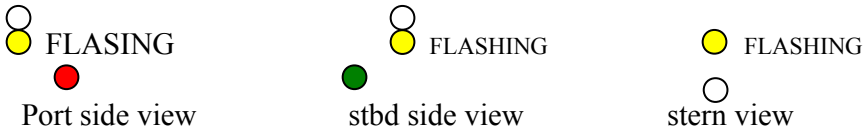


End-On view stbd view stern view

Q16. What she is?



- Air-cushion vessel in non-displacement mode, making way seen end on
- Making way 1 prolonged blast at intervals of not more than 2 minutes
- less than 50m

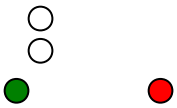


Port side view stbd side view stern view

Q17. What is the frequency of amber flashing light?
120 flashes / min

Q18. What is minimum base angle of masthead light with side lights?
27°

Q19. What she is?



- Possible distribution of the lights for an air craft carrier underway but stop or making way seen from ahead
- Making way 1 prolonged blast at intervals of not more than 2 minutes

Underway but stopped 2 prolonged blasts with 2 seconds gap in between at intervals of not more than 2 minutes

- probably 50m or more
- No day signal

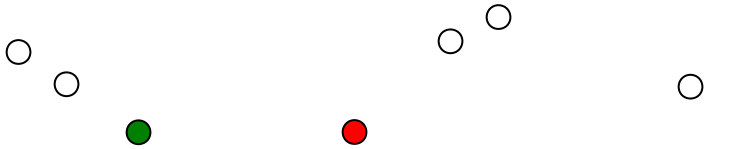
Q20. Where the lights are placed on an aircraft carrier?

- Steaming lights placed permanently off the centre line of the ship and reduce horizontal separation.
- Side lights are positioned either side of the flight deck or

On either side of the island structure where the port side light is 50m, or more from port side of ship

- 4 white Anchor lights

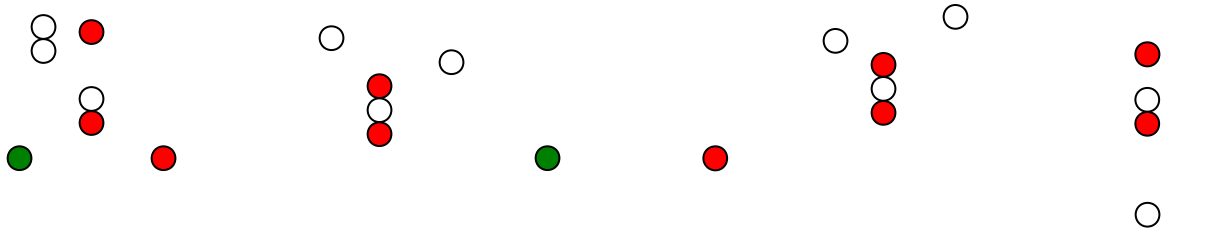
Each light in port and stbd in same horizontal plane in forward part not more than 1.5m below flight deck
Each light in port and stbd in same horizontal plane in aft part not less than 4.5m lower than forward lights.
Each light is visible over an arc of 180 degrees. The fwd lights visible over a minimum arc from 1 pt on opposite bow to 1 pt from right astern on their own side, and after lights from 1pt on the opposite quarter to 1pt from right ahead on their own side.



stbd side view port side view stern view

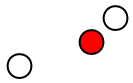
Q21. What extra light she will carry?

Red, white, red all around lights only exhibited when engaged in the launching or recovery of air craft. While Operation she head into wind.



End-On Stbd view Port view stern view

Q22. What she is?



- Possible distribution of the lights of submarine underway but stop or making way seen her port side
- Making way 1 prolonged blast at intervals of not more than 2 minutes

Underway but stopped 2 prolonged blasts with 2 seconds gap in between at intervals of not more than 2 minutes

- probably 50m or more
- When they are in accompany exhibit international code group NE2

Q23. What extra light she will carry?

VQ FL Y (Amber) light, 90 to 105 flashes per minute fitted 1 to 2m above or below masthead light.
At anchor or at buoy by night, exhibit normal anchor lights as for vessels of their length and in addition will exhibit an all around white light midship.

Q24. How do submarine indicate their position?

- Releasing an indicator buoy having aerial.
- On the approach of surface vessel by regular interval firing yellow, white or red smoke candles or pyrotechnics
- By pumping fuel or lubricating oil to the surface
- Bu blowing out air.

Stbd view End –On Stern view

Q25. What she is?

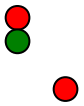
- Possible distribution of the lights of seaplane underway but stop or making way on water seen end on.
- Making way 1 prolonged blast at intervals of not more than 2 minutes

Underway but stopped 2 prolonged blasts with 2 seconds gap in between at intervals of not more than 2 minutes

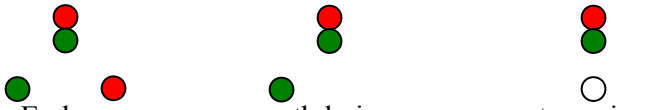
- Less than 50m
- No day signal

stbd side view port side view stern view

Q26. What she is?



- Sailing vessel underway but stop or making way exhibiting the optional all around lights at or near the top of mast seen her port side
- 1 prolong and 2 short blasts at interval not more than 2 minutes
- Probably more than 20m in length
- No day signal



End –on stbd view stern view

Q27. What she is?

- Sailing vessel underway but stop or making way seen her port side
- Making way 1 prolonged blast at intervals of not more than 2 minutes
  Underway but stopped 2 prolonged blasts with 2 seconds gap in between at intervals of not more than 2 minutes
- No indication of length
- No day signal

OR

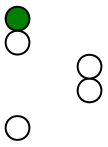
(Length < 20m)

End –on stbd view stern view

Q28. Is optional lights can exhibited in conjunction with combined lantern?

No

Q29. What she is?

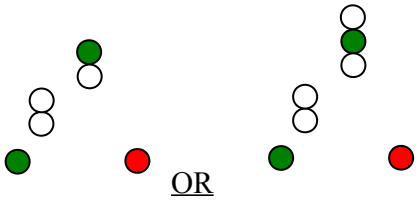
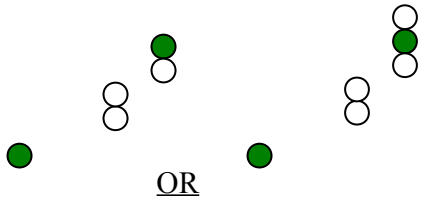
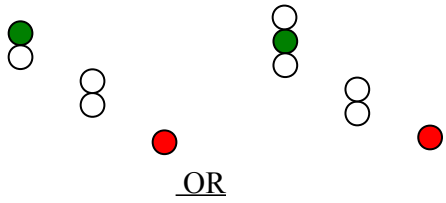


• Vessel engaged in trawling, making way through water and exhibiting optional lights indicating that she is shooting her nets, seen her stern.
• 1 prolong and 2 short blast at interval not more than 2 minutes
• Less than 50m
• 2 cones with apexes together in vertical line (Diameter of cone ≥ 0.6m, Ht.=diameter),Flag Z

Q30. Which extra light carry indicating her length?
Masthead light abaft of and higher than all around green light.

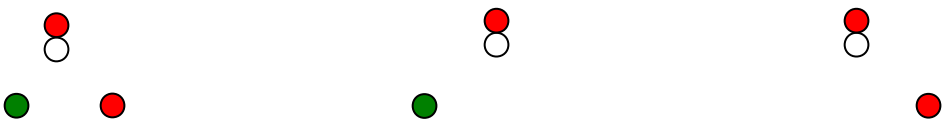
Q31. Is she carry masthead light while underway but stop?
Yes

Q32. Where these optional lights are placed?
At least 0.9m apart but lower than trawler lights and upper than side lights.
Visible all around the horizon at a distance of at least 1 mile but lesser than other lights

Length<50m probably 50m or more	Length<50m probably 50m or more	Length<50m probably 50m or more
 OR	 OR	 OR

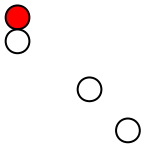
Q33. What she is?

• V/l engage in fishing other than trawler.
(a)Underway but stop or at anchor ,gears extending more than 150m.
(b)Making way ,gear extended 150m or less,seen her stern from obstruct stbd side
• 1 prolong and 2 short blasts at interval not more than 2 minutes
• No indication of length
• (a)2 cones with apexes together in vertical line
(b)Also a cone with apex upwards in direction of gear

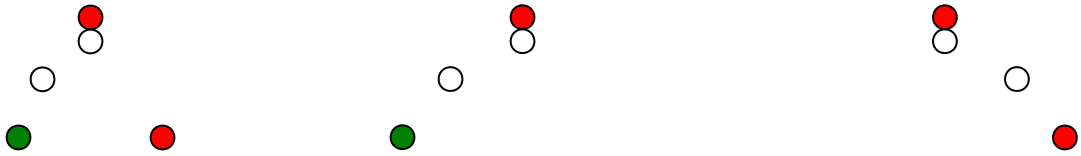


end-on stbd view port view

Q34. What she is?



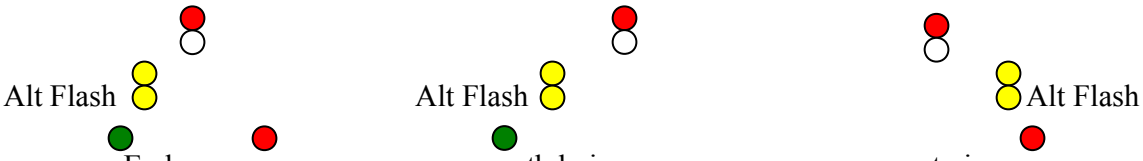
- V/l engage in fishing other than trawler ,Making way ,gear extended more than 150m ,seen her stern from obstruct port side.
- 1 prolong and 2 short blasts at interval not more than 2 minutes
- No indication of length
- 2 cones with apexes together in vertical line (Diameter of cone ≥ 0.6m, Ht.=diameter)
  Also a cone with apex upwards in direction of gear.



End-on Stbd view Port view

Q35. What she is?

- V/l engage in fishing other than trawler & exhibiting optional all around lights indicating that she is using purse seine
  (a)Underway but stop or at anchor ,gears extending more than 150m.
  (b)Making way ,gear extended 150m or less,seen her stern from obstruct stbd side
- 1 prolong and 2 short blasts at interval not more than 2 minutes
- No indication of length
- (a)2 cones with apexes together in vertical line (Diameter of cone ≥ 0.6m, Ht.=diameter)
  (b)Also a cone with apex upwards in direction of gear.



End-on stbd view port view

Q36. What are the light specification?

All around light height specification

Length > 20m

Distance between lights ≥ 2m

Length < 20m

Distance between lights ≥ 1m

Height of lower light above side light ≥ 2 x distance between two vertical lights

Outlying gear light

2m ≥ horizontal distance from red over white light ≥ 6m

Height of sides light < height of outlying gear light < height of all around white light

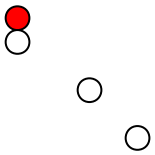
Optional lights

At least 0.9m apart but lower than fishing lights and upper than side lights.

Visible all around the horizon at a distance of at least 1 mile but lesser than other lights

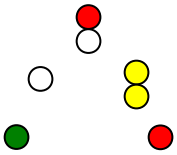
Q37. What she is?

Alt Flash.



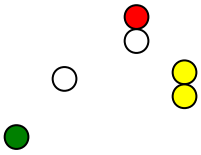
- V/l engage in fishing other than trawler & exhibiting optional all around lights indicating that she is using purse seine ,Making way ,gear extended more than 150m, seen her stern from obstruct port side.
- 1 prolong and 2 short blasts at interval not more than 2 minutes
- No indication of length
- 2 cones with apexes together in vertical line (Diameter of cone ≥ 0.6m, Ht.=diameter)

  Also a cone with apex upwards in direction of gear.



Alt Flash

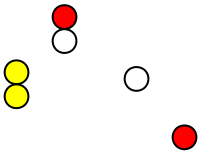
End-on



Alt Flash

Stbd view

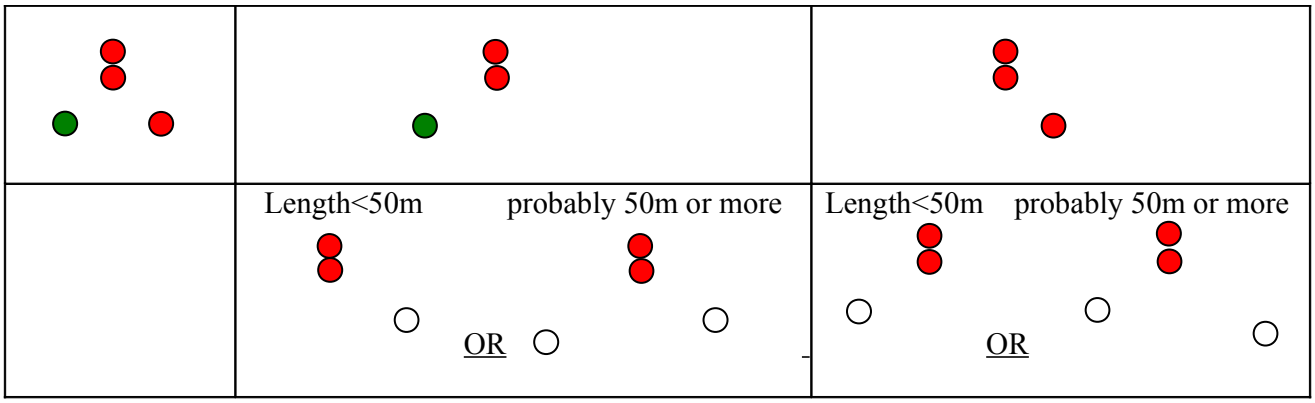
Alt.Flash



Port view

Q38. What she is?

- (a) N.U.C vessel making way seen from astern
  (b) Aground vessel
- (a) 1 prolong and 2 short blasts at interval not more than 2 minutes
  (b) At interval not more than 1 minute 3 separate and distinct strokes on the bell immediately before and after the rapid ringing of bell for 5 seconds in forepart In a vessel of 100m or more in length immediately gong shall be sounded for 5 sec in aft part of vessel.She may give appropriate whistle signal.
- (a) No indication of length
  (b) probably less than 50m
- (a)Two balls in a vertical line
  (b)Three balls in a vertical line (Diameter of ball =0.6 m)



End on Stbd view port view

Q39. What is construction of bell?
Diameter of mouth ≥ 300mm
Mass of striker ≥ 3% of mass of bell.

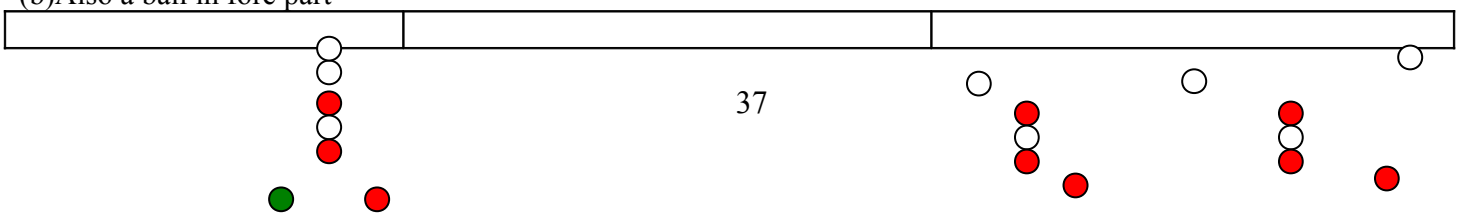
Q40. What is combined whistle system?
They are fitted when distance more than 100m apart as high as practicable. They shall be sounded simultaneously.
The frequency of any one whistle differ other at least 10Hz

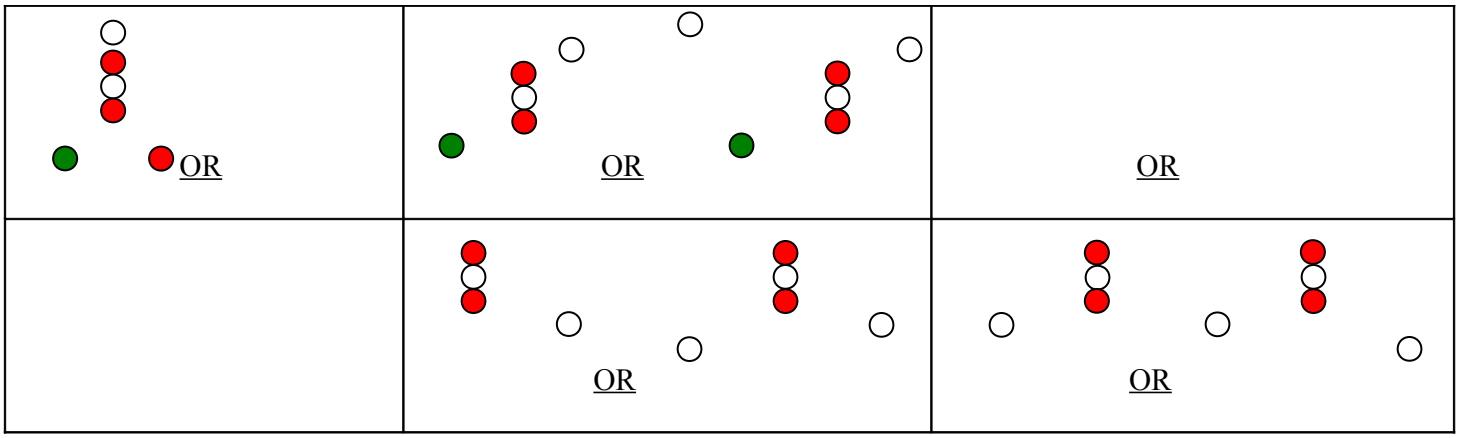
Q41. What is the sound pressure of bell or gong?
Sound pressure level ≥ 110 db at a distance 1m from it.

Q42. What are the lights specifications?
LIGHTS SPACING
Anchor light
Height of Forward anchor light ≥ (4.5m + height of aft anchor light), Height of Forward anchor light ≥ 6m above hull.
2 red lights in a vertical line
Distance between lights ≥ 2m
Height of lowest light ≥ 4m above hull.
DAY MARK SPACING Diameter of ball ≥ 0.6m

Q43. What she is?

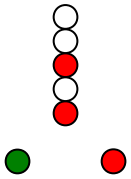
- Vessel R.A.M. or dredger without obstruction
  (a) Making way seen her astern
  (b) At anchor
- 1 prolong and 2 short blasts at interval not more than 2 minutes
- (a) no indication of length
  (b) Probably less than 50m
- (a) Ball, diamond and ball in vertical line
  (b)Also a ball in fore part





End on Stbd view Port view

Q44. What she is?



- (a)Power driven vessel engage in towing, length of tow is 200m or less and is unable to deviate from her course, underway but stop or making way ,seen end on

(b) Vessel R.A.M. or dredger without obstruction, making way, seen end on

- (a)1 prolong and 2 short blasts at interval not more than 2 minutes

  (b)Towing Vessel 1 prolong and 2 short blasts at interval not more than 2 minutes

Last Towed Vessel If manned 1 prolong and 3 short blasts immediately after the signal made by the towing vessel

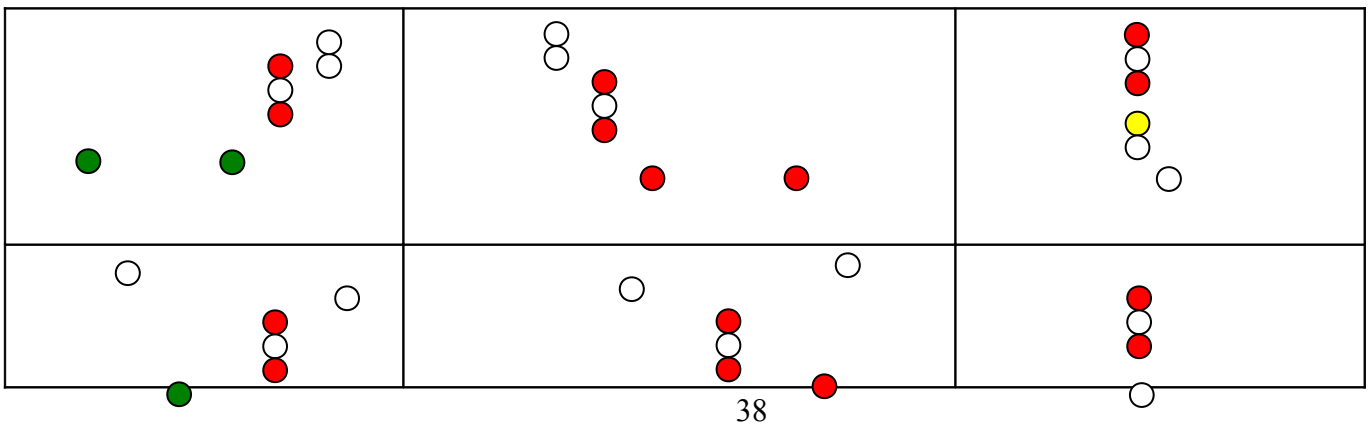
- (a)Less than 50m.

  (b)Probably 50m or more

- Ball,diamond and ball in a vertical line (Diameter of ball =0.6 m, Diamond = 2 cones having common base)

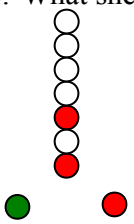
Q45. Where all around light are placed?

- RAM light may carry below forward masthead light or above after masthead light
- RAM lights between masthead light placed at a horizontal distance not less than 2m from fore & aft centre line of the vessel in athwartship direction.

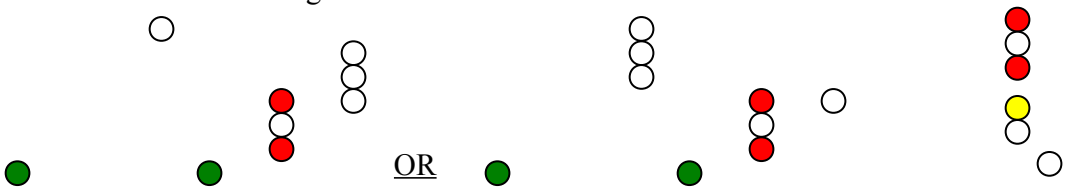


Stbd view	port view	stern view

Q46. What she is?



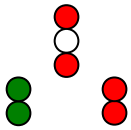
- Power driven vessel engage in towing, length of tow exceeds 200m and is unable to deviate from her course, underway but stop or making way seen end-on
- Towing vessel 1 prolong and 2 short blasts at interval not more than 2 minutes
  Last Towed Vessel If manned 1 prolong and 3 short blasts immediately after the signal made by the towing vessel
- Probably more than 50m.
- Towing vessel Ball,diamond and ball in a vertical line (Diameter of ball =0.6 m, Diamond = 2 cones having common base)
  1 diamond each on towing and towed vessel



Stbd view Stern view

Port view

Q47. What she is?

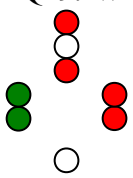


- Power driven vessel engage in dredging, underway but stop or at anchor ,obstruction on side of 2 red lights other may vessel pass from green light ,seen end-on.
- 1 prolong and 2 short blasts at interval not more than 2 minutes
- No indication of length
- Ball,diamond and ball in a vertical line(Diameter of ball =0.6 m, Diamond = 2 cones having common base)
  On Safe side 2 diamonds in a vertical line
  On obstruction side 2 balls in a vertical line

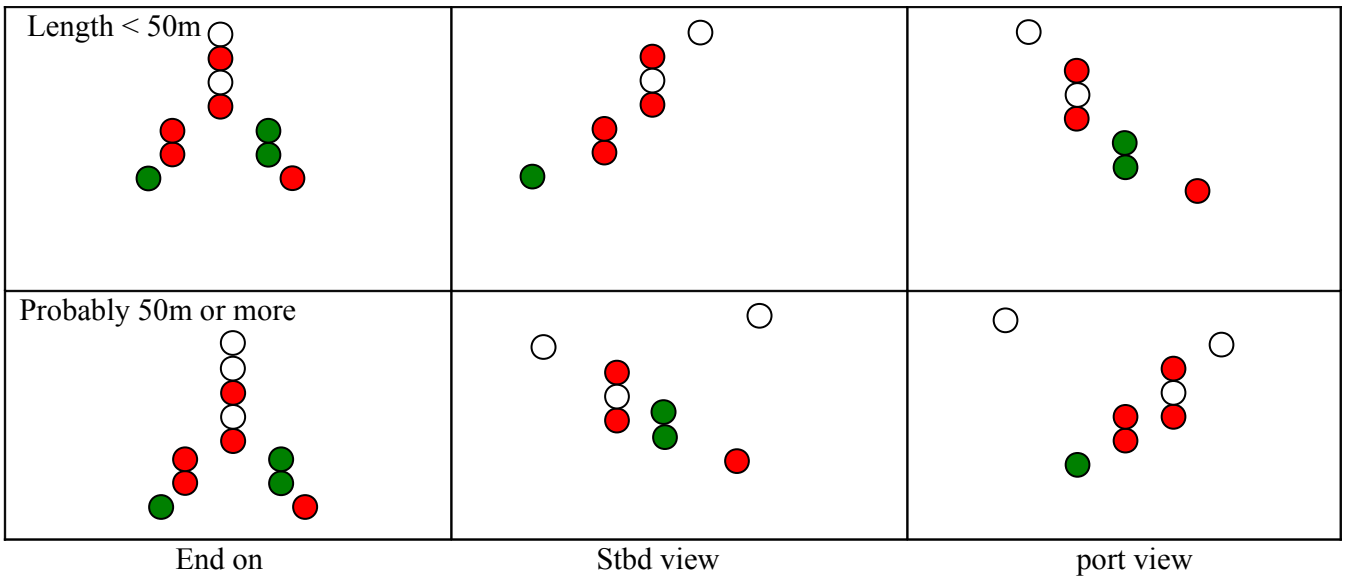
Q48. Where all around light are placed?

- RAM light may carry below forward masthead light or above after masthead light
- RAM lights between masthead light placed at a horizontal distance not less than 2m from fore & aft centre line of the vessel in athwartship direction.
- 2 red and 2 green lights are placed horizontally not less than 2m from RAM lights and vertically below RAM lights.

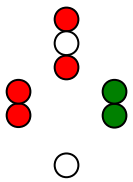
Q49. What she is?



- Vessel engage in dredging, making way obstruction on her stbd side and other vessel may pass from her port side ,seen her stern.
- 1 prolong and 2 short blasts at interval not more than 2 minutes
- Less than 50m.
- Ball,diamond and ball in a vertical line (Diameter of ball =0.6 m, Diamond = 2 cones having common base)
  On Safe side 2 diamonds in a vertical line
  On obstruction side 2 balls in a vertical line

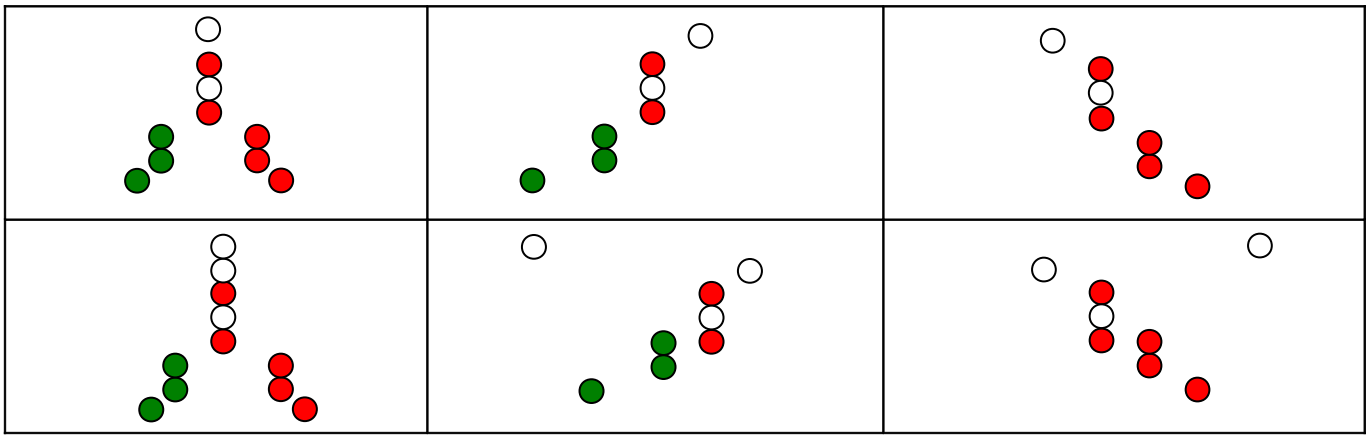


Q50. What she is?



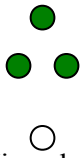
- Vvessel engage in dredging, making way obstruction on her port side other vessel may pass from her stbd side ,seen end-on.
- 1 prolong and 2 short blasts at interval not more than 2 minutes
- Probably 50m or more
- Ball,diamond and ball in a vertical line(Diameter of ball =0.6 m, Diamond = 2 cones having common base)
  On Safe side 2 diamonds in a vertical line

On obstruction side 2 balls in a vertical line

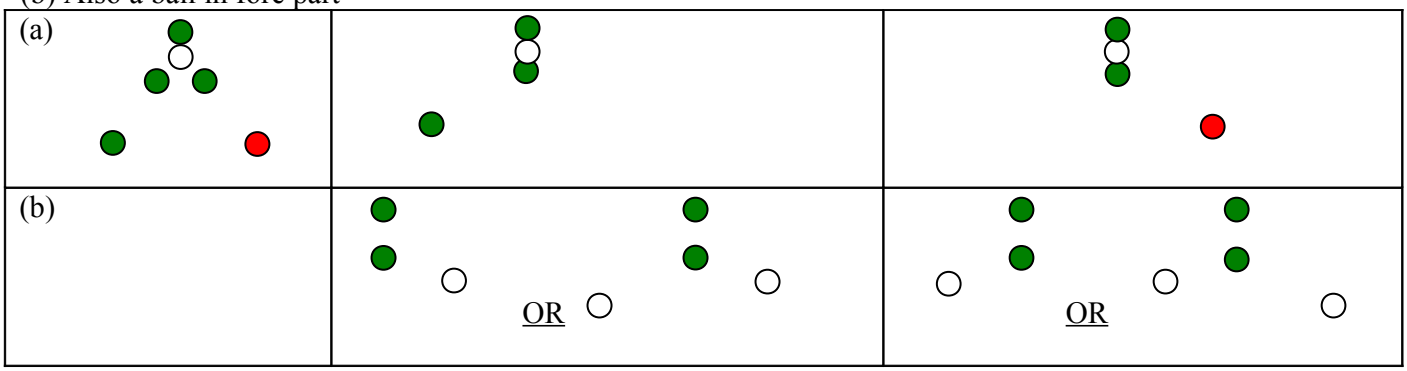


End on | Stbd view | port view

Q51. What she is?



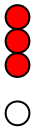
- Mine clearance vessel
  (a) Underway but stop or making way seen her stern
  (b) At anchor.
- (a) 1 prolong and 2 short blasts at interval not more than 2 minutes
  (b) At interval not more than 1 minute rapid ringing of bell for 5 seconds in forepart. In a vessel of 100m or more in length immediately gong shall be sounded for 5 sec in aft part of vessel.She may give warning signal one short ,one prolong and one short blast.
- (a) No indication of length.
  (b) Probably less than 50m
- (a)Three balls-one at foremast head and one at each end of fore yard (Diameter of ball =0.6 m)
  (b) Also a ball in fore part



Ends-On | stbd view | port view

Q52. Where all around lights are placed?
Near the foremast head and one at each of the foreyard.

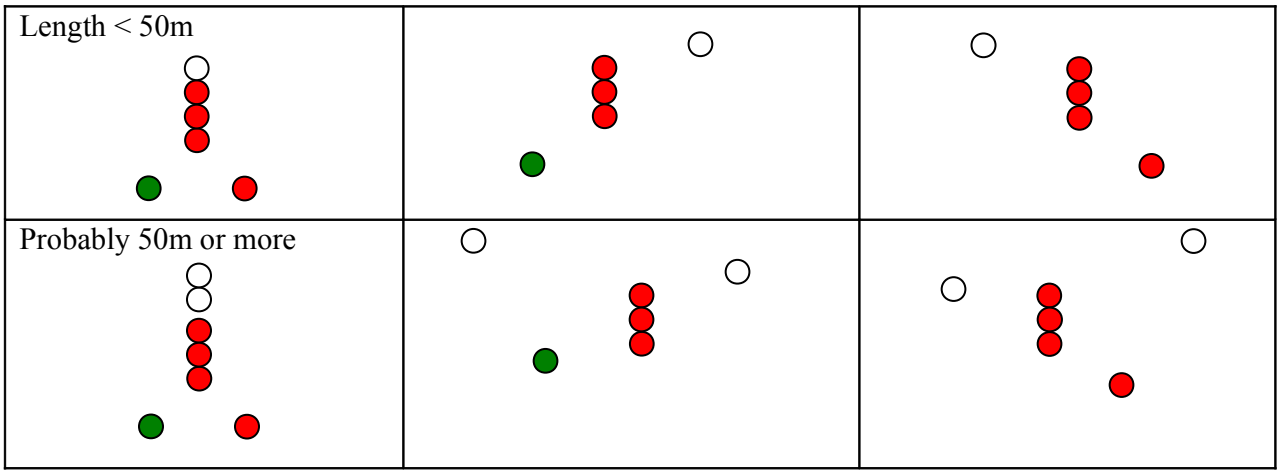
Q53. What she is?



- Power driven vessel constrained by her draught underway but stop or making way seen from astern.
- 1 prolong and 2 short blasts at interval not more than 2 minutes
- No indication of length
- A cylinder (Diameter = 0.6m ,Ht. = 2 x Diameter)

Q54. Where all around lights are placed?

- 3 red light may carry below forward masthead light or above after masthead light
- 3 red lights between masthead light placed at a horizontal distance not less than 2m from fore & aft centre line of the vessel in athwartship direction



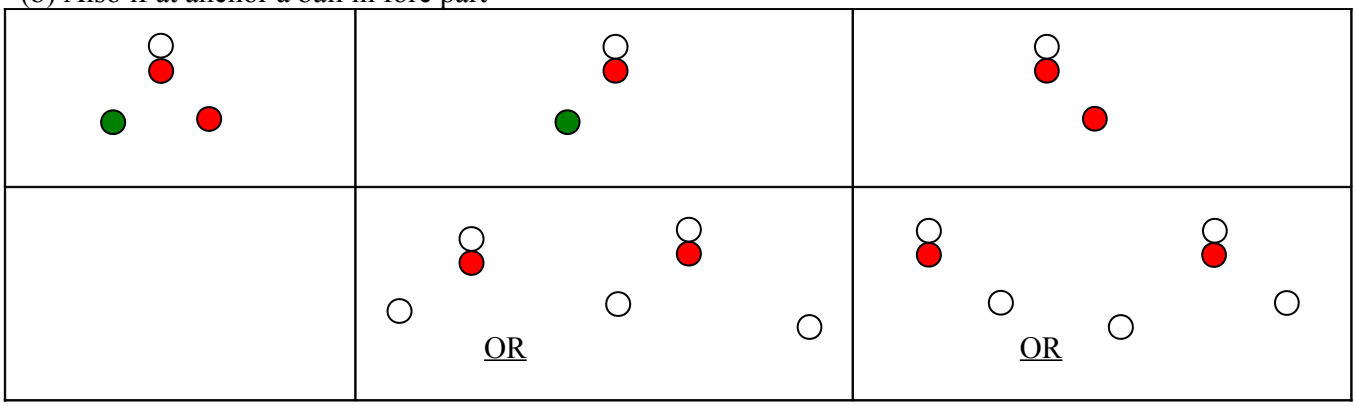
Q55. What she is, if you see her within the port limit?

- Examination vessel showing port is closed
- Less than 50m
- 3 red balls vertically disposed in place of red lights
  1 White and red horizontal band in the centre of blue flag

Q56. What is she?

- Pilot vessel
  (a) Underway but stop or making way seen her stern from obstruct stbd side
  (b) at anchor
- (a) Making way 1 prolonged blast at intervals of not more than 2 minutes
  Underway but stopped 2 prolonged blasts with 2 seconds gap in between at intervals of not more than 2 minutes
  (b) At interval not more than 1 minute rapid ringing of bell for 5 seconds in forepart. In a vessel of 100m or more in length immediately gong shall be sounded for 5 sec in aft part of vessel.She may give warning signal one short ,one prolong and one short blast.she may give Identity signal 4 short blasts

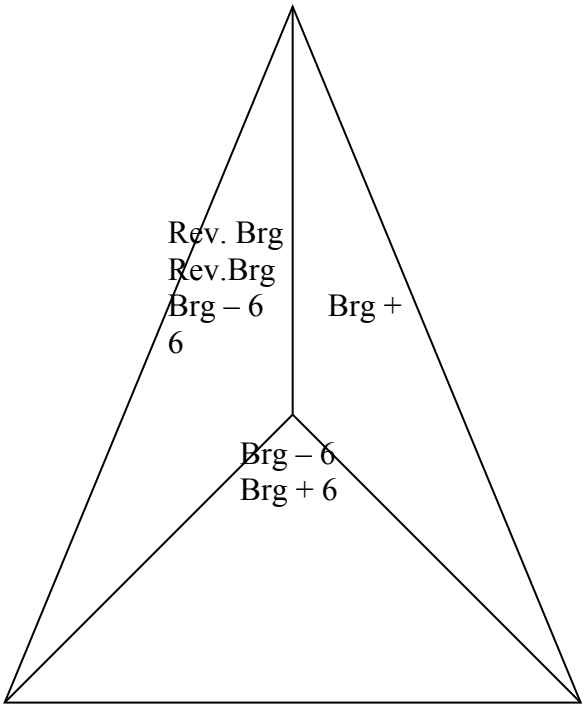
- (a) no indication of length
  (b) Probably less than 50m
- (a) Flag H.
  (b) Also if at anchor a ball in fore part



End on | Stbd view | port view

How is she heading? (Game of 6 Pts)

Count limits always clock wise from first limit.
Green light *First Limit* Reverse bearing, *Second Limit* **6** pts should be taken to the right of bearing
Red light *First Limit* Reverse bearing, *Second Limit* **6** pts should be taken to the left of bearing
White light 6 pts on the either side of bearing
Sailing vessel cannot sail **6** pts on the either side of wind



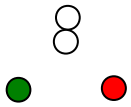
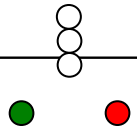
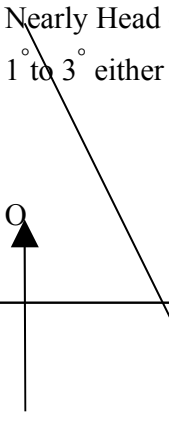
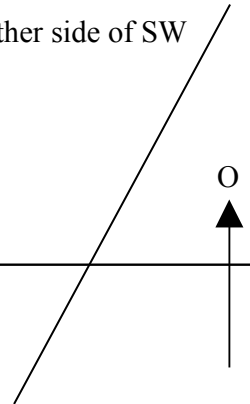
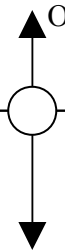
Q You are heading North .You see red light at four points and after 1 minute you see stern white light How she heading?

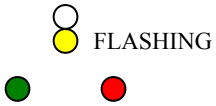
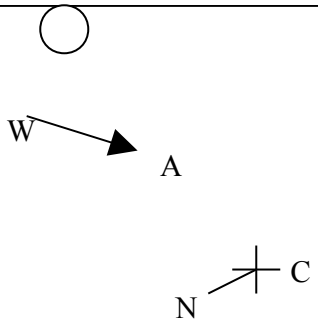
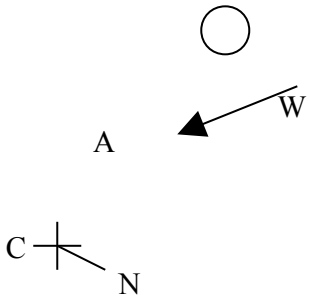
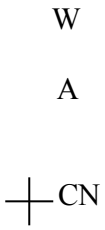
(With in 1° to 5° either side of WSW)

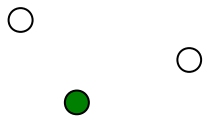
CARDS

All cards are **4 point on Port bow / Right ahead / 4 Points on Starboard bow**

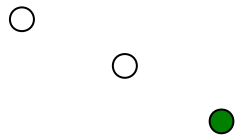
1. What she is? What she is doing?
2. What is your action?
3. If you are heading North .How she heading and if risk of collision exist? (Always anticlockwise)
4. Relate situation with radar plot?
5. What is her day signal?
6. What is her fog signal?

1. What she is? What she is doing? 5. What is her day signal? 6. What is her fog signal?	2. What is your action? 3. If you are heading North. How's she heading? 4. Relate situation with radar plot?		
	4 PT PORT BOW	**4 PT STBD BOW**	**RIGHT AHEAD / 1/4 PT ON EITHER SIDE**
 P.D v/l less than 50m underway but stop or making way seen end on	No risk of collision maintain course and speed	SAME ACTION AS PORT SIDE	• I will take series of bearings. • If bearings don't changing appreciably then risk of collision exist. • I will give 1 short blast / flash, a/c to stbd (3 pts) and pass port side of other vessel at safe distance.
 P.D v/l seen end on 1.Probably 50m or more underway but stop or making way 2.Less than 50 m towing or pushing underway but stop or making way, tow 200 m or less	Head on = SE Nearly Head on = With in 1° to 3° either side of SE	Head on = SW Nearly Head on = With in 1° to 3° either side of SW	Head on = S Nearly Head on = With in 1° to 3° either side of S
			

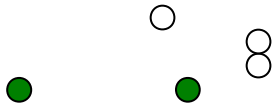
P.D v/l towing underway but stop or making way seen end on- (a)less than 50m,tow exceed 200m (b) Probably 50m or more, tow 200m or less.  Submarine Probably 50m or more underway but stop or making way seen end on  Aircraft carrier Probably 50m or more, underway but stop or making way seen end on  Possible distribution of sea planes lights, Probably 50m or more, underway but stop or making way seen end on  Air-cushion vessel less than 50m in non-displacement mode, making way seen end on No day signal	 	 	
 P.D v/l less than 50m underway but stop or making way seen her open stbd side	• Maintain course and speed • Keep watch by taking series of bearing • If bearing don't changing	Check C.P.A by radar <u>Approaching at wide range</u> Maintain course and speed <u>Approaching at close range</u> • If C.P.A is less, then close quarter situation exist.	• I will take series of bearings. • If bearing don't changing appreciably then risk of collision or close quarter situation exist.



P.D v/l probably 50 m or more underway but stop or making way seen her open stbd side

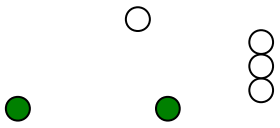


Aircraft carrier probably 50 m or more underway but stop or making way seen her open stbd side



P.D v/l engage in towing, tow 200m or less, underway but stop or making way ,seen her open stbd side

No day signal



P.D vessel towing probably 50m or more, underway but stop or making way tow exceeds 200m seen her open stbd side

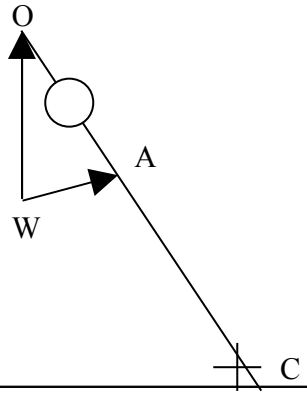
1 diamond each on towing and towed vessel.

appreciably then risk of collision exist.

- If that vessel doesn't take any action, I give at least 5 short blasts / flashes
- If that vessel still doesn't take any action, I give 1 short blast / flash, a/c to stbd and come on her parallel course and keep observing that vessel
- If still she does not take any action, observe the speed of other if is more than my vessel let her pass and come back own course from stern of other vessel at safe distance, other wise I will give again 1 short blast / flash alter course to starboard make a round turn and pass well clear from stern of other vessel at safe distance.

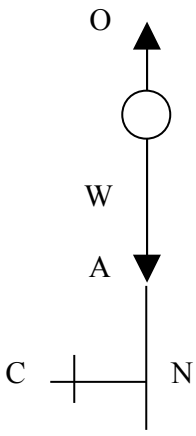
NNE to SE

Collision Hdgs 022.5 to 134



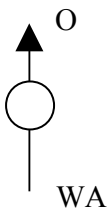
- If other vessel steers same course Give 2 short blasts /flashes a/c to port and pass at safe distance. (Code rule 17(b))

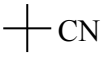
ESE to SW

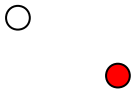
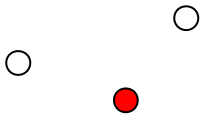
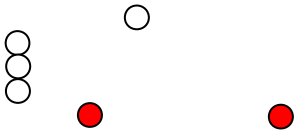
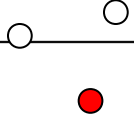


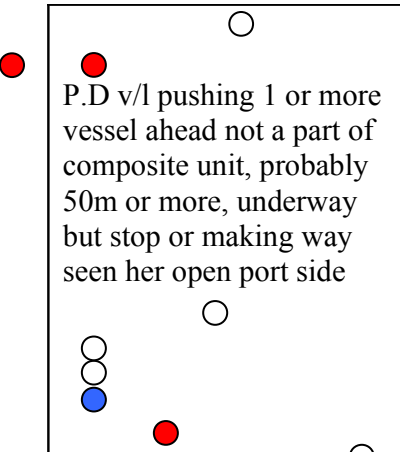
- If that vessel doesn't take any action, I give at least 5 short blasts / flashes
- If other vessel still doesn't take any action, I will give 1 short blast / flash alter course to starboard, come on her parallel course and watch for other vessel.
- If other vessel alter course to her stbd come back own course OR the speed of other is more than my vessel let her pass and come back own course from stern of other vessel at safe distance, other wise I will give again 1 short blast / flash alter course to starboard make a round turn and pass well clear from stern of other vessel.

ENE to S



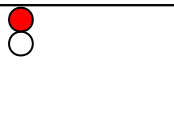
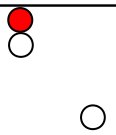


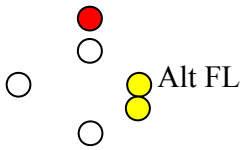
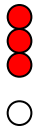
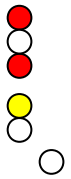
 P.D v/l less than 50m, underway but stop or making way seen her open port side  P.D v/l probably 50 m or more, underway but stop or making way seen her open port side  Submarine Probably 50m or more, underway but stop or making way seen her open port side No day signal  P.D vessel towing probably 50m or more, underway but stop or making way tow exceeds 200m seen her open port side 1 diamond each on towing and towed vessel.   P.D vessel pushing 1 or more v/l ahead not part of composite unit less than 50m underway but stop or making way seen her open port side. No day signal.  	Check C.P.A by radar <u>Approaching at wide range</u> Maintain course and speed <u>Approaching at close range</u> • If C.P.A is less, then close quarter situation exist. • If other vessel steers same course I give at least 5 short blasts / flashes • If other vessel still steers same course Give 1 short blast / flash a/c to stbd and pass at safe distance. (Code rule 17(b)) SE to WSW	• I will take series of bearings. • If bearing don't changing appreciably then risk of collision exist. • I will give 1 short blast / flash, a/c to stbd pass stern of other vessel at safe distance. SW to NNW Collision Hdgs 022.5 to 225	• I will take series of bearings. • If bearing don't changing appreciably then risk of collision exist. • If that vessel doesn't move then she underway but stop, I give 1 short blast / flash, a/c to stbd and pass well clear of that vessel. S to WNW

 P.D v/l pushing 1 or more vessel ahead not a part of composite unit, probably 50m or more, underway but stop or making way seen her open port side P.D v/l engage in towing a dracone Breadth < 25m and length < 100m, tow 200m or less, probably 50m or more, underway but stop or making way, seen her open port side <u>Towing vessel</u> Ball,diamond and ball in a vertical line. 1 diamond shape at or near the aftermost extremity of dracone			
 (a) P.D. v/l or S.V. underway but stop or making way seen her astern. (b)P.D v/l less than 50m.underway but stop or making way out of range of side lights. (c)All around lights of: 1.v/l less than 50m at anchor v/l under oars 3.P.D v/l less than 7m,speed not exceeding 7 knots. 4.P.D v/l less than 12m;out of range of side lights. 5.Sailing v/l less than 7m. 6.A life raft showing	<u>(a)</u> • I will take series of bearings. • If bearing don't changing appreciably then risk of collision exist. • I will give 2 short blasts / flash, a/c to port pass stern of vessel at safe distance <u>(b), (c) 4.</u> As per side lights sighted <u>(c) 1. 2. 3. [Ends-on: Port bow] 5 [Ends-on: Port bow],7.</u> Maintain course and speed <u>(c) 3 [Stbd bow].</u> • Maintain course and speed • Keep watch by taking series of bearing	<u>(a)</u> • I will take series of bearings. • If bearing don't changing appreciably then risk of collision exist. I will give 1 short blast / flash, a/c to stbd pass stern of vessel at safe distance <u>(c) 1. 2. 3 [Ends - on: Stbd bow], 5 [Ends-on: Stbd bow],7.</u> Maintain course and speed <u>(c) 3 [Port bow]. 5 [Port bow].</u> • I will take series of bearings. • If bearings don't changing appreciably then risk of collision	<u>(a)</u> • I will take series of bearings. • If bearing don't changing appreciably then risk of collision exist. I will give 1 short blast / flash, a/c to stbd pass stern of vessel at safe distance <u>(c) 1. 2. 3, 5.</u> • I will take series of bearings. • If bearings don't changing appreciably then risk of collision exist. • I will give 1 short blast / flash, a/c to stbd pass other vessel at safe distance. <u>(c) 7.</u> Maintain course and speed

white light on the outside of canopy. 7. A rising star (At Horizon) <u>Anchored vessel</u>-one ball in fore part. <u>Other than life raft</u> – No day signal <u>Life raft</u> – • a gun or other explosive signal fired at intervals of about a minute • rockets or shells, throwing red stars fired one at a time at short intervals • a signal made by radiotelegraphy or by any other signalling method consisting of the group ...---... (SOS) in the Morse Code • a signal sent by radiotelephony consisting of the spoken word "Mayday" • a rocket parachute flare or a hand flare showing a red light • a smoke signal giving off orange-coloured smoke • slowly and repeatedly raising and lowering arms outstretched to each side • the radiotelegraph alarm signal • the radiotelephone alarm signal • signals transmitted by emergency position-indicating radio beacons • approved signals transmitted by radio communication systems	• If bearing don't changing appreciably then risk of collision exist. • If that vessel doesn't take any action, I give at least 5 short blasts / flashes • If that vessel still doesn't take any action ,I give 1 short blast / flash ,a/c to stbd and come on her parallel course and keep observing that vessel • If still she does not take any action, I take a round turn and pass round stern of vessel at safe distance <u>(c) 5 [Stbd bow].</u> • I will take series of bearings. • If bearings don't changing appreciably then risk of collision exist. • I will give 2 short blasts / flashes, a/c to port more than 4 points and pass other vessel at safe distance 6.Give 2 short blasts / flashes Alter course toward life raft Approach toward windward side of vessel Post lookout to Maintain watch on distress signals reduce Engine speed Call Master	exist. • I will give 1 short blast / flash; a/c to stbd more than 4 points and passes other vessel at safe distance. REST SAME AS PORT ACTION	REST SAME AS PORT ACTION

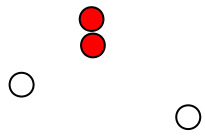
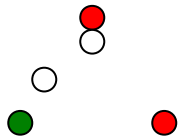
including survival craft transponders • a piece of orange canvas with either a black square and circle or other symbol appropriate for identification from the air A dye marker.			
•  •  • P.D v/l engage in towing, underway but stop or making way ,seen her stern from obstruct port side <u>tow length > 200m</u> : 1 diamond each on towing and towed vessel <u>tow length ≤ 200m</u>: No day signal  •  • P.D v/l engage in towing a dracone breadth < 25m and length < 100m, underway but stop or making way ,seen her stern side 1 diamond shape at or near the aftermost extremity of dracone	• If by radar there is speed of vessel and bearings don't changing appreciably then she is making way and risk of collision exist. • I will give 2 short blasts / flashes alter co more than 4 point to port and pass stern of vessel. <u>Limits</u> WSW to NNE <u>Collision Hdgs</u> 001 to 022.5	• If by radar there is speed of vessel and bearings don't changing appreciably then she is making way and risk of collision exist. • I will give 1 short blast / flashes alter co more than 4 point to stbd and pass stern of vessel. <u>Limits</u> NNW to ENE <u>Collision Hdgs</u> 337.5 to 359	SAME ACTION AS STBD SIDE <u>NOTE</u> BY SEEING STERN LIGHT OF TOWING AND TOWED VESSEL WE CANNOT JUDGE THE PROBABLE HEADINGS BECAUSE TOWED VESSEL NOT NESSASARY TO BE IN FORE & AFT LINE OF TOWING VESSEL <u>Limits</u> WNW to ESE <u>Collision Hdgs</u> 000
<u>NOTE</u>			

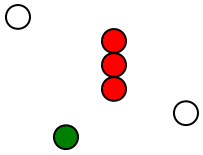
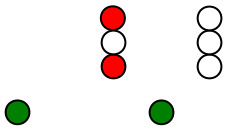
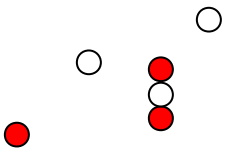
• All around lights are not necessary in fore and aft centre line with mast head light so when they are in line with stern light it is not necessary that their course is near to bearing which we take for that ship. • Probable headings with respect to all around lights only when we deemed that they are on centre line otherwise we use limit headings			
 V/l engage in fishing other than trawler. (a)Underway but stop or at anchor ,gears extending more than 150m. (b)Making way ,gear extended 150m or less,seen her stern from obstruct stbd side (a)2 cones with apexes together in vertical line (b)Also a cone with apex upwards in direction of gear.	(a) • I will use radar for assessment. • If she is under way and extending gears more than 150m .I will maintain co and speed (b) • I will use radar for assessment also take series of bearings. • If by radar there is speed of vessel and bearings don't changing appreciably then she is making way and risk of collision exist. • I will give 2 short blasts / flashes alter co more than 4 point to port and pass stern of vessel. (a)Any where 000° to 360° (b) Limits WSW to NNE Probable Hdgs NW to NNE Collision Hdgs 001 to 022.5	(a) • I will use radar for assessment. • If she is under way and extending gears more than 150m • I will give 1 short blasts / flashes alter co more than 4 point to stbd and pass at a safe distance (b) • I will use radar for assessment also take series of bearings. • If by radar there is speed of vessel and bearings changing appreciably then there is no risk of collision exist. • If she is making way I will maintain co and speed (a)Any where 000° to 360° (b)Limits WNW to ENE Probable Hdgs NE to ESE	SAME ACTION AS STBD SIDE (a)Any where 000° to 360° (b) Limits NNW to ESE Probable Hdgs N to ENE Collision Hdgs
 V/l engage in fishing other than trawler. (a)Underway but stopped or at anchor ,gears extending more than 150m. • (b)Making way ,gear extended 150m or less,seen her stern from obstruct port side	(a) • I will use radar for assessment. • If she is under way and extending gears more than 150m • I will give 2 short blasts / flashes alter co more than 4 point to port and pass at a safe distance (b) • I will use radar for assessment and take series of bearings. • If by radar there is speed of vessel bearings	(a) • I will use radar for assessment. • If she is under way and extending gears more than 150m .I will maintain co and speed (b) • I will use radar for assessment and take series of bearings. • If by radar there is speed of vessel and bearings don't	SAME ACTION AS STBD SIDE

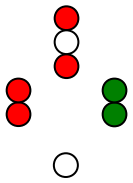
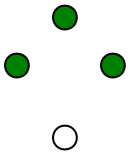
(a) 2 cones with apexes together in vertical line (b)Also a cone with apex upwards in direction of gear.	changing appreciably then there is no risk of collision exists. • If she is making way I will maintain co and speed (a)Any where 000° to 360° (b) Limits WSW to NNE Probable Hdg NW to WSW	changing appreciably then she is making way and risk of collision exist. • I will give 1 short blast alter co more than 4 point to stbd and pass stern of vessel. (a)Any where 000° to 360° (b) Limits NNW to ENE Probable Hdgs NE to NNW Collision Hdgs 337.5 to 359	(a)Any where 000° to 360° (b) Limits WNW to ESE Probable Hdgs N to WNW
 V/l engage in fishing other than trawler using purse seine gear extending more than 150m ,making way, seen her stern 2 cones with apexes together in vertical line Also a cone with apex upwards in direction of gear.	• I will take series of bearings. • If bearings don't changing appreciably then risk of collision exist. • I will give 2 short blasts/flashes; a/c to port, give wide berth to vessel, knowing passing from extended gear side at a safe distance Limits WSW to NNE Probable Heading NW	• I will take series of bearings. • If bearings don't changing appreciably then risk of collision exist. • I will give 1 short blast / flash; a/c to stbd appreciably and pass other vessel at safe distance Limits WNW to ENE Probable Heading NE	SAME ACTION AS STBD SIDE NOTE: STARBOARD ALTERATION IS PREFERABLE FOR OVERTAKING VESSEL WHICH OVERTAKE OTHER AT NEARLY PARALLEL COURSE, BECAUSE ALTERATION IS ALSO SUITABLE AT THE SAME TIME VESSEL COMING JUST RIGHT AHEAD. Limits NNW to ESE Probable Heading N
 P.D v/l constrained by her draught underway but stop or making way seen from astern.  • P.D v/l engage in towing, and is unable to deviate	• I will take series of bearings. • If bearings don't changing appreciably then risk of collision exist. • I will give 2 short blasts / flashes; a/c to port appreciably and pass other vessel at safe distance	• I will take series of bearings. • If bearings don't changing appreciably then risk of collision exist. • I will give 1 short blast / flash; a/c to stbd appreciably and pass other vessel at safe distance	SAME ACTION AS STBD SIDE

from her course, underway but stop or making way, seen her stern side from obstruct port side <u>Towing vessel</u> Ball,diamond and ball in a vertical line. <u>tow length > 200m</u> : 1 diamond each on towing and towed vessel <u>tow length ≤ 200m</u>: No day signal	<u>Limit</u> WSW to NNE <u>Probable Hdgs</u> NW	<u>Limit</u> WNW to ENE <u>Probable Hdgs</u> NE	<u>Limit</u> NNW to ESE <u>Probable Hdgs</u> N
 Trawler underway but stop or at anchor. 2 cones with apexes together in vertical line	I will Maintain co and speed Any where 000° to 360°	I will Maintain co and speed Any where 000° to 360°	• I will take series of bearings. • If bearings don't changing appreciably then risk of collision exist. • I will check the direction of wind vessel is drifting to leeward side and dredged nets are on windward side. I will alter course toward windward side appreciably and pass at a safe distance. Any where 000° to 360°
 Pilot vessel (a) Underway but stop or making way seen her stern from obstruct stbd side (b) Less than 50m at anchor . Flag H.Also if at anchor a ball in fore part 	(a) • I will use radar for assessment and take series of bearings. • If by radar there is speed of vessel and bearings don't changing appreciably then risk of collision exist. • I will give 2 short blasts / flashes; a/c to port more than 4 points and pass other vessel at safe distance (b) • I will use radar for assessment and take series of bearings. • If by radar there is no	(a) • I will use radar for assessment and take series of bearings. • If by radar there is speed of vessel bearings changing appreciably then there is no risk of collision exists. • I will Maintain co and speed (b) • I will use radar for assessment and take series of bearings. • If by radar there is no speed of vessel and	(a) • I will use radar for assessment and take series of bearings. <u>MAKINGWAY</u> • If by radar there is speed of vessel bearings changing appreciably then there is no risk of collision exists. • I will Maintain co and speed <u>UNDERWAY BUT STOPPED</u> • I will take series of bearings. • If bearings don't

○ Vessel R.A.M. or dredger without obstruction (a) making way seen her astern obstruct stbd side (b) less than 50m at anchor (a) Ball, diamond and ball in vertical line (b) Also a ball in fore part	speed of vessel bearings changing appreciably then there is no risk of collision exists. • I will Maintain co and speed (a) Limits WSW to NNE Probable Hdgs NW to NNE Collision Hdgs 001 to 022.5	bearings changing appreciably then there is no risk of collision exists. • As a practice of good seaman ship and knowing the factor of wind rode and tide rode I will give sound signal according to sufficient sea room and alter co toward sufficient sea room preferably stern of vessel. (a) Limits WNW to ENE Probable Hdgs NE to ESE	changing appreciably then risk of collision exist. • I will give 2 short blasts / flashes; a/c to port appreciably and pass other vessel at safe distance (b) SAME ACTION AS STBD SIDE (a) Limits NNW to ESE Probable Headings N to ENE
 ○ • S.V. probably 20m or more underway but stop or making way seen her astern from obstruct stbd side No day signal	• I will take series of bearings. • If bearing don't changing appreciably then risk of collision exist. • I will give 2 short blasts / flashes; a/c to port more than 4 points and pass other vessel at safe distance [Let WIND is from WEST] NNW to NNE Collision Hdgs 001 to 022.5	• I will take series of bearings. • If bearings changing appreciably then there is no risk of collision • I will Maintain co and speed NE to ESE	SAME ACTION AS PORT SIDE N to ENE
 ○ (a) N.U.C vessel making way seen from astern (b) Aground vessel less than 50m. (a)Two balls in vertical line (b)Three balls in vertical line	(a) • I will take series of bearings. • If bearings don't changing appreciably then risk of collision exist. • I will give 2 short blasts / flashes; a/c to port appreciably and pass other vessel at safe distance (b) • Plot position of both vessels on chart	(a) • I will take series of bearings. • If bearings don't changing appreciably then risk of collision exist. • I will give 1 short blast / flash; a/c to stbd appreciably and pass other vessel at safe distance (b) SAME ACTION AS PORT SIDE.	(a) • I will take series of bearings. • If bearings don't changing appreciably then risk of collision exist. • I will give 1 short blast / flash; a/c to stbd appreciably and pass other vessel at safe distance

 Aground vessel probably 50m or more,seen from port side Three balls in a vertical line	(i) <u>On Course Line / Already in deep water:</u> • Check depth on echo sounder • Call vessel aground for ascertain her draught • Maintain co with safe speed and navigate with extreme caution <u>(ii) Out of Course Line:</u> • Turn vessel toward course line/deep water • Check depth on echo sounder • Call vessel aground for ascertain her draught (a) <u>Limits</u> WSW to NNE <u>Probable Headings</u> NW No risk of collision maintain course and speed SE	(a) <u>Limits</u> WNW to ENE <u>Probable Headings</u> NE I will give 1 short blast alter co more than 4 point to stbd and pass port side of other vessel at safe distance. SW	(a) <u>Limits</u> NNW to ESE <u>Probable Headings</u> N • I will take series of bearings. • If bearings don't changing appreciably then risk of collision exist. • I will give 1 short blast / flash, a/c to stbd (3 pts) and pass port side of other vessel at safe distance. (With in 1° to 3° either side of S)
 V/l engage in fishing other than trawler, Making way ,gear extended more than 150m, seen end on. 2 cones with apexes together in vertical line Also a cone with apex upwards in direction of gear.			

 P.D Vessel constrained by her draft probably 50m or more ,underway but stop or making way seen her stbd side. A cylinder  P.D v/l towing less than 50 m.,underway but stop or making way ,tow exceeds 200m R.A.M seen her stbd side. <u>Towing vessel</u> Ball, diamond and ball in vertical line 1 diamond each on towing and towed vessel.	• I will take series of bearings. • If bearing don't changing appreciably then risk of collision exist. • I will give 2 short blasts / flashes; a/c to port more than 4 points, give wide berth and pass other vessel at safe distance <u>FOR VESSEL CONSTRAINED BY HER DRAFT</u> • I reduce speed in ample time and allow her to pass ahead NNE to SE	Check C.P.A by radar <u>Approaching at wide range</u> Maintain course and speed <u>Approaching at close range</u> • If C.P.A is less, then close quarter situation exist. • If other vessel steers same course Give 2 short blasts / flashes a/c to port and pass at safe distance. ESE to SW	SAME ACTION AS PORT SIDE ENE to S
 Possible distribution of the Lts. for an air craft carrier probably 50m or more & is unable to deviate from her course engage in launching and recovery operation head into wind, underway but stop or making way, seen her open port side Ball, diamond & ball in a vertical line.	Check C.P.A by radar <u>Approaching at wide range</u> Maintain course and speed <u>Approaching at close range</u> • If C.P.A is less, then close quarter situation exist. • If other vessel steers same course Give 1 short blast / flash a/c to stbd, give wide berth and pass at safe distance to the lee side of vessel. SE to WSW	• I will take series of bearings. • If bearing don't changing appreciably then risk of collision exist. • I will give 1 short blast / flash; a/c to stbd more than 4 points ,give wide berth and pass other vessel at safe distance to the lee side of vessel. SW to NNW	SAME ACTION AS STBD SIDE S to WNW

 • Dredger R.A.M with obstruction on stbd side making way seen her astern from obstruct stbd side Ball, diamond and ball in vertical line 2 Diamonds in vertical line on safe side 2 ball in vertical on obstruction side	• I will take series of bearings. • If bearing don't changing appreciably then risk of collision exist. • I will give 2 short blasts / flashes; a/c to port ,give wide berth to vessel ,knowing passing from obstruction side at a safe distance <u>Limits</u> WSW to NNE <u>Probable Hdgs</u> NW	• I will take series of bearings. • If bearing don't changing appreciably then risk of collision exist. • I will give 1 short blast / flash; a/c to stbd more than 4 points, pass from safe side at a safe distance <u>Limits</u> WNW to ENE <u>Probable Hdgs</u> N	SAME ACTION AS STBD SIDE <u>Limits</u> NNW to ESE <u>Probable Hdgs</u> NE
 Mine clearance vessel (a) underway but stop or making way seen her astern (b) Less than 50m at anchor. (a)Three balls-one at foremast head and one at each end of fore yard. (b)A ball in fore part	• Plot position of both vessels on chart • Check by plotted navigation warning, ship is in any excising area. • Communicate with vessel • Check other minesweeper because they are always in group • Alter course toward outside the exercising area .Give wide berth and pass more than 1000m from mine sweeper <u>If Master already Inform</u> • Call master may be he have some other information <u>If Seen Unexpectedly</u> • Call master because I am in excising area may be I need him afterwards to take effective action for other mine sweepers.	SAME ACTION AS PORT SIDE (a) <u>Limits</u> WNW to ENE <u>Probable Hdgs</u> NE (b) Any where 000° to 360°	SAME ACTION AS PORT SIDE (a) <u>Limits</u> NNW to ESE <u>Probable Hdgs</u> N (b) Any where 000° to 360°

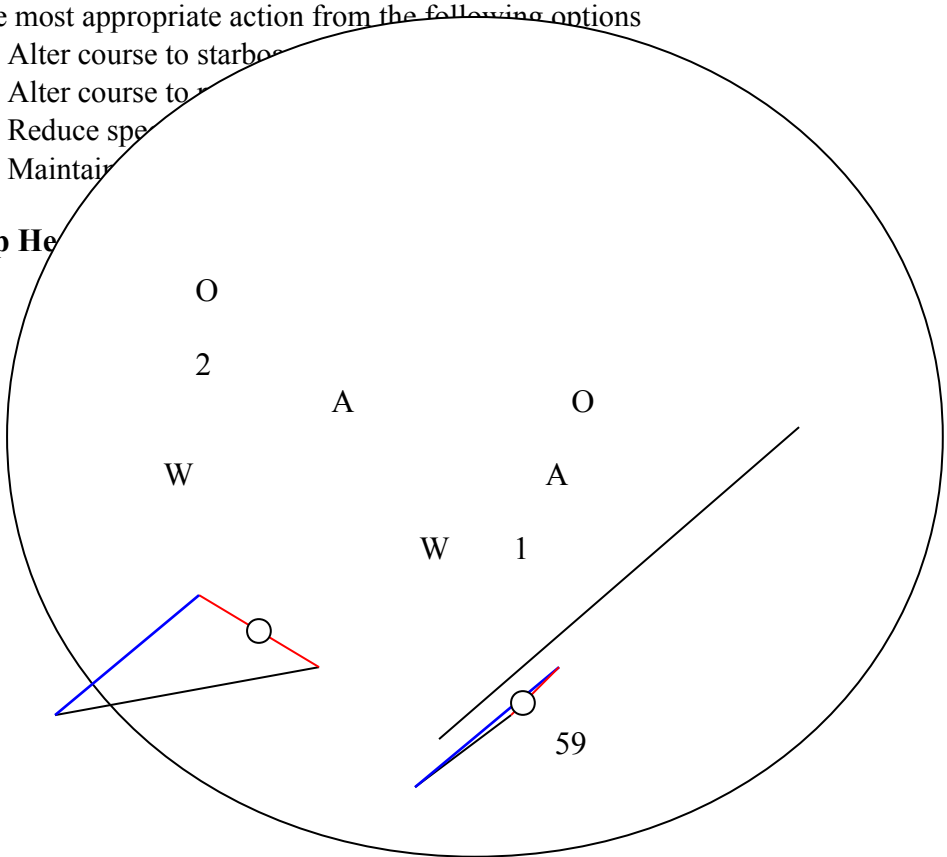
	(a) Limits WSW to NNE Probable Headings NW (b) Any where 000° to 360°		

RADAR PLOTTING

1. A white light on 4 points at range of 6 miles what is her CPA?

2. Select the target which present close quarter situation and risk of collision from following options
   Select the most appropriate action from the following options
   - Alter course to starbo
   - Alter course to
   - Reduce spe
   - Maintai

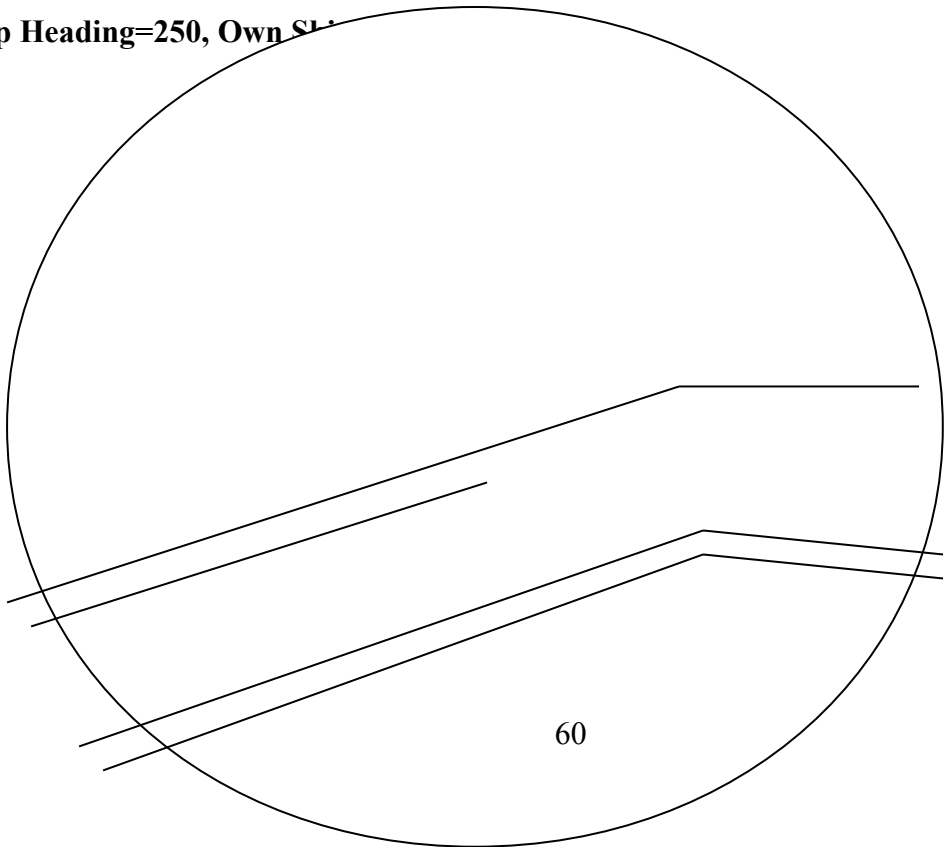
a) Own Ship He

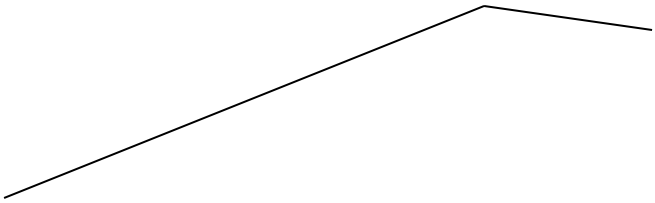


Target Ship

	TARGET NO 1	TARGET NO 2
CPA (miles)	0.3	0.1
TCPA (minutes)	0	28
RANGE (miles)	1.1	4.5
BEARING	201	289
TRUE COURSE	042	069
SPEED (knots)	12.1	18.7

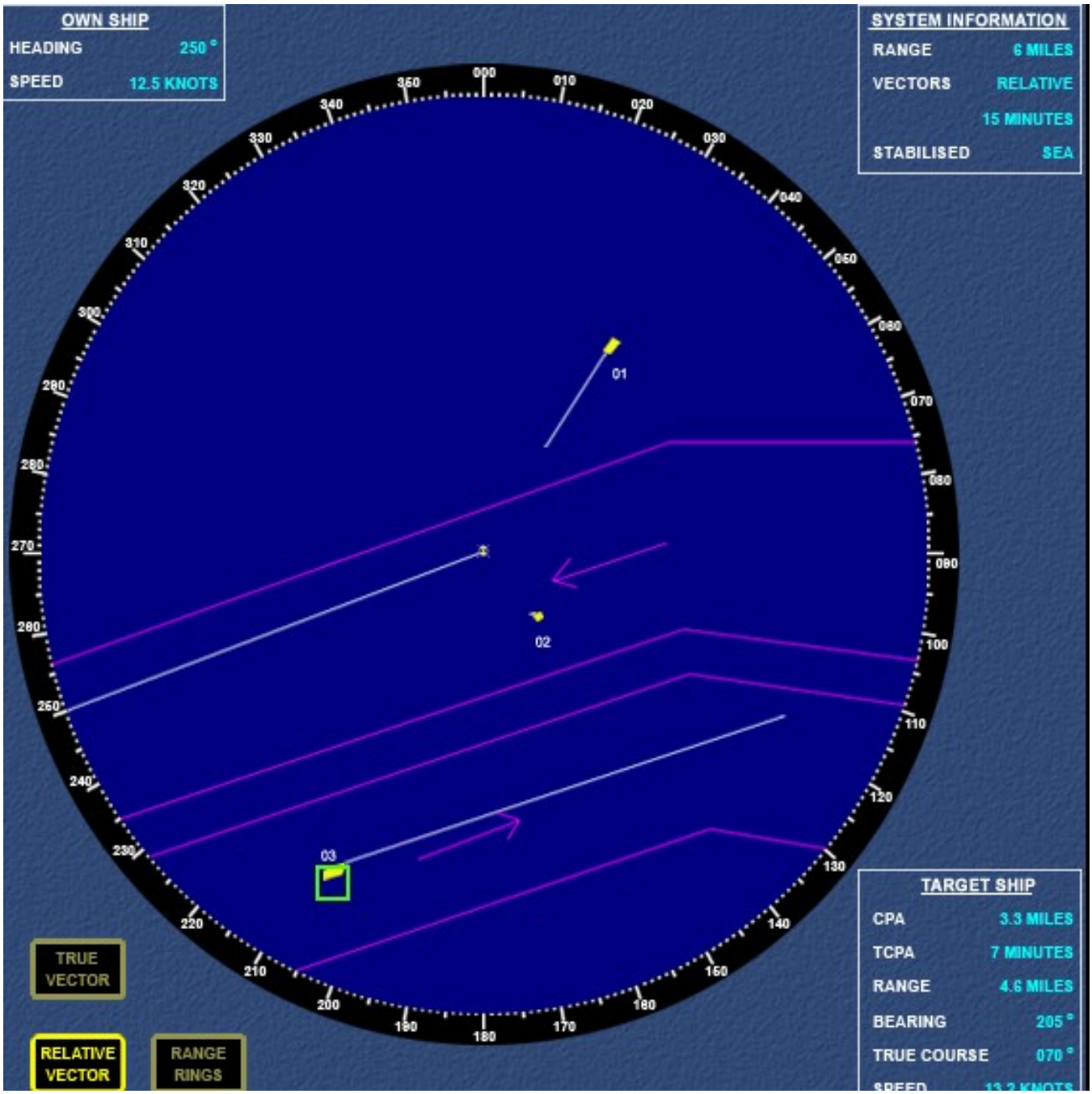
b) Own Ship Heading=250, Own Sh





Target Ship

	TARGET NO 1	TARGET NO 2	TARGET NO 3
CPA (miles)			
TCPA (minutes)			
RANGE (miles)			
BEARING			
TRUE COURSE			
SPEED (knots)			


OWN SHIP
HEADING 250 °
SPEED 12.5 KNOTS
SYSTEM INFORMATION
RANGE 6 MILES
VECTORS RELATIVE
15 MINUTES
STABILISED SEA
000
010
020
030
040
050
060
070
080
090
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
01
02
03
TARGET SHIP
CPA 3.3 MILES
TCPA 7 MINUTES
RANGE 4.6 MILES
BEARING 205 °
TRUE COURSE 070 °
TRUE VECTOR
RELATIVE VECTOR
RANGE RINGS

BOUYAGE

3. What is IALA?

   International Association of Light house authority is a bouyage system, which divides the world into two regions.

4. What is difference between buoy and beacon?

   BOUY: It is Navigational Mark, having colour, light, shape, retro reflective tape, top mark.

   TYPES OF BOUY:

   - Cardinal
   - Lateral
   - Safe Water
   - Special
   - Isolated Danger

   BEACON: It is non floating, fixed in sea bed navigational Mark, having colour, light, shape, retro reflective tape, top mark. It may carry navigation aid (Direction finder, non directional finder), radar reflector.

5. How many systems of Buoyage? What system is used for our region?

   There are two system of bouyage

   Region A: It covers remainder of world from region B. Pakistan is in region A.

   Region B: covers north, central and south America and related off shore islands and also includes Japan, the republic of Korea and the Philippines

6. How to mark new danger and where to pass?

   MARKING

   By one or more Cardinal or lateral marks.

   - *CARDINAL MARK*

     Q or VQ white light.

   - *LATERAL MARK*

     Q or VQ red or green.

   Racon Morse code (D) showing a signal of 1 nautical mile on radar.

   PASSING OF OTHER VESSEL:

   Other vessel must pass from the duplication of mark.

7. Which mark have maximum alternative light characteristic?

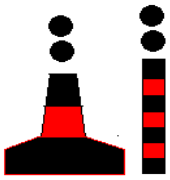
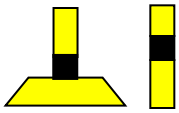
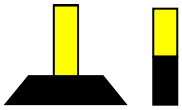
   Safe water mark

   - Iso
   - Oc
   - LFl.10s
   - Mo(A)

8. What is safe water mark where placed in a channel?

   It indicates that there is navigable water all around a mark. Such mark used as mid channel (Spherical type), Fairway buoy or to indicate best point of passage under fixed bridge.

9. Find out Region B port lateral mark, wreck mark, W and S cardinal mark from box (with out top mark) Describe colour, shape, top mark and light?

MARKS	Colour	Shape	Top Mark	Light(When Fitted)	Retro reflector code	
					Standard	Comprehensive
	Green	Can, Pillar or Spar	(if any) Single Green Can	Green, any rhythm except Fl(2+1)	1 green band or green shape i.e. square in Region B	As standard code
	Black with one or more broad horizontal red bands	Pillar or spar	2 black spheres with clear one another vertical separation	White, Fl(2)	1 or more white bands, letters, numerals or symbol	Blue and red horizontal band
	Yellow with broad horizontal band	Pillar or spar	2 black cones pointed toward 	White Q(9) every 15 sec VQ(9) every 10 sec	1 or more white bands, letters, numerals or symbol	2 horizontal yellow bands on the upper yellow part.
	Yellow above black	Pillar or spar	2 black cones pointed downward 	White Q(6) + LFL every 15 sec VQ(6) + LFL every 10 sec	1 or more white bands, letters ,numerals or symbol	Yellow bands on yellow part and blue band on the black part

10. <u>BOUYAGE ACTION</u>

<u>Example:</u>

Q. You are heading N, E cardinal buoy right ahead your action?

- Pass E of E cardinal mark
- Alter course to STBD more than 45 take buoy on beam of port side by maintaining safe distance pass E of buoy.

Heading	Right Ahead Cardinal Mark	Pass Cardinal Mark From	Alter course to	Take buoy on beam of	Maintaining safe distance pass
N	E	E	STBD > 45	PORT Side	E
N	W	W	PORT > 45	STBD Side	W
E	N	N	PORT > 45	STBD Side	N
E	S	S	STBD > 45	PORT Side	S
NW	N	N	STBD > 45	PORT Side	N
NW	W	W	PORT > 45	STBD Side	W
W	S	S	PORT > 45	STBD Side	S
SE	W	W	STBD > 45	PORT Side	W

11. You are heading N, S cardinal buoy right ahead your action?
    - Pass S of S-cardinal mark
        - Plot the position on chart check where we desire to go.
        - Alteration of course more than 90.Take buoy on beam by maintaining safe distance pass S of buoy.

12. You are heading N, strong wind came and displaced 3 - cardinal marks except N in quadrantal cardinal danger zone, your action?
    - Plot the position on updated chart and check ship position with respect to danger.
    - Encircle missing buoys and write time on chart
    - Check the depth on chart w.r.to danger and present available depth on echo sounder
    - **Make broad alteration to 90** toward ample sea room preferred stbd side safe as is safe or practicable.
    - Call Master
    - When Bearing of buoy becomes less than NW alter course NW
    - After passing clear from danger pass from N of buoy into general direction of bouyage.
    - Inform missing buoys to port authorities

13. You are heading W, W cardinal buoy right ahead your action?
    Plot the position on updated chart and check ship position with respect to danger.
    <u>ORIGINAL BOUY</u>
- Encircle missing buoys and write time on chart
- Check the depth on chart w.r.to danger and present available depth on echo sounder
- Make broad alteration to 90 toward ample sea room.
- Call Master
- When bearing of buoy becomes less than SW alter course SW
- After passing clear from danger pass from W of buoy into general direction of bouyage.
- Inform missing buoys to port authorities
  <u>DRIFTED BOUY</u>
- On chart search for other buoy if present.
- Call port authorities for drifted buoy
- Pass at a safe distance from buoy.

14. How oil rig is marked (Morse code and lights) and where to pass from it? Where we find this information?
    - Extensive use of all available deck lights.
    - All around white Fl (U) every 15 sec range 15 Miles.
    - A secondary light with the same characteristic range 10 Miles automatically brought up on failure of above lights.
    - Red Fl (U) every 15 second ranges 2 Miles at each end of extremities.
    - Fog signal (U) every 30 second range 2 Miles

15. What are the dangers of homing on a light vessel in poor visibility?

GENERAL
PUBLICATIONS

NAVIGATIONAL PUBLICATIONS

1. What publications must be onboard a vessel should carry and from where this information is obtained?
   The Carriage of Nautical Publication list is found in Annual Summary of admiralty notices to mariner
   LIST OF OFFICIAL PUBLICATIONS
   - International code of signals
   - The Mariner Hand Book
   - MSN, MGN, MIN
   - NTM
   - ALRS
   - ALLS
   - Sailing Directions
   - Nautical Almanac
   - Navigation Tables
   - Admiralty Tide Table
   - Tidal Stream Atlases
   - Operation and Maintenance Instructions for navigational aids carried.

   List of Nautical Publication is found in
   - Annual summary of admiralty notices to mariner.
   - Chart Catalogue.

2. Contents of Admiralty Notices to Mariner?
   I Explanatory notes. Indexes to Section II
   II Admiralty Notices to Mariner. Updates to Standard Navigational Charts.
   III Reprints of Radio Navigational warning.
   IV Amendments to Admiralty Sailing Directions
   V Amendments to Admiralty List of Lights and Fog Signals
   VI Amendments to Admiralty List of Radio Signals

3. What is large correction and small correction?
   LARGE CORRECTION
   Revision of the part of chart in latest publication
   SMALL CORRECTION
   Correction of chart in weekly notices to mariner

4. What information you will get from Mariner Hand Book, Chart Catalogue, Ocean Passages for world, Admiralty list of radio signals (ALRS), Admiralty tide table (ATT), Cumulative List Of Notices To Mariner

,Sailing Direction (pilot Books) , Annual Summary to Notices to mariner ,Bridge Procedure Guide, MERSAR and IAMSAR?

SAILING DIRECTION (Pilot books) (NP 1 -72)

- Published in 74 volumes covering all the navigable waters of the world and complimentary to admiralty charts and other navigational publications.
- Provide comprehensive information on navigational hazards, bouyage systems, pilotage, regulations, general notes on the countries, port facilities, seasonal currents, ice and climatic conditions.

ADMIRALITY LIST OF LIGHT AND FOG SIGNAL (ALL) (NP 74 – 84)

- Published in 11 regional volumes,
- This series provides a world- wide tabulation of all light houses and lights of navigational significance.
- Also include lightships, lit floating marks of over 8m in height, and fog signals.

MARINER HAND BOOK (NP 100)

Contain information on

- Use of charts and other navigational aids,
- Operational information and regulations,
- Tides and ocean currents,
- Metrology,
- Ice,
- International Regulations for Preventing Collisions at Sea
- IALA Maritime Bouyage System (Illustrated with Colour Photographs and Diagrams)

CHART CATALOGUE (NP 131)

II *NAVIGATIONAL CHARTS*

- Limit of Chart Index
- General charts of ocean
- Planning Chart
- Admiralty charts with respect to index

  Large Scale Chart They are covering harbour, anchorages or for passing close to navigational hazards. Always use large scale chart specially English Channel, southern North Sea, gulf of Suez, Malacca strait

  Medium Scale Chart is published for coastal navigation.

  Small Scale Chart use for offshore navigation and passage planning
- Admiralty Chart Folio

  Each folio is of special area and contains the navigational chart of area. There are 10 folios We can check No of chart in each folio

III *THEMATIC CHART*

- ROUTEING CHART

Recommended routes and distance between major ports with respect to weather for each month of year

- ROUTEING GUIDE

Passage planning information and details of TSS for major shipping areas.

- GNOMONIC CHARTS

To plot great circle routes as a straight line
Also use in composite great circle sailing

- METEROLOGICAL CHARTS

2 world climatic charts showing metrological information from
January to July and
July to December

- OCEAN PLOTTING SHEETS

For long route ocean voyages

IV *NAVIGATIONAL PUBLICATIONS*
Contain the name of all onboard navigational publications.
IX *ADMIRALITY NAVIGATIONAL CHARTS*
Contain chart Number serial wise and the page on which its limits are shown

OCEAN PASSAGES FOR WORLD (NP 136)
Provides information for

- Planning of ocean voyages by selection of ocean routes applicable to power and sailing vessels with distances between ports and important positions.
- Detail of weather, currents and ice hazards
- Numerous route diagrams and chart lets showing the effects if climate, wave heights and load line zones.

ADMIRALITY TIDE TABLE (ATT) (NP 201 - 204)
Published in four volumes:
Volume 1. United Kingdom and Ireland (including European Channel Port)
Volume 2. Europe (excluding United Kingdom and Ireland),
Mediterranean Sea and Atlantic Ocean
Volume 3. Indian Oceans and South China Sea (including tidal stream predictions).
Volume 4. Pacific Ocean (including tidal stream predictions).

Each of these volumes is divided into two parts:
Part I Tidal prediction for Standard Ports.
Part II Time and Height Difference for Secondary Ports.
Standard ports are back of front cover of each volume.
Secondary ports of Standard ports are listed at rear of each volume. Each port is assigned an Index Number.

CUMMULATIVE LIST OF ADMIRALITY NOTICES TO MARINER (NP 234)
January Edition include all notices to mariner number published during previous 2 years
July Edition includes all notices number published during previous 2½ years.

ANNUAL SUMMARY OF ADMIRALTY NOTICES TO MARINER (NP 247)
SECTION 1 ANNUAL NOTICE TO MARINER (1-24)
4 Distress and Rescue at Sea, helicopter operation, AMVER Organization
9 Warning broadcast by British by British CRS and the BBC

13 World wide navigational warning services
15 Under Keel Allowance, negative storm surges
17 TSS
18 Carriage of Nautical Publication
20 Protection of offshore installation

SECTION 2 TEMPORARY AND PRELIMINARY NOTICES
SECTION 3 AMENDMENTS TO SAILING DIRECTIONS

ADMIRALITY LIST OF RADIO SIGNALS (ALRS) (NP 281 – 288)

Provides the most comprehensive and authoritative information published on all respect of maritime radio communication. Published in 6 volumes

Volume I Coast Radio Station
Volume II Radio Aids to navigation, Electronic position fixing systems, legal time and radio time signals, satellite navigation system
Volume III Maritime Safety Information Services
Volume IV Metrological observation stations
Volume V Global Maritime Distress and safety system
Volume VI Pilot services, Vessel Traffic Services and port operations

DISTANCE TABLE (NP 350)

Published in 3 volumes which list the distance between nearly port or place of navigational significance in the world.

These volumes are Admiralty distance tables,

1 Atlantic Ocean
2 Indian Ocean
3 Pacific Ocean

BRIDGE PROCEDURE GUIDE

PART A (Guidance to masters and navigating officers)

- Bridge Organization
- Passage Planning
- Duties Of OOW
- Operation and maintenance of bridge equipment
- Annexes

PART B (Bridge Checklists)
PART C (Emergency Checklists)

(IAMSAR) INTERNATIONAL AVIATION AND MARITIME SEARCH AND RESCUE MANUAL

Intended for carriage aboard search and rescue units and aboard civil aircraft and vessel is to provide guidance to those who:

- Operate aircraft, vessel or other craft, and who may be called upon to use the facility to support SAR operations
- May need to perform on-scene co-ordinator functions for multiple facilities in the vicinity of a distress situation
- Experience actual or potential emergencies, and may require search and rescue (SAR) assistance and search patterns are defined for SAR purposes
- Provide guideline for a common aviation and maritime approach to organizing and providing search

and rescue services. There are 3 volumes

- The requirement of manual is given in M-Notices.

I *ORGANIZATION MANAGEMENT*
Global SAR system, and provide effective and economical SAR services.

II *MISSION CO-ORDINATION*
Plan and co-ordinate SAR operations and exercise.

III *MOBILE FACILITIES*
Give co-ordinate Sea and air Search patterns (Creeping line search pattern)

ADMIRALITY PUBLICATIONS	**NEW EDITION**	**UPDATION**
List of Radio Signal	Annually except Volume 4 which published in 1½ years	Weekly NTM Section VI
List of light and fog signal	Annually	Weekly NTM Section V
Sailing Directions	Continuous revision Volumes: Republished as New Edition at 3 yearly intervals Non Continuous Revision Volumes Supplements Published at approximately 3 yearly intervals.	Weekly NTM Section IV for matters of immediate importance.
Chart Catalogue	Annually	Weekly NTM
Annual summary to NTM	Annually	
Cumulative list of NTM	½ Yearly	
Weekly Notices to mariner	Every week	

5. Differentiate between M Notices and Notices to Mariner?

NOTICES TO MARINER	**M-NOTICES**
Published by hydrographic office	Published by Marine Coastguard Agent
Published on specific time and date • Weekly (Weekly NTM) • Half yearly (Cumulative list of NTM) • Annual (Annual Summary of NTM)	Published when they are required.

6. What are Contents in CSWPMS (Code of safe working practice in merchant seaman)?
   I Safety Responsibility/Shipboard Management
   II Personal Health and Safety, Fire precaution, Emergency Procedures
   III Work Activities
   IV Specialist Ships
   V Appendices

7. From where you get information about standards of lashing?
   Cargo stowage and securing manual.

8. What are publications required for laying off courses?
   Ocean Passages for world.
   Chart Catalogue
   Sailing Direction

9. How to reply to a vessel in distress when those people are not familiar with English language?
   International code of signals
   Standard Maritime Communication Phrases

10. From where you get information about any new port?
    - Nories Nautical Table
    - Ocean Passages for world.
    - Guide to port entry

11. What publication you will consult when you are entering in area for navigation in ice?
    - Sailing Direction of Area
    - Admiralty List of Radio Signals Vol 3, 4 (For met warnings)
    - Mariner Hand Book (For nature of ice)

12. How you correct a charts and publications?
    CHART CORRECTION
    - Take out the "Cumulative List Of Notices To Mariner" and check the chart is corrected up to last chart correction

    CORRECTION NUMBER FOUND
    - In latest 'Weekly NTM Section I 'find out chart number in "Index of Charts Affected" and note 'Notice No'. From "Index of Notices and Chart Folios" find out page of 'Notice No'.
    - In 'Weekly NTM Section II' check 'Notice No' the Chart [Last correction] number.
    - If chart is not updated to above last correction then find it in previous weekly NTM.Until we find the correction written on bottom left of chart.
    - Take out tracing of correction or position from weekly NTM /Annual summary of NTM, one by one from bottom, update chart, write correction number in bottom left corner and in chart correction book. Do up to last correction and write on the back of chart "Corrected up to NTM (No of NTM) / (year)".

    CORRECTION NUMBER NOT FOUND
    - Check weekly notices to mariner came after the date of "Cumulative List of Notices to Mariner" and all steps as given above.

    PUBLICATION CORRECTION
    - Take out publication which needs to be corrected
    - Compare last amendment of publication in weekly edition of notices to mariner with back of front cover of each publication.

    CORRECTION NUMBER FOUND
    - Correct the publication and write weekly notice to mariner number in back of front cover of each publication

    CORRECTION NUMBER NOT FOUND

- Check weekly notices to mariner of last amendment until we find the weekly notice number written on back of front cover of each volume. If amendment weekly notice number is of last years and we can not find required weekly notices to mariner then we take it from 'Annual Summary Of Admiralty Notice To Mariner'

CHART CATALOGUE

1. How will you take out chart from chart catalogue?
   Chart Catalogue
   PART 2
   - Find out the index of arrival and departure port.
   - Take out planning chart which have arrival and departure ports
   - Go in index of departure port and draw roughly course by avoiding danger to arrival port
   - Take out chart No. of departure harbour ,sufficient course line, near to land and arrival harbour

   PART 3
   - Take out Routeing chart of month for passage region and world climatic chart (Of with in 6 month).
   - For Ocean crossing take out Gnomonic charts of ocean passage region and plotting sheets

   PART 4
   - Take out Admiralty Tide Table for the region
   - Take out Sailing Directions (Pilot books) for region
   - Take out Admiralty List of Light and Fog Signal for the region
   - Take out Admiralty List of Radio Signal Volume 1 ,3 ,6 for the region

2. Passages planning from Karachi to Colombo How will you pick up the charts Plot courses, what Books, Publication to consult?
3. Passage planning from Karachi to New York from where you will get information port VHF Channel's and how to report them at what time will you report?
4. Plan the passage between Cape Town and Dakar consulting the chart catalogue finds the list of lights, Sailing direction and other publication to be used?

PASSAGE PLANNING	**Index**	**PLANNING CHART**	**PASSAGE CHART**	**ALL**	**ATT**	**Pilot book**	**ALRS Vol 1**	**ALRS Vol 3**	**ALRS Vol 6**
Karachi to Colombo	H1,I	4073 ,[4705 , 4706]	40,58,39,1470, 1474,708,1509, 1564,1565, 1566,1587,813, 1655	D, F	Vol 3	NP 38	(2)	(2)	(4)
Karachi to Madagascar	H1,H	4072 ,[4705, 4703,4702, 4701]		D	Vol 3	NP 38,39	(1)	(1)	(4),(3)
Karachi to New York	H1,H2, F,E1,E	4004 [4072, 4011],[4705,	40,58,707,3785 ,3784,6,157,	D,E, J	Vol 2,3	NP 38 ,	(2)	(1),(2)	(3),(5)

	,A2,G, A & A1,U, U1	4704,4300, 4302,4301, 4103,4114, 4407, 4403]	452,453,143, 158,159,2375, 2374,333,2373, 2133,3214,233, 234,2578,2574, 3400,183,1091, 1092,189,1440, 2124,2123, 2122,2121,252, 1910,1909,774, 773,3578,144, 142,92,2670, 3459,3456, 3455,3454 Mariner routeing guide 5501			64,49, 45,1, 71,70, 69			
Cape Town and Dakar	G1,G	4021 [4204,4203, 4209,4104]	4148,4150, 4151,578,632, 3139,1147, 1664,1663	D	Vol 2	NP 1,2	(1)	(1)	(3)

SHIP`S BUSSINESS AND LAW

IMO PUBLICATIONS

1. What is IMO? What are its important regulations?
   INTERNATIONAL MARITIME ORGANIZATION
   An organization, which makes convention with their codes and regulation for maritime.
   IMO CONVENTION
   Convention is International agreement on certain subjects. It contains the requirement
   - SOLAS
   - MARPOL

   IMO REGULATION
   - International Regulations For Preventing Collisions At Sea

   IMO CODE
   Codes are the details of convention.

- FSS code
- LSA code
- IMDG code
  - ISM code
  - ISPS code

2. Which authority determines the regulation for competency?
   STCW compliance regulation determines the regulation for competency. IMO have white list of countries compliance with IMO.

SOLAS

1. What is SOLAS?
   SAFETY OF LIFE AT SEA

2. What information we find in SOLAS or contents of SOLAS?
   We find out the requirements from SOLAS.
   CONTENTS OF SOLAS:
   I General Provision
   II – 1 Construction – structure, subdivision and stability, machinery and electric installations
   II – 2 Construction fire protections, fire detection, and extinguishing
   III Life saving appliances and arrangements
   IV Radio Communications
   V Safety of navigation
   VI Carriage of cargos
   VII Carriage of dangerous goods
   VIII Nuclear ships
   IX Management for the safe operation of ships
   X Safety measures for high speed craft

XI-1 Special measures to enhance maritime safety
XI-2 Special measures to enhance maritime security
XII Additional safety measures for bulk carrier
Appendix Certificates

3. LSA and FFA requirement of your last ship. Where will you find regulations?

FILL ACCORDING TO YOUR OWN SHIP

LSA CONTENT	**PASSENGER SHIP**	**CARGO SHIP**	**TANKER**
Life boats • Type • Number • Location • Capacity			
Life rafts • Type • Number • Location • Capacity			
Life jackets			
Life buoys			
Immersion suit			
Thermal protective suit			
Line throwing apparatus			
Pyrotechniques • Parachute signal • Hand flares • Smoke Signal			
EPIRB			
SART			
FFA CONTENT			
Extinguisher • Water • Foam • Dry powder • CO2			
Fire hoses • on engine • on deck			
Fireman outfit			
Emergency fire pump			
International Shore connection			
Fire detection system			
Fixed smothering system • Accommodation • Cargo spaces • Engine room			

FIRE FIGHTING APPLIANCES (II-2)

1. What is fire plan? Where the fire plans located in ship?

   Plan to show location of control station, FFA, remote controls, detection system, fire zones, ventilation system, and access to spaces. Description is given in the language of flag state

   - 1 Copy supplied to each officer
   - 1 Copy at all time be available on board in accessible position
   - Instruction manual for maintenance, operation and installations of equipment on board for the fighting and containment of fire shall be kept under one cover at easily accessible position.
   - Placed duplicate set in weather tight enclosure outside deck house for Fire Brigades.

2. What is fire wallet?

   A wallet kept near the gangway along with international shore connection and I/buoy lit for the easy and nearest access to be. It contains following documents

   - Muster list and location of muster point
   - Crew list
   - General arrangement plan
   - Safety plan
   - Cargo plan
   - Trim stability booklet
   - Details of fire fighting system
   - Details of water tight doors and ventilation
   - Details of emergency fire pump
   - Important telephone numbers
   - Pumping arrangement

3. What are SCABA and EEBD?

   <u>SELF CONTAINED AIR OPERATED BREATHING APPARATUS:</u>
   It is a working device contain fresh air use to work at place where deficient amount of oxygen level
   <u>EMERGENCY ESCAPE BREATHING APPARATUS:</u>
   It is a escaping device contain fresh air use to escape from place where deficient amount of oxygen level

4. What is requirement of (SCABA) breathing apparatus sets on board ship?

   No of SCABA = No of Fireman outfits

   - <u>FRESH AIR BREATHING APPARATUS</u>

     Smoke helmet provided with a suitable air pump = 1

     If Length of air hose > 36m would be necessary to substituted or provided additional self-contained breathing apparatus.

   - <u>SELF CONTAINED AIR OPERATED BREATHING APPARATUS</u>

     Cargo ship 2 (at least)
     Tanker 4 (at least)

Passenger ship carrying more than 36 passengers

- For every 80 m provided 2 and additional 2 for each main vertical zone.
- At least 2 spare charges for each breathing apparatus. All air cylinders for breathing apparatus shall be Interchangeable.
- Each pair of SCABA provided 1 water fog applicator

Volume of compressed air contained in cylinder = 1200L
Time period = 30min
Whistle starts after 20 min
Provided with a life line of sufficient length.

5. What are the parts of breathing apparatus?
   - Face mask
   - Demand Valve
   - Air supply hose
   - Cylinder
   - Cylinder valve
   - By Pass valve
   - Warning whistle
   - Pressure gauge
   - Safety harness

6. How to check new breathing apparatus and precautions taken while using?

   PHYSICAL CHECK:

   Check the breathing apparatus all parts visually

   AIR PRESSURE CHECK

   Air pressure in full bottle= 200 bar

   Liquid capacity in cylinder = 6 litre

   Air pressure (200) x liquid capacity (6) = Total compressed air (1200)

   WARNING WHISTLE CHECK

   Whistle must sounded in last 10 to 8 seconds

   INTERNAL OR EXTERNAL AIR LEAK CHECK

   - Drop of pressure in 10 second in gauge tube (having high pressure) should less than 5 bar
   - Close cylinder valve and Wear face mask tightly, intake air if air is coming then there is leakage in mask supply hose.

7. What is requirement of emergency fire pump on board ship?

Gross Tonnage	Minimum number of Fire Pump	Capacity (N / mm^2)

Class I		
Under 4000	2	0.4 (1000 & upward) satisfaction of administration (under 1000)
4000 and upward	3	0.3
Class VII		
Under 1000	By satisfaction of administration	
1000 and upward	1	0.25 (under 6000) 0.27 (6000 & upward)

8. Why emergency fire pump inlet and outlet valves are always open? Why isolating valve is closed while using?
    - In case of emergency the system available in line up condition
    - Isolating valve is use to isolate the compartment from rest compartments in system.

9. What is the use of emergency generator?

10. Fire nozzle requirement and its function?

    Standard nozzles sizes 12mm, 16mm, 19mm

SPACES	Nozzle Sizes (mm)
Accommodation and service spaces	12
Machinery and exterior location	19

    All nozzles shall be of an approved dual-purpose type (i.e. spray/jet type) incorporating a shutoff.

11. Fire hydrants requirement?

    The number and position of hydrants shall be such that at least 2 jets of water from same hydrant

12. On board fire hoses shall be of which material?

    Fire hoses shall be of non-perishable material.

13. What was the size of Fire hose on your last vessel? Fire hose requirement?

    Class I: 1 per hydrant

    Class VII: 1 per 30 m length not less than five .total length 60% ship's length + 1 spare

    Length of hose not less than 18 m if breadth of vessel more than 27 m then hose length of 27 m but not more.

14. Fire fighting arrangement on tanker?

Capacity of fire pumps (Total required capacity not more than 180 m^3/hr):

- Each fire pump (other than Emergency fire pump) shall have a capacity not less than 80 % of total required capacity divided by minimum no of required fire pumps but in any case not less than 25 m^3/hr.
- Each pump capable of delivering at least 2 required jets of water.
- G/S, Ball, Bilge pumps accepted as fire pumps provided:

- Not normally used for pumping oil.
- If used occasionally have suitable changeover arrangements fitted.

Emergency Fire pump:

- Capacity not less than 40 % of total required capacity of the fire pumps but in any case not less than 25 m^3 / hr.
- Capable of delivering 2 jets of water with minimum pressure (at a 3rd hydrant – not a SOLAS requirement) not less than 2.1 bar.
- Diesel power source of pump started in cold condition of 0° C by hand or by power at least 6 times within a period of 30 minutes and at least twice within 1st 10 minutes.
- Tank to have sufficient fuel for at least 3 hours and reserve fuel outside main machinery space to allow the pump to run for additional 15 hours.

  (Total suction head and the net positive suction head of the pump to be such that they will provide for the required capacity and pressure under all conditions of list, trim, roll and pitch likely to be encountered in service)

- No direct access between engine room and emergency fire pump. If access provided, through and airlock.
- Isolation valves in tankers to be fitted on the fire main on poop and tank deck at intervals not more than 40 meters to pressure integrity of fire main system.

  (Diameter of fire main: sufficient for maximum discharge from 2 pumps operating simultaneously except for cargo ships the diameter need be sufficient for a discharge of 140 m^3 / hour.

Fire hydrants:

- Number and position such that at least two jets of water not from the same hydrant can reach any part of the ship.
- One shall be from a single length of a hose.
- Engine room hydrant – one on each side and one in tunnel.

Fire hoses:

- One for each 30 meter length of the vessel and one spare but in no case less than 5 in nos.
- (Length of hose not less than 18 meter if breadth of vessel more than 27 meter then hose length of 27 meter but not more) – not in SOLAS.

Fire nozzles:

- All nozzles of dual purpose type i.e. spray and jet in corroborating a shut off.
- Standard nozzle size = 12mm, 16mm and 19mm.
- For accommodations and service spaces a nozzle side greater than 12mm need not be used.

- Machinery spaces more than 19mm need not be used.

CO_2 Systems:

- Cargo pump room spaces: Quantity of CO_2 available is sufficient to give a minimum volume of gas equal to 30 % of the gross volume of largest cargo space so protected by the ship.
- Machinery spaces: Quantity of CO_2 available be sufficient to give a minimum volume of gas equal to 40 % of the gross volume of space (excluding casing) or 35 % of the gross volume of space (including casing). For machinery spaces, the fixed piping system shall be such that 85 % of the gas can be discharged into the space within 2 minutes.
- For the purpose of the above volume of free CO_2 shall be calculated at 0.56 m^3 / kg.
- Two separate controls shall be provided for releasing
- One control shall be used to discharge the gas from its storage container.
- The other to open the valve of the piping which conveys the gas to the protected space.

Fire extinguishers:

- All of approved type and design capacity of portable extinguisher not more than 13.5 litres and not less than 9 litres.
- Spare charges for 100 % of extinguishers.
- Portable foam applicator consists of an air foam nozzle of an inductor type capable of being connected to the fire main by a fire hose and a portable tank of at least 20 litres.
- Foam making liquid and one spare tank.
- Rate of foam 1.5 m^3 / minute.
- One of the portable fire extinguishers intended for use in any space to be stowed outside the entrance.

Boiler room:

- One set of portable foam applicator unit required.
- At least 2 portable fire extinguisher
- At least 1 approved foam type extinguisher of capacity 135 litres.
- A receptacle containing sand or sawdust impregnated with soda.
- Any fixed fire-extinguishing system – e.g. CO_2, foam, water spray.
- Spaces with internal combustion machinery:
- Any fixed extinguishing system.
- At least 1 set of foam applicator unit.
- Sufficient number of foam type extinguisher capacity 45 litres plus sufficient number of portable foam so placed that walking distance between extinguishers not more than 10 meters.
- High expansion foam: (fixed type system in machinery space)
- Sufficient to fill the greatest space to be protected at a rate of at least 1 meter in depth / minute.
- Produce a volume of foam equal to 5 times the volume of the space.
- Expansion ratio of not less than 5 liters/m^2/minute.
- Sprinklers: Application rate of not less than 5 liters/m^2/minute.

Fire mans outfit:

1. Fire proof protective clothing outer surface waterproof.
2. Boots and gloves of rubber or non-conductive of electricity.
3. Rigid helmet.
4. Electric safety lamp (approved type) minimum burning period 3 hours.

5. An axe (approved type with cover)
6. Breathing apparatus.

- SCBA at least 1200 litres capacity or capable of functioning for at least 30 minutes. Normal breathing rate 40 litres / minute.
- Fire proof line attached to harness.
- To carry at least 4 sets of fire mans outfits widely spread. **For tankers**.

International shore connection:

- Outside diameter: 178 mm
- Inside diameter: 64 mm
- Bolt circle diameter: 132 mm
- Slots in flange4 holes: 19 mm in diameter
- Flange thickness: minimum 14.5 mm
- Bolts and nuts4 nos: each 16 mm in diameter, 50 mm in length
- Washers: 8 nos.

Fixed deck foam systems: (tanker's – low expansion)

1. Capable of delivering foam to entire cargo tank deck as well as into a cargo tank if the is ruptured.
2. Control station outside and away from cargo area and readily accessible, simple and rapid operation.
3. Rate of foam not less than 0.6 litres/ m^2/ minute.
4. Sufficient supply of foam concentrate to produce foam for at least 20 minutes. (IG system fitted)
5. Foam supplied through foam monitors and applicators. (1250 litre/min)
6. Capacity of any monitors at least 3 liter/m^2/minute.
7. Capacity of applicator not less than 400 litres/minute and throw not less than 15 meter

Inert gas systems: (cargo tank protection):

1. Maintaining O_2 content less than 8 % by volume in any part of cargo tank.
2. Positive pressure at all times.
3. Maintaining O_2 content less than 5 % in the IG main.
4. System capable of delivering IG to cargo tanks at a rate of at least 125 % of the maximum discharge rate.
5. 2 blowers : capacity 20000 m^3/hr
6. IG : capacity 1000 m^3 / hr
7. Vacuum : 200 mm wg
8. High pressure : 1200 mm wg

LIFE SAVING APPLIANCES (III)

1. Differentiate between life boat and rescue boat explains?

   LIFE BOAT capable of sustaining the lives of person in distress from time of abandoning ship. It is constructed with rigid sides and has ample stability and sufficient free board when fully loaded with person and equipments

   RESCUE BOAT It is generally designed and used to rescue persons in distress and to marshal survival craft.

2. What are types of life boat?
    - Metallic
    - Glass reinforced plastic
    - Partially enclosed life boat
    - Self-righting partially enclosed life boat
    - Totally enclosed Life boat
    - Life boat with a self contained air support system
    - Fire protected life boat
    - Rescue boat
    - Free fall life boat

3. What is the requirement of totally enclosed life boat with life raft on board?
   Totally Enclosed Life boat on each side = 100% (onboard person capacity)
   Transferable at single open deck life rafts aggregate capacity =100% (onboard person capacity)
   Rigid life raft on each side =100 %(onboard person capacity)

4. What is free fall life boat requirement with life raft?
   A Free-fall lifeboats over stern =100 %(onboard person capacity)
   Life raft on each side =100 %(onboard person capacity) .At least 1 side of ship served by launching appliances.

5. What is the requirement of tanker lifeboat?
   Fire Protected Totally Enclosed Life Boat on each side = 100% (onboard person capacity)
    - Chemical tankers and gas carrier carrying cargoes emitting toxic vapours or gasses shall carry fire protected totally enclosed lifeboat equipped with a self contained air support system.
    - Oil tanker, chemical and gas carriers carrying cargoes having a flashpoint not exceeding 60C shall carry fire protected, totally enclosed lifeboat

6. What are the marking on life raft and its container?
   MARKING ON CONTAINER FOR INFLATABLE LIFE RAFT
    - The maker name or trade mark
    - Serial number
    - Name of approving authority and the number of person it is permitted to carry
    - SOLAS
    - Type of emergency pack enclosed
    - Date when last serviced

- Length of painter
- Maximum permitted height of stowage above waterline(depending on drop-test length of painter)
- Launching instructions

MARKING ON INFLATABLE LIFE RAFT

- The maker name or trade mark
- Serial number
- Date of manufacture
- Name of approving authority
- Name and place of servicing station where it was last serviced
- Number of persons it is permitted to accommodate over each entrance in characters not less than 100mm in height of colour contrasting with that of the life raft.

MARKING ON RIGID LIFE RAFT

- Name and port of registry of the ship to which it belongs
- The maker name or trade mark
- Serial number
- Name of approving authority and the number of person it is permitted to carry
- Number of persons it is permitted to accommodate over each entrance in characters not less than 100mm in height of colour contrasting with that of the life raft.
- SOLAS
- Type of emergency pack enclosed
- Length of painter
- Maximum permitted height of stowage above waterline (depending on drop-test length of painter)
- Launching instructions

7. How to lower free fall lifeboat?
    - All personnel proceed to boat station. Warm clothing to be worn Lifejackets to be carried but not put on
    - Disengage the life boat lashing
    - Disconnect the battery charger
    - Board the free-fall lifeboat.
    - Close all hatches and openings
    - Fasten seat belt as soon as seated
    - Pull the lever aft towards your position
    - Operate the hydraulic pump. After about 20 strokes the locking device will disengage and boat is now free.

8. How to lower enclosed lifeboat?

- Gripes should remove
- Tricing pendant is on

- Plug is shipped
- Over side is clear
- People in the boat are holding the lifelines.
- No body is standing in the dangerous position.
- Safety harbour pins out and gripes are clear
- On hearing Master's verbal order Coxswain will boarding passengers (Women and children first)
    - Make sure that every body seated as low as possible in the boat and their hands are clear from the gunwale and they should be distributed equally in the boat
- They are holding life lines, clear and nothing on the surface of water
- If motor boat make sure engine is started
- Slack off the bowsing tackles and let go
- Lower the boat
- Unhook the falls
- Pick up launching crew by side ladder
- Clearing of boat under oars from ship's side

9. What are requirements of Life rafts, why life rafts forward?
    - Horizontal distance from the extreme end of the stem or stern of the ship to the nearest end of the closest survival craft is more than 100m shall carry additional life raft securely fast for manual release and they don't need any approved launching device.
    - In case of emergency, person on forward can lower forward life raft.

10. Life raft, which can be moved either side .How transferred from side to side?
    - Open Manual release senhouse slip lashing and by the mean of two persons shift life raft on other side
    - Transfer by the mean of special life raft ramp passes in between accommodation.

11. What is requirement s of Life buoys (Cargo + Passenger Ship)?

L.O.A (m)	Number of life buoys
Class VII	
Under 100	8
100 and under 150	10
150 and under 200	12
200 and over	14
Class I	
Under 60	8
60 and under 12	12
120 and under 180	18

180 and under 240	24
240 and over	30

12. Differentiate between
    - TPA and Immersion Suit

Thermal Protective Aid	Immersion Suit
It is a bag or suit made of waterproof material with low thermal conductance.	It is a protective suit which reduces the body heat loss of a person wearing it in cold water.

13. Line throwing appliances requirement and precautions?

    REQUIREMENT

    4 projectile carrying line 230m in calm weather

    4 lines, breaking stress = 2 KN

    PRECAUTIONS

    - Distance from target < 230 m
    - When firing a rocket across the wind, aim slightly downward before igniting the rocket. The wind will act on the bight of rocket line and deflect the rocket up into the wind.
    - Fire the rocket toward target by an angle of 45 from horizontal.

14. When life boat wires turned and changed?

    Turned end for end =2 ½ years (30 months)

    Renewed or changed 5 years

15. What are LSA and distress signal on bridge?

    LSA

    - 1 ELSA
    - 2 MOB lifebuoy with self igniting light and 15 minutes duration smoke signal

    Distress

    - EPIRB
    - 1 SART
    - 12 Rocket parachute flares
    - 4 Line throwing apparatus

16. What are the distress signals on a life boat?
    - 6 Hand flare
    - 4 Parachute flares
    - 2 Orange smoke floats

17. What are the ranges of life boat distress signal and in what condition they are use?
    Orange Smoke floats = Give when passing aircraft in daytime
    Rocket parachute flare = Give to a vessel pass by about 20 nautical miles
    Red Hand flare = Give to a vessel pass by in daytime about 10 nautical miles
    Heliograph = Give to a vessel pass by in daytime about 5 nautical miles
    Whistle = Give to a vessel pass by in daytime about 1 nautical mile
    Electric torch = Give Morse code (SOS ···---···) to vessel pass by in night time about 1 nautical mile

18. From where newly signed on person will know about his emergency duties.
    Muster List

19. Purpose of contents of muster list?
    Muster list
    - Specify Details of general emergency alarm public, address system action to be taken by crew and passengers when this alarm is sounded and order to abandon ship.
    - Include
        1. Closing of the watertight doors, fire doors, valves, scuppers, sidecuttles, skylights, portholes and similar openings
        2. Equipment of the survival craft and life-saving appliances
        3. Precaution and launching of survival craft
        4. Preparations of life saving appliances
        5. muster of passengers
        6. use of communication equipment
        7. manning of fire parties
        8. special duties assigned to use fire fighting equipment and installations
    - Specify officer assigned to ensure life saving and fire appliances maintained in good condition and ready for immediate use.
    - Specify substitute for key persons who may become disabled
    - Shall be prepared before proceeds to sea.

RADIO COMMUNICATION (IV)

1. What is GMDSS? Which regulation/Chapter of SOLAS deal with it? What is the requirement or equipment carried accordance with it
    - Global Maritime distress and safety system .The purpose of the global system is those SAR authorities ashore, as well as the shipping in immediate vicinity of the ship in distress incident so they assist in coordinate SAR operation with minimum delay. This system is also providing urgency and safety information (navigational and metrological warnings, metrological forecasts and other urgent

safety related messages broads to ships).

- SOLAS Chapter # 4 Radio communication
- Requirement of equipment carried are as follows

EQUIPMENT	Gross Tonnage ≥ 500	300 ≤ Gross Tonnage < 500
portable 2 way VHF	3	2
Radar Transponder	2	1
EPIRB	1	1

2. What is requirement for radio communication?

   Every ship

   VHF radio installation

- Capable to initiate distress alert (VHF Channel # 70)
- RT (VHF Channel # 6, 13, 16)

  Continuous DSC watch (VHF Channel # 70)

  Radar Transponder (9GHz)

  NAVTEX receiver

  INMARSAT EGC

  EPIRB

3. Radio communication is based on what calling system?

   Digital selective calling (DSC)

   This is a technique using digital codes which enables a radio station to establish contact with, and transfer information to another station or group of stations.

4. How to reply distress call read on GMDSS equipment?

   MAYDAY
   [DISTRESS VESSEL NAME / CALLSIGN X 3]
   THIS IS
   [ACKNOWLEDGMENT VESSEL X 3]
   RECEIVED MAYDAY
   OVER

5. On what channel is the VHF watch kept?
   - Channel No 13(Ship to ship communication)
   - Channel No 70 (DSC Alerts)

6. Is channel Number 70 available on hand held transceiver?

   Yes

7. What information you get from NAVTEX?

   NAVTEX service means the coordinated broadcast and automatic reception on 518 KHz of maritime safety information by means of narrow-band direct printing telegraphy using English language.

   Types of messages

   - Navigational warning
   - Metrological warning
   - Ice reports
   - Search and rescue information and pirate attack warning
   - Metrological forecasts
   - Pilot service messages
   - DECCA LORAN, OMEGA, SATNAV messages
   - Special services

8. How EPIRB use, location and function?

   <u>EMERGENCY POSITION INDICATING RADIO BEACON.</u>

   - It is used to determine the location of survivors during SAR operation.
   - Installed on easy accessible position.
   - Capable of floating free because HRU is attached if the ship sinks and being automatically activated when afloat
   - Capable of activated manually.
   - It can transmit a digital message on 406 MHz as well as 121.5 MHz signal once energized.
   - The 406 MHz signal contains MMSI (information such as country of origin and a vessel serial number.)
   - Their signals are detected by COSPAS SARSAT polar orbiting space craft equipped with suitable receivers. The signals are relayed to a grounds receiving station termed as LUT(Local user terminal).They are special ground stations linked with COSPAS-SARSAT satellite and calculate the vessel EPIRB locations using the known satellite position and data received from satellite.
   - The signal is then relayed together with location data to MCC.
   - MCC give information to respective RCC
   - RCC initiates the SAR activities

9. How SART uses, location and function?

   <u>SEARCH AND RESCUE RADAR TRANSPONDER</u>

   - It is use to locate the ship in distress or their survivors
   - Installed on easy accessible position.
   - It operates in 9 GHz frequency band.
   - Any X-Band (3 cm) radar with in the range of 10 miles may trigger SART .It generates line of 20 blips on radar outward from its position along line of bearing on PPI.

- At 1mile Blips dot change into wide arcs and as approaches more near Blips dot change into complete circles.
- Battery capacity in stand-by condition = 96 hours and when transmition interrogated with radar = 8 hours
- Operating temperature = -20° C to + 55°C

NAVIGATION (V)

1. What is requirement for bridge equipment?

EQUIPMENT	G.T ≥ 150	G.T ≥ 500	G.T ≥ 1,600	G.T ≥ 10,000	G.T ≥ 100,000
Signalling lamp	1				
Standard magnetic compass • Steering magnetic compass • Communication mean b/w standard compass and bridge • Mean for taking bearing of horizon 360° (Pelorus or repeater at aft of bridge)	1				
Master Gyro Compass • Gyro Repeater		1	Placed for taking bearing as near as practicable over an arc of horizon 360°		
Telephone arrangement with compass repeater at emergency steering flat		1			
Radar (9GHz) Additional Radar		1		1	
Reflection plotter			1		
ARPA				1	
Echo sounder		1			
Speed & distance log indicator		1			
ARPA fitted with Speed & distance log indicator		1			
Rudder Angle, RPM indicator		1			
Rate of turn indicator					1

2. Details of Pilot Ladder?
    - A single length of ladder should be used.
    - Whenever the distance to the waterline exceeds 9m then a combination ladder to be used in conjunction with a pilot ladder.
    - Treads of the ladder must be made of hard wood (ash, oak, elm, or teak).
    - Steps (must remain horizontal at all times)-
    - Dimensions- not less than 48Omm x 115mm x 25mm.
    - Spacing- not less than 300mm and nor more than 380mm apart.
    - Four lower steps to be constructed of rubber.
    - Side ropes consist of manila rope 18mm in diameter.
    - Manropes of diameter not less than 20mm in diameter.
    - Spreaders-
    - Dimensions- 1800mm – 2000mm in length.
    - They must be so fixed so that the lowest spreader comes no lower than the 5th step from the bottom.
    - Intervals between spreaders not to exceed 9 steps.
    - The bulwark ladder must be well secured to the bulwark.
    - Stanchion -
        - Spacing- 700 – 800mm.
        - Not to extend more than 1200mm above bulwark.

3. What is the use of spreader in pilot ladder?
    To prevent the pilot ladder from twisting

IMDG (VII)

1. What is IMDG code?

    <u>INTERNATIONAL MARITIME DANGEROUS GOODS CODE</u>
    - It gives a uniform international code of dangerous goods for transportation by sea
    - It gives methods of packing in packets or in container, stowage and segregation of incompatible substances.
2. Dangerous Good regulation and convention?

    Marking:

    The following requirements shall be complied with-

- The package must be clearly marked with the correct technical names of goods and an indication must be given with the hazards that could arise during the transportation of the goods.
- Markings must comply with IMDG.
- The outer material of the package will survive 3 months immersion and the marking must be durable.

- If the outer material does not survive 3 months then the inner receptacle which will survive 3 months must be durably marked.
- If the goods are carried in a container then the unit must have distinctive labels on the external.

Packing:

1. Shall be in good condition.
2. Of such a character that an interior surface with which the contents may come in contact is not dangerously affected by the substance being conveyed and capable of withstanding the ordinary risk of carriage at sea.
3. Where absorbent or cushioning is being used-

    - Capable of minimizing the danger to which the liquid may give rise.
    - Prevent movement and ensures that the receptacle remains surrounded.
    - Absorb liquid in the event of breakage.

    1. Receptacles shall have an ullage at the filling temperature sufficient to allow for the highest temperature during the voyage.
    2. Cylinders or receptacles under pressure shall have been adequately constructed, tested and correctly filled.
    3. Empty receptacles shall be considered as dangerous and be treated as dangerous cargo unless they have been cleaned and dried.

Stowage:

- Dangerous cargo should be stowed safely appropriately according to the nature of the cargo. Incompatible goods to be separated from one another.
- Explosives to be stored in magazines and to be kept securely closed at sea. They should be kept far away from electrical.
- Goods which give dangerous vapours should be stowed in well-ventilated places.
- Ships carrying inflammable liquids and gases special precautions should be taken against fire and explosion.
- Substances liable to spontaneous heating should not be carried unless adequate precautions have been taken.

3. How many volumes and supplement for IMDG code?

    Volume I (Part 1, 2 and 4 – 7)
    - General provisions, definitions, training
    - Classification
    - Packing and tank provisions
    - Consignment procedures
    - Construction and testing of packaging, IBCs, large packaging, portable tanks and road tanks vehicles
    - Transport operation

    Volume II (Part 3)
    - Limited quantities exceptions
    - The index
    - Appendices

    Supplement
    - EMS Guide
    - Medical first aid guide
    - Reporting procedures

- Packing cargo transport units
- Safe use of pesticides
- INF code

4. What are EMS No and MFAG?
   MEDICAL FIRST AID GUIDE (MFAG)
   Guide use in accidents involving dangerous goods. It gives information regarding safety, first aid, and emergency procedures to be followed and action to be taken in the event of an accident involving certain dangerous goods.
   EMERGENCY SCHEDULE NUMBER (EMS No)
   Emergency schedule for FIRE and SPILLAGE

5. How many classes of dangerous goods and name them?
   CLASSES OF DANGEROUS CARGO:
   Class 1: Explosives
   Class 2: Gases Compressed, Liquefied or Dissolved Under Pressure.
   Class 3: Inflammable Liquids.
   Class 4.1: Inflammable Solids.
   Class 4.2: Inflammable Solids or Substances Liable to Spontaneous Combustion.
   Class 4.3: Inflammable Solids or Substances Which When In Contact With Water Emit Flammable Gases.
   Class 5.1: Oxidising Substances.
   Class 5.2: Organic Peroxides.
   Class 6.1: Poisonous Toxic Substances.
   Class 6.2: Infectious Substances.
   Class 7: Radio Active Substances.
   Class 8: Corrosives.
   Class 9: miscellaneous dangerous cargo which presto a danger not covered by other classes.

6. What is Play Card? Marking and labelling of dangerous goods on packages and container?
   - Dangerous good label on container carrying dangerous good
   - Small label over packages from 100 x 100 mm to 150 x 150 mm
     Radioactive 250 x 250 mm
     Standard size of label on container 200 x 200 mm

7. How will you find information about dangerous good in IMDG code?
   Volume -2
   - Find the dangerous good by alphabetical name in index at last pages or UN No in Dangerous good list
   - In Dangerous Goods list information is given in 18 columns of a UN NO
   - In chapter 3.2 definitions of 18 columns are written

   Volume -1 for interpretation of volume 2 UN No columns (2 to 14)
   Supplement For the interpretation of volume 2 UN No columns (15)

8. Find the label to be used for IMDG Dangerous Good (Cotton waste, oily) from IMDG code?

Volume 2

Find the Class Number of dangerous good

Volume 1

In chapter 5.2 Label specifications is given in 5.2.2.2.2

According to Class Number pick up label for dangerous good

ISM (XI – 1)

1. What is ISM or what you understand by ISM?

   INTERNATIONAL SAFETY MANAGEMENT

   It was first adopted by IMO to ensure safety at sea, prevention of human injury or loss of life, and avoidance of damage to the marine environment. There are check list for every work.

   All passenger ships of 100 gross tonnage and upwards and all cargo ships of 300 gross tonnage and upward have her identification number (MMSI NO.)

2. What is DOC?

   DOCUMENT OF COMPLIANCE:

   A document of compliance shall be issued to every company which complies with the requirements of ISM code. A copy of the document shall be kept on board.

3. What certificate carries to ISM or what is SMC?

   SAFETY MANAGEMENT CERTIFICATE

   It shall issue to every ship by the recognized organization. It verifies that the company and its shipboard management operate in accordance with the approved safety management system.

ISPS (XI-2)

1. What is ISPS?

   INTERNATIONAL SHIP PORT FACILITY AND SECURITY CODE

   ISPS defines set of procedures for prevention and protection for security

   Security level 1

   Minimum appropriate security measures will maintained at all times

   Security level 2

   Level of appropriate additional protective security measures shall be maintained for a period of time as a result of high security risk of a security incident.

   Security level 3

   Level for which further specific protective security measures shall be maintained for a limited period of time when a security incident is probable or imminent, although it may not be possible to identify a specific target.

2. Define DA, CSO, SSO, PSO, ISSC and SSP?

   DESIGNATED AUTHORITIES

   It is an authority authorized by flag state contracting government applied ISPS code to port territory which is primarily for all ship engaged on international and non international voyages.

   SHIP SECURITY OFFICER

   The person onboard the ship answerable to the master for security of the ship including implementation and maintenance of the ship security plan and has connection with the company security officer and the port security facility officer.

   COMPANY SECURITY OFFICER

The person based ashore designated by the company for ensuring that the ship security assessment is conducted, that the plan is developed and approved, implemented and maintained for link with the port facility security officers and the ship security officers.

PORT FACILITY SECURITY OFFICER

The person designated as responsible for the development, implementation, revision and maintenance of the port facility security plan and for link with the ship security officers and company security officers.

INTERNATIONAL SHIP SECURITY CERTIFICATE

It shall issue to every ship by the recognized security organization. It verifies that the company and its shipboard management operate in accordance with the approved security management system

SHIP SECURITY PLAN

A plan to ensure the application of measures on board the designed to protect persons on board, cargo, cargo transport unit, ships store or the ship from the risk of a security incident.

APPENDIX

1. Certificates of Ships?

ALL SHIPS

1. International tonnage certificate
2. International load line certificate
3. International load line exemption certificate
4. International ship security certificate
5. Intact stability certificate
6. Damage control booklets
7. Minimum safe manning document
8. Certificates for masters officers or rating
9. International oil pollution certificate
10. Oil record book
11. Shipboard oil pollution emergency plan
12. Garbage management plan
13. Garbage record book
14. Cargo securing manual
15. Document of compliance
16. Safety management certificate

ADDITIONAL PASSENGER SHIP

1. Passenger safety certificate
2. exemption certificate
3. special trade passenger ships
4. special trade passenger ships space certificate
5. Search and rescue co-operation plan
6. List of operational limitations
7. decision support system for masters

ADDITIONAL CARGO SHIP

1. Cargo ship construction certificate
2. cargo ship safety equipment certificate
3. cargo ship safety radio certificate
4. cargo ship safety certificate
5. Exemption certificate
6. document of compliance with the special requirements for ships carrying dangerous goods
7. Dangerous goods manifest or stowage plan
8. Document of authorization for the carriage of grain
9. certificate of insurance or other financial security in respect of civil liability for oil pollution damage
10. Enhanced safety report file
11. Record of oil discharge monitoring and control system for the last ballast voyage
12. Bulk carrier booklet

ADDITIONAL NOXIOUS LIQUID CHEMICAL

1. International pollution prevention certificate for the carriage of noxious liquid substances in bulk
2. Cargo record book
3. Procedures and arrangement Manual
4. Shipboard marine pollution emergency plan for noxious substances

ADDITIONAL CHEMICAL TANKER

1. International Certificate of fitness for the carriage of dangerous chemical in bulk.

ADDITIONAL GAS CARRIER

1. International Certificate of fitness for the carriage of liquefied gases in bulk

ADDITIONAL HIGH SPEED CRAFT

1. High speed craft safety certificate
2. permit to operate high speed craft

2. How to prepare Safety Equipment survey?
   LIFE SAVING APPLIANCES:
   Lifeboat-
   - Stores and equipment.
   - Particular attention to bottom boards and buoyancy material.
   - Thwarts free of cracks.

   1. Overhaul and grease which davits and blocks. Falls to be renewed or turned end to end. Repaint markings on the lifeboat.
   2. When boats are in water run the boats ahead and astern.
   3. Inflatable life rafts to be serviced within the last 12 months.

4. Lifebuoys- si lights, grab lines, markings well painted.
5. Lifejackets- lights, whistles and markings.
6. Pyrotechnics- expiry dates.

Fire fighting appliances:

1. Fire control plans legible.
2. Check fire hoses, nozzles and applicators in good condition.
3. Test emergency fire pump.
4. Overhaul all extinguishers.
5. Test and overhaul fixed fire equipment system.
6. Check breathing apparatus and firemen's suit.
7. Check fire and smoke detection system.

Other checks:

1. Emergency lighting system.
2. Check closing arrangements for- ventilators, skylights, doors and funnel.
3. Check navigational equipment.
4. Check pilot ladders and pilot hoists.

In general all checks to be carried out as per the record of inspection form at the back of the SEQ certificate

MARPOL

1. What is MARPOL?
   International Convention for Prevention of Pollution from Ships, adopted by IMO

2. How many Annexes in MARPOL?
   I Prevention of pollution by Oil
   II noxious Liquid Substances in Bulk
   III Prevention of pollution by IMDG –MP
   IV Prevention of pollution by Sewage from ship
   V Prevention of pollution by Garbage from ship
   VI Air Pollution

3. What are the designated special areas?
   - North Sea
   - Baltic sea
   - Mediterranean Sea
   - Black Sea
   - Red Sea
   - Gulf of Aden
   - Persian Gulf
   - Gulf of Mexico and Caribbean Sea

- Antarctic sea

4. What equipments are used to prevent discharge oil on tankers? Equipment to prevent oil pollution on board?
   - Oil Discharge Monitor Equipment (on tankers)
   - Oily water separator

5. What is oily water separator and its use?
   - Equipments are used to prevent discharge oil on tankers.
   - It use to separate oil in water

6. What MARPOL annex deals with oil pollution what details are given in there?
   ANNEX 1 (Prevention of pollution by Oil)

   Discharging mixed with cargo oil residue into sea

   From Engine Room bilges (All Ships except Tanker)
   - The ship is not within a special Area;
   - The ship is more than 12 NM from nearest land
   - The ship is en route;
   - The oil content of the effluent is less than 15 PPM
   - The ship has in operation require an oil discharge monitoring and control system (ODME), oily-water separating equipment, oil filtering system or other installation

   From Cargo Area (Tanker)
   - The tanker is not within a special Area
   - The tanker is more than 50 NM from the nearest land
   - The tanker is proceeding en route;
   - The instantaneous rate of discharge of oil content does not exceed 30 litres /NM
   - The total quantity of oil discharged into the sea does not exceed for existing tanker 1/15,000 of the total quantity of the particular cargo of which the residue formed a part, and for new tankers 1/30,000 (New ship means a ship built after 31 December 1975) of the total quantity of the particular cargo of which the residue formed apart;
   - The tanker has in operation provided oil discharge monitoring and control system and slops tank arrangement.

7. Maintenance of oil record book?

   OIL RECORD BOOK

   Part I Machinery Space Operation

   Part II Cargo/Ballast Operation

   MAINTENANCE
   - The loading, discharging and voyage transfers of oil cargo, cleaning and ballasting of cargo tanks,

discharge of dirty ballast and water from slop tank, discharge of oily bilge water from machinery spaces and the pump room whether in port or at sea, and the disposal of oil residues.

- Any occasion when oil or an oily mixture has been discharged in order to maintain the safety of ship or to prevent damage to any vessel or cargo or to save life.

8. Action of the OOW if see oil spill into the sea?

9. What is Garbage control Management and what are garbage rules?
   - They prohibit the disposal into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets and plastic garbage bags.
   - They restrict the disposal into the sea of garbage, which includes all kinds of victuals, and domestic and operational waste generated during the normal operation of the ship.
   - The disposal into the sea of the following garbage shall be made as far as practicable from the nearest land is less than:
     1. 25 NM for dunnage, lining and packing material which float
     2. 12 NM for food wastes and all other garbage including paper products, rags, glass, metal, bottles, crockery and similar refuse.
     3. If passed through a cominuter or grinder, garbage in this category may be disposed into the sea not less than 3NM from the nearest land.

10. Action if a person throwing garbage into sea, from where we get its precaution?

STCW

1. Contents of STCW code?
   - I General provision
   - II master and deck department
   - III Engine Department
   - IV Radio Communication and radio personnel
   - V Special training requirements for personnel on certain types of ships
   - VI Emergency, occupational safety, medical care and survival function
   - VII Alternative certification
   - VIII Watch keeping

WATCHKEEPING

1. You are jointing as a new 3 rd officer what will you do?
   - Report to the master.
   - Fill ISM Bridge familiarization check list and check the Manuals of bridge equipment.
   - Check LSA and FFA over due time with in 4 weeks in list, so I would make requisition for appliances.
   - Report to C/O and take a look for winches, anchor, cranes and carry out visual inspection of LSA and FFA

- Check mooring fore and aft because in case of cast off at station I know about the mooring ropes which are used
- Check cargo operation ISM checklist.

2. Joining as 2nd Mate on ISM compiled ship how familiarizes your self to ship safety equipment, Navigational equipments?
    - Cargo ship safety equipment certificate ,Record of equipment for the cargo ship safety equipment certificate (FORM E)
    - Cargo ship safety radio certificate , Record of equipment for the cargo ship safety radio certificate (FORM R)
    - ISM Bridge familiarization check list and Manuals of bridge equipment
    - Check the blind sector of radar.

3. How to test Bridge gear system?
    - Synchronize bridge clocks with chronometer and correct engine room clocks
    - Check binoculars, azimuth mirrors, pen, pencils, rubbers, dividers, chart compass, parallel ruler etc available.
    - Arrange voyage charts in sequence
    - Make log book and bridge movement book available
    - Confirm GPS waypoints already entered and ready for use
    - Test 3 cm Radar and 10 cm Radar performance, operational and satisfactory. Test ARPA operational and satisfactory
    - Test walkie talkies with fully charged batteries
    - Check echo sounder, working o.k. and recording paper available
    - Check navigational ,alternative navigational ,Christmas tree and anchor lights on Bridge panel by buzzer test
    - Test bridge communication equipment, internal and external
    - Test bridge engine room telegraph
    - Align gyro repeaters (1-Bridge,2-Wings,1-Steering Flat) , Gyro stabilized radar(3cm ,10cm), GPS, AIS, ECDIS with master gyro and check compass error whenever possible
    - Check magnetic compass and compare with the gyro compass
    - Check both steering motors online and working
    - Test steering gear and confirm the timing. Port to stbd and stbd to port in 28 second.
    - Check telegraph time recorder time, course alignment/working o.k. and enough paper available
    - Check and test Aldis lamp from main and battery powers
    - Test VHF equipment and select operational channels
    - Test whistle passage plan for departure already been prepared and available.
    - Have wheelhouse and wings cleaned and glass cleared

- Make required Nautical publications available
- Confirm propeller, Rudder etc clear of all obstructions and post a watchman
- Test main engine
- Check deck power available and satisfactory
- Make sure that all information required by port authorities or pilot station is available
- Fill-up pilot card and keep it ready
- Contact pilot /Port authorities and exchange required information
- Confirm pilot boarding time and arrival way.
- If pilot coming by ladder, have it rigged and tested by responsible officer.
- Have lifebuoy with light and heaving line available at pilot ladder.
- Give sufficient notice to crew/additional staff for readiness
- Give appropriate notice to duty engineer for manoeuvring
- Tea, coffee, entertainment must be ready for pilot and etc.

4. You are entering fog what you will do?
    - Sound fog signal
    - Reduce safe speed
    - Place extra look out and in congested waters change auto to manual steering.
    - Exhibit navigational lights
    - Set watch on the radar.
    - Have engine ready for immediate manoeuvre.
    - Inform Master

5. How will you take over watch as officer of Watch on bridge in night?
    - Arrive 15 minute before watch on bridge
    - Check position and present course of ship on chart
    - Check course in 4 hours and alteration during watch on chart
    - Check dangers are marked, navigational and metrological warning are plotted on chart
    - Check barometric pressure and barometric tendency for last 3 hours.
    - Check found gyro and magnetic compass error
    - Read master standing orders and sign
    - Check GMDSS walky talky are placed in charger ,watch is maintained on VHF CH # 13, 16 and DSC channel # 70
    - Check AIS, radar, Aldis lamp are working fine.
    - Compare GPS with DGPS.
    - Check steering motor is running
    - Check navigational lights from inside panel and outside.

- Check funnel spark, compass repeater, ship side for finding any oil sheen in water, wind ,swell
- Check watch keeper is in sense.
- Fill ISM check list for handing over and taking over during change of watch.

DURING WATCH

- Maintain proper look out by sight and hearing
- Find out gyro error
- Take fire rounds

6. What precautions you take to keep a navigational watch?
   Rule 5 Look out

7. You are 3rd officer and vessel is going for Dry dock what precaution will you do?
   - Ship should have no list and trim by stern.
   - Repair list regarding LSA and FFA should ready.
   - Ensure ship docking plan has arrived to dock master
   - Hatches and beams stowed in position.
   - Derricks and cranes stowed in position.
   - Adequate fendering required.
   - FFA and hoses should ready.
   - Take sounding of tanks
   - Inform head of all departments.
   - Inform C/E to take shore power facilities.
   - Required notices posted.
   - For Security lock up spaces.
   - Rig fenders

8. How to take over cargo watch?
   <u>TAKING OVER THE WATCH</u>

1. The officer of the watch should not hand over the watch to the relieving officer if he has any reason to believe that the latter is obviously not capable of carrying out his duties efficiently, in which case he should notify the master accordingly.
2. The relieving officer should be informed of the following by the officer being relieved:
   - The depth of water at the berth, ship's draught, the level and time of high and low water; fastening of the moorings, arrangement of anchors and the slip of the chain, and other features of mooring important for the safety of the ship; state of main engines and availability for emergency use;
   - All work to be performed on board the ship; the nature, amount and disposition of cargo loaded or remaining, or any residue on board after unloading the ship;
   - The level of water in bilges and ballast tanks;

- The signals or lights being exhibited;
- The number of crew members required to be on board and the presence of any other persons on board;
- The state of fire-fighting appliances;
- Any special port regulations;
- The master's standing and special order;
- The line of communication that are available between the ship and the dock stall or port authorities in the event of an emergency arising or assistance being required;
- Other circumstances of importance to the safety of the ship and protection of the environment from pollution.

3. The relieving officer should satisfy himself that:

- Fastening of moorings or anchor chain are adequate;
- The appropriate signals or lights are properly hoisted and exhibited;
- Safety measures and fire protection regulations are being maintained;
- He is aware of the nature of any hazardous or dangerous cargo being loaded or discharged and the appropriate action in the event of spillage or fire;
- No external conditions or circumstances imperil the ship and that his own ship does imperil others

4. If, at the moment of handing over the watch, an important operation is being performed it should be concluded by the officer being relieved, except when ordered otherwise by the master.

CSWPMS

1. Precaution when shifting "Lead Acid Battery"? Where to obtain this information?

We find information in code of safe working practices for merchant seaman

PRECAUTION WHILE HANDLING LEAD ACID BATTERIES

- Protective gears goggles, rubber gloves and protection apron must be worn
- Clean contact place of body with fresh water to neutralize acid on skin or clothes
- Eyewash bottle should be in compartment
- Carely handles terminals of batteries to avoid injury

SEAMANSHIP

CARGO WORK

1. Define Gross and Net Tonnage in Detail, their purpose and unit?

IMO TONNAGE MEASUREMENT

GROSS TONNAGE:

- The moulded volume of all enclosed spaces of the entire ship in cubic meter multiplied by a log factor ($0.2 + 0.02 \log_{10} V$) gives Gross Tonnage.
- It is used in Ship Safety Regulations.

NET TONNAGE:

- The volume of cargo spaces, the numbers of passenger carried the moulded depth of ship, and her summer draught put in a formula which gives value more than 30% of gross tonnage.
- It used as an indication of the ship's earning capacity and for accessing dues and charges in port.

UNIT:
There is no any unit of gross and net tonnage.

2. What is length over all, Forward Perpendicular, Aft Perpendicular and Length between perpendiculars, Light ship, Load Displacement and Dead weight?

LENGTH OVER ALL (L.O.A) Maximum length of the vessel measured from the extreme forward point of the vessel to the extreme after point.
FORWARD PERPENDICULAR A perpendicular drawn to the point on the summer water line where it intersects the stem part of vessel.
AFT PERPENDICULAR A perpendicular drawn to the point on the summer water line where it intersects the rudder post. If rudder post is not fitted, then it is drawn from the centre of the rudder stock.
LENGTH BETWEEN PERPENDICULARS The distance of fore and aft line on summer water line where it intersect stem part and rudder post. If rudder post is not fitted, then it is drawn from the centre of the rudder stock.
LIGHT SHIP The weight in tones of the completed vessel with boilers, if any filled to working level with lubricating oil and cooling water ,but without cargo ,bunker, stores, dunnage etc.
LOAD DISPLACEMENT
The weight of vessel all it contain at her loaded condition.
The weight of water ship displaces at her load draught
DEAD WEIGHT The total weight of cargo stores bunkers etc. when the vessel is at her loaded draught.
Dead Weight = Load Displacement – Light Displacement

3. What are Bale Capacity and Grain Capacity, Stowage Factor and Density?

BALE CAPACITY
Internal volume measured to the inside edges of the Spar ceiling (Cargo Battens), beams, tank top ceiling, and bulkhead stiffeners
GRAIN CAPACITY
Total internal volume of the compartment from shell plating either side and from tank top to underdeck with an allowance of beams and frames.

STOWAGE FACTOR The volume occupied by unit weight.

- MEASUREMENT CARGO
  Cargo having stowage factor > 1.2 m^3 / tones
  Freight is paid on volume occupied.

- DEADWEIGHT CARGO
  Cargo having stowage factor < 1.2 m^3 / tones
  Freight is paid on actual weight

DENSITY The weight occupied by unit volume

4. Which cargo holds have greater Stowage Factor Cargo Hold No 1 or Hold No 3?
Stowage factor of hold = Stowage factor of cargo + Broken stowage

Broken stowage of hold no1 is more than hold no 3 there fore stowage factor of cargo hold no 1 is more than hold no 3.

5. One room 100 m^3, 30 tonnes cotton to load how find stowage factor?
S.F = 3.33 m^3 / tonnes

6. 4 m^3 boxes and 2 m^3 boxes .If loading, which has more broken stowage?
2 m^3 boxes

7. How to minimize the broken stowage of bagged grain cargo?
   - Stowed on double dunnage
   - The first layer should be stowed athwartship on vessels equipped with side bilge system
   - When stowing, bag on bag stow is good ventilation, whereas bag on half bag is poor ventilation but good for economical use of space.

8. What are centre of floatation, TPC (Is it constant), stable equilibrium, neutral equilibrium, unstable equilibrium?

CENTRE OF FLOATATION The point in ship's length about which the vessel will trim by head/by the stern.
TONNES PER CENTIMETER The mass which must be loaded or discharged to change a ship's mean draft in salt water by 1 cm.

$$TPC = \frac{1.025A}{100}$$

STABLE EQUILIBIRIUM When the body is inclined from its initial position and come back to its original position
NEUTRAL EQUILIBIRIUM When the body is inclined from its initial position don't come back to its original position and acquire another position for oscillation.
UNSTABLE EQUILIBIRIUM When the body is inclined from its initial position and heel over still further.

9. Details of Chain Register?

Certificates of test, annealing and all reports of inspection and examinations of gears are to be kept in onboard register before they use. The register is designed for 8 year services. When new one is put in use the old one should be preserved for at least 4 years.

Part1 4 yearly examinations, Annual inspections

Part2 Annual through examinations of cranes, winches and hoists and gear accessory gear, other than derricks.

Part3 Annual through examination of gear exempted from annealing

Part4 Recommended minimum factor of safety by parts, SWL and construction

10. Where are the cargo plans located in ship?

- Cargo Office
- Bridge
- Master Cabin
- Fire wallet

11. On container ship GM is small water barge came what you will do?

TANKER WORK

1. What is the purpose of Slop tank, Manifold?

   SLOP TANK:

   - Small tanks built at the after end of cargo tanks to receive the residue from cargo tanks as a result of tank washing operations.
   - Minimum capacity of slop tanks = 3% of total cargo carrying capacity
   - They are served by same piping system as the cargo tanks, these tanks can intend to carry cargo
   - Heating coils are fitted in them to separate oil from water

   MANIFOLD: The points usually near midship on either side of vessel where ships pipe lines connected to shore pipelines

2. Name some of hydrocarbon gasses what are its main hazard

   Propane, Butane, Pentane

3. What are the hydrocarbon gasses and from where they will come?

4. Is Hydrocarbon heavier or lighter than air?

   Hydrocarbon is heavier than air

5. Differentiate between

   - Hydrocarbon gasses and toxic liquids
   - Hydrocarbon gasses and explosive gasses
   - Oxygen analyzer, Tank scope, Explosimeter, Dragger tubes and How to use them?

   Oxygen Analyzer: Use for measuring oxygen contents and may be either fixed type, portable or pocket size

   Tankscope: Use for measuring hydrocarbon gasses (0 – 20% by volume) in inerted or over rich atmosphere.

   Catalytic hot filament combustible gas indicator / Explosimeter: Use for measuring concentration of hydrocarbon gasses below LFL (i.e. below 1% by volume) in non-inerted or to lean atmosphere.

   Dragger tubes: Use for measuring toxic gasses.

6. What are Flash Point, Lower Flammable Limit, Upper Flammable Limit, and Flammable range?

   Flash point The lowest temperature at which a liquid gives off sufficient gas to form a flammable gas mixture near the surface of liquid which is ready to catch fire.

Flammable range / Explosive Range The range of hydrocarbon gas concentrations in air between the lower and upper flammable limits. Mixtures within this range are capable of being ignited and of burning.

Lower Flammable Limit (LFL) / Lower Explosive Limit (LEL) The concentration of a hydrocarbon gas in air below which there is insufficient hydrocarbon to support and propagate combustion

Upper Flammable Limit (UFL) / Upper Explosive Limit (UEL) The concentration of a hydrocarbon gas in air above which there is insufficient oxygen to support and propagate combustion

7. How inert gas system works onboard ship?
    - Open and secure the scrubber and water seal overboard discharge valves.
    - Start the water supply systems to the scrubber and deck seal at least 15 minutes before commencing the operation
    - Ensure that the flue gas is of a suitable quantity
    - Open the flue gas isolating valves
    - Open the blower suction and delivery valves
    - Start the blowers
    - Ensure that the gas regulating valve is open and open the deck main isolating valve.
    - Open the mast riser to allow inert gas to vent to the atmosphere in case it is of poor quality
    - Check all monitors and when satisfied open the branch line valves to cargo tanks and close the mast riser valve.

8. How to gas free the tank?

    G*as freeing*: Replacement of hydrocarbon vapours and or the inert gas by air.

    Tank will gas free by

    1. *Purging:* Introduction of inert gas into tank already in the inert condition with the object of reducing the existing hydrocarbon gas content to a level below which combustion can't be supported if air is subsequently introduced into the tank.

    The purging can be done by one of the following

    - *Dilution* Incoming Inert gas mixes with the original tank atmosphere to form a homogeneous mixture similar to the incoming gas

      The inert gas pressure should kept high

      Method use to inert only one tank at a time
    - *Displacement* Inert gas is slightly lighter than hydrocarbon gas, while inert gas enters at the top of the tank, the heavier hydrocarbon gas escapes from the bottom through suitable piping.

      The inert gas pressure should kept low

      Method use to inert several tanks at a time

    2. *Introduction of air*: Using portable fans or a fixed system (i.e. Inert gas system may also be used by isolating the scrubber tower and connecting the fresh air intake to gas blowers. This method is faster than

other).

9. What checks taken before discharging/loading commencement on tankers regarding static electricity?
   Grounding of antenna

SOLID BULK CARGOES

1. Define angle of repose?
   ANGLE OF REPOSE The angle made between a horizontal plane and the cone slop of a cargo.

2. What are the bulk loading preparation and precautions?
   BULK LOADING PREPARATION
   - Holds and tween decks thoroughly cleaned for cargo to be loaded
   - All dunnage removed from cargo spaces or stowed one end and covered. Remove spar ceiling if cargo necessities removal i.e. coal
   - Clean bilges or bilge wells, paying particular attention to strum boxes and test suctions, sweeten, tween deck scuppers should be covered with burlap and cement over
   - Cement chocks at top of bilges examined for good condition and repaired, as required.
   - Limber boards and bilges well should be covered with separation cloths or old tarpaulins to prevent sewage into bilges or well.
   - All hatch beams in position
   - Rig shifting boards, if required
   - Test fire smothering system
   - Blank off bottom ventilator grills
   - Hold hatch survey.

   BULK LOADING PRECAUTIONS
   - The general fore and aft distribution by weight should not appreciably differ from that found satisfactory for general cargoes
   - The maximum no. of tonnes of cargo loaded in any lower hold should not exceed that specified in the code. This amount varies directly with the ship's maximum moulded breath
   - If cargo is untrimmed or is only partially trimmed the height of the cargo above the tanktop must not exceed a certain amount, which is specified in the code and which varies directly as the stowage factor of the cargo and the summer load draft.
   - Precautions should be taken to minimise the extent to which dust may come into contact with the moving parts of deck machinery
   - Ventilator system should be shutdown or screened during loading or discharge
   - Bilges or hold wells should be sounded after the completion of loading
   - Special care is necessary when loading high density cargoes which are normally loaded at a fast rate.

Cargo space fitting need to be protected against damage. Soundings must be taken regularly to keep bilges dry and monitor cargo liquidation.

- Initial loading to be slow and if practicable dropped near the tank top and not releases from heights.

EDH (Efficient Deck Hand)

GENERAL

1. What is the purpose of course?

2. What did you cover in the EDH course at college?

   SYLLABUS FOR EXAMINATION OF EDH CERTIFICATE

   GENERAL

   - The meaning of common nautical term, Shipboard terms and definitions
   - The name and function of various parts and equipment of a ship

   STEERING

   - Understanding helm orders, use of magnetic and gyro compasses
   - Ability to steer a ship on a given course, on a transit or on an instruction from master or pilot
   - Change over from autopilot to hand steering and vice versa

   ANCHOR WORK

   - Marking of the anchor cable
   - The use and operation of a windlass in anchor work and in warping, safe handling of mooring winch self-tensioning winches. Precaution to be taken in securing the anchors for sea, back spring, slip wire, rope stoppers and chain stopper

   ROPES

   - Use and care of ropes and wires
   - Knots, hitches and bends in common use
   - To whip a rope end and seizing on rope and wire
   - Splicing of ropes
   - To put a stopper on a rope or wire hawser and derrick lift.
   - Slinging and over side stage, rigging a bosun's chair, pilot ladder and hoist

   BLOCKS

   - Use of different types of blocks and shackles, bottle screws, bull dog grips, thimbles, monkey plates
   - General maintenance with particular reference to wires, blocks and shackles of cargo gear

   HATCH WORK

   - Opening and closing of hatches, rigging up derrick, general precautions to be taken and during the operation of a winch used for working cargo or for warping
   - The safe handling of mechanical hatch covers
   - Securing in anticipation of rough sea.

EMERGENCIES

- Knowledge of emergency duties and alarm signals
- Use of appropriate internal communication and alarm systems
- The use of life saving and fire fighting appliances
- Knowledge of pyro technique distress signal, satellite EPIRB and SART
- Avoidance of false distress alerts and action to be taken in event of accidental activation

DUTIES

- Ability to maintain an efficient look out
- Precaution to be taken while working over side or at a height and while entering a void space
- Basic environmental protection procedures

COMMUNICATION

- Identification of commonly used signal letter flags

3. Type of last ship sailed, company, GRT, NRT, dead weight? How many tanks on your last ship? How many ballast tanks on your ship?
   - Single Hull ,Double bottom product carrier (Tanker)
   - B+H Equimar (Pvt) Ltd
   - GRT = 23,709
   - NRT = 12,954
   - DWt = 40,564
   - 9 Centre Tanks, 1 – 3 – 5 Wing Tanks, Slop Wing Tanks
   - Fore Peak Tank, 2 – 4 Wing Tanks, Aft Peak Tank

4. How often tanks are sounded? How to take ballast tank sounding?

5. What was your routine on your last ship?

   <u>AT SEA / ANCHOR</u>

   0400-0800: Bridge Watch

   0800-1500: Deck Work with pump man and bosun

   1600-2000: Bridge Watch

   <u>AT PILOTAGE</u>

   All time on bridge with captain

   <u>AT STATIONS</u>

   Forward station

   <u>AT PORT</u>

   0600-1200: Cargo Watch

   1800-2400: Cargo Watch

6. What is air pipe, break water, duct keel, collision bulkhead, companion way, duct keel, embarkation deck, engledfield clip, strum box (rose box)? Where they use?

AIR PIPE Goose necked ventilators to the double bottom.
BREAK WATER A vertical plate on fore deck, used to divert water coming aboard in heavy weather.
COLLISION BULKHEAD The extra strength full bulkhead in the forward portion of vessel to withstand damage after impact from collision.
COMPANION WAY Fixed staircase with handrails or banisters.
DUCT KEEL Void space along the centre line of cargo holds formed by 2 centre girder between collision bulkhead & the forward engine room bulkhead to provide convenient tunnel for various piping system from tanks.
EMBARKATION DECK

EMBARKATION LADDER is the ladder provided at survival craft embarkation station to permit safe access to survival craft after launching.
ENGLEDFIELD CLIP

- Secure logline to the governor in patent log machine.
- Secure Flag with Halyard.

STRUM BOX / ROSE BOX A perforated metal box on the end of suction pipe, placed there to prevent dirt entering the pump.

7. What is differentiate between
    - Main deck and weather deck
    - Cofferdam and void spaces?
    - Tank top ceiling and spar ceiling
    - Sounding pipe and Cowl vents
    - Weather tight doors and water tight doors? Have you seen watertight doors onboard? Where will you find these doors?
    - Double bottom tanks and deep tanks also used for?
    - Capstan and winch

MAIN DECK	WEATHER DECK
The deck of the ship up to which all water tight bulkhead reach	It is a deck, which is completely exposed to the weather from above and from at least two sides.
COFFERDAM	VOID SPACES
Vacant space left intentionally between two water tight bulkheads, being the width of the ship placed between engine room and oil tanks as a fire precaution or between oil and water tanks to prevent pollution	Vacant space left unintentionally during construction of ship.
TANKTOP CEILING	SPARCEILING / CARGO BATTENS
A wooden sheathing to protect the tank top of the double bottom. It is at the bottom of hold	Horizontal or vertical planks fixed to the inboard side of the frames, to protect cargo.

SOUNDING PIPE	COWL AIR VENTS
A pipe from weather deck to down bilges or double bottom tank .we use sounding rod to ascertain the amount of water in the compartment	A pipe from weather deck to tank top use for ventilation.
WEATHER TIGHT DOORS	**WATER TIGHT DOORS**
• They situated above water line • They are Weather proof from only outer side • They are less stronger	• They are tested under certain pressure for their integrity • They are Water tight from both sides • They are more Stronger
DOUBLE BOTTOM TANKS	**DEEP TANKS**
Space between bottom of the ship and the tank top .used for carriage of ballast, fresh water and oil bunkers. Subdivided fore and aft by the keelson and by a number of transverse bulkheads.	A ballast tank the width of the ship with a centre fore and aft bulkhead, placed in either the tween-deck or the lower hold. Used for ballast or edible oils and in some cases provided with a large watertight lid enabling the space to be used for dry cargo.
CAPSTAN	**WINCHES**
Vertical barrel used for hauling mooring ropes.	Machine having a horizontal barrel operated by either hand or power, to which a rope may be made fast and wound around the barrel. The machine will, by rotating the barrel, cause the rope to haul or hoist an object.

STEERING

1. Where is the position of magnetic and Master Gyro compasses on ship?

Magnetic compass bowl is mounted in gimbals in a binnacle and sited on ship's fore and aft centre line above wheel house

Mater gyro compass placed on the bridge

2. Where is the acknowledgement of gyro failure?

3. How you will change steering from manual to auto?
   - Follow the manufacturer instructions
   - Check ISM checklist regarding manual to auto
   - Steady the course
   - Rudder Midship
   - Put pointer on required course
   - Look for danger and ships all around all must clear
   - Switch manual to auto.

4. How quartermaster hand over to his reliever?

5. You're heading 330° Master orders you to steer 030° where will you alter course?

STBD side

6. Differentiate between

- Stbd 20° and 20° to Stbd
- Ease to 5° and stbd 5°
- True North and Magnetic North
- Compass Error and Gyro Error
- Set and Leeway

STBD 20°	20° to STBD
Change <u>rudder angle</u> from 00° to 20° to stbd side	Change <u>course</u> from present course to 20° towards stbd side
STBD 5°	EASE TO 5°
Change <u>rudder angle</u> from 00° to 05° to stbd side	Turn the wheel toward midships but retain 5° of stbd helm as shown by rudder indicator.
TRUE NORTH	MAGNETIC NORTH
The direction from any position on the earth's surface to the geographical pole	The direction taken up by the longitudinal axis of a compass when under the influence of the earth's normal force
VARITION	DEVIATION
It is the angle contained between the true and magnetic meridian	It is the angle contained between the magnetic meridian and the compass needle
COMPASS ERROR	GYRO ERROR
It is the angle contained between the true meridian and the magnetic compass north	It is the angle contained between the true meridian and the gyro compass north
SET	LEEWAY
The direction toward which the current and / or tidal stream flows	The effect of wind in moving a vessel bodily to leeward

ROPES

1. How many strand in rope and wire?

   Fibre Rope Strands = 3 or 4

   Wire Rope Strands = 6

2. How to take size (diameter) and circumference of rope or wire and convert mm into inches?
   <u>MEASUREMENT:</u>

   - Take apiece of cloth, thread or paper make two round turn and mark a line which cut these two turn horizontally take a scale and measure it gives circumference

     Circumference / 3 = diameter

   - By vernier calliper we measure diameter

   <u>CONVERSION:</u>
   Diameter of a rope (in millimetres) = circumference of rope (in inches) x 8

3. 10mm diameter of rope, what is its circumference?
   Circumference = 3 x 10 = 30mm

4. 28mm diameter, find out circumference in inches?
   Circumference = 28/8 = 3.5 inches

5. How to take the size of wire rope by vernier calliper?
   By measuring the diameter of circle enclosing all strands (i.e. only 1 strand should touch to the jaw of calliper)

6. What types of mooring ropes you have on your ship?

Quantity (Pieces)	Name	Length (m)	Diameter (mm)
2	Kevlar	150	38
2	Spectra	220	40
10	Polypropylene	220	89
5	Amsteel Blue	300	28

7. In forward station if passing nylon ropes what precaution will be taken?
8. Where manila ropes are used?
9. How to check manila rope?

10. What is the Breaking Stress of fibre rope and wire rope?
    D = diameter in mm , Breaking stress in tonnes

    FIBRE ROPE
    Manila = $\frac{2D^2}{300}$, Polypropylene & Polythene = $\frac{3D^2}{300}$, Terylene = $\frac{4D}{300}$, Nylon = $\frac{5D2}{300}$

    WIRE ROPE
    Strands x Wires/strand
    6 x12 = $\frac{15\ D^2}{500}$, 6 x 24 = $\frac{20\ D^2}{500}$, 6 x 37 = $\frac{21\ D^2}{500}$

    STUD LINK CHAIN
    Grade 1 = $\frac{20\ D^2}{500}$ Grade 2 = $\frac{30\ D^2}{500}$ Grade 3 = $\frac{43\ D^2}{500}$

11. What is gantline why so called?
    A fibre rope used aloft to lower a man in bosun's chair or over side with a stage.

12. Types and uses on board of knots, bends and hitches?
    KNOT

- Overhand knot:
- Figure of 8 knot:
- Reef knot:

BENDS

- Sheet bend

  Single:

  Double:
- Carrick bend

  Single:

  Double:
- Fisherman's bend

HITCHES

- Timber hitch:
- Clove hitch:
- Cow hitch:
- Rolling hitch:
- Half hitch:
- Marlin spike hitch:
- Midshipman's hitch
- Black wall hitch

  Single:

  Double:
- Bowline
- Bowline on the bight

13. Make an eye without splicing?

    Bow line

14. Can you make Bosun chair and stage?

15. Types and uses of splicing?

- Back splice:

  To provide grip to pilot while embarkation and disembarkation by pilot ladder with man rope
- Cut splice:
- Eye splice:

  Rope:

  Wire:

- Long splice:
- Short splice:

16. Differentiate between
    - Cow and Clove hitch
    - Marlin and Twine
    - Worming, Parcelling, Serving and Splicing
    - Whipping and Seizing
    - American and Sail maker
    - Short splice and Long splice
    - Hard eye and Soft eye

Worm and Parcel with the lay

Turn and Serve the other way.

COW HITCH	CLOVE HITCH
MARLIN	TWINE
WHIPPING	SEIZING
The binding round the bare end of a rope to prevent the strands from unlaying.	Fasten two ropes, or two parts of the same rope, securely together, to prevent them moving in relation to each other
AMERICAN	SAIL MAKER
SHORT SPLICE	LONG SPLICE
HARD EYE	SOFT EYE

17. How to uncoil new end of rope?

FIBRE ROPE

Diameter = 48mm: Take the outside end of the rope. If a rope is right hand lay turn counter clock wise in right hand or if left hand lay turn clock wise in left hand otherwise lay it flat on its side

Diameter ≥ 48mm: Coil should be placed on a slung turntable which can revolved easily and uncoil in the opposite way in which it was made up.

WIRE ROPE

- 1 man will flake out the wire down the deck
- 1 man ensure that turntable rotates steadily

18. Types of wire rope? What types did you have on your last ship?
    - Non-Flexible Steel Wire Rope
    - Flexible Steel wire rope
    - Extra Flexible Steel Wire Rope
    - Super Extra Flexible Steel Wire Rope

19. Differentiate between
- Hard and flexible wire and where they use?
- Stays and runner wire

HARD WIRE	FLEXIBLE WIRE
STAYS	RUNNER WIRE
Strong wire rope that leads forward from a mast and helps to support the mast. Strong wire ropes that leading any direction and help support a funnel, Samson post or other object.	Wire rope used on derrick for working cargo as a whip or in purchase.

20. Precaution while making new
    - Pilot Ladder
    - Stage / Bosun Chair

21. How to check rope and wire rope?

    FIBRE ROPE
    - Twist the rope, if powder comes out then don't use it.
    - There should not any Knots in rope.
    - There should not be any bends in rope

    WIRE ROPE

    Wire rope must be condemned if the total visible number of broken wires (in any length of eight diameters) exceeds 10% of the total number of wires.

22. How to rig
    - Three fold purchase
    - Bosun chair
    - Union purchase derricks

23. Precaution while rigging of
    - Pilot ladder
    - Stage
    - Bosun Chair

Over side?

Fill ISM checklist, 1 man standby, Communication, Lighting arrangement,

PILOT LADDER

- Ladder should be rigged clear of ship's discharge
- Steps are to be horizontal and against ship sides
- Lower end is to be at height above the water to allow ease of access to and from the attendant craft.
- Ladder must not be crushed by pilot launch.
- Pilot must be supervised by a responsible officer of the ship.
- Bridge to be kept informed as to how embarkation/disembarkation of pilot is proceeding. Use walk talky set
- Stanchions and a bulwark ladder to be rigged on bulwark.

BOSUN CHAIR it is used for working aloft

- Close inspection should be made of the chair itself and the gantline before the chair is used.
- The bridle to the chair should be inspected, particularly the internal lay and its condition
- A safety line with safety harness must also be worn when operating from bosun's chair
- Always secure the gantline to the chair with a double sheet bend.
- Always the chair should be hoisted manually
- Any tools, paint pots etc should be secured by lanyard. any loose article should be removed to prevent falling when aloft.
- When riding a stay, make sure the bolt of the bow shackle passes through Becket of the bridle. This bolt should be moused.
- Before going to work on funnel, aerial, radar scanners etc the appropriate authority (engine room, radio officer, or bridge) should be informed respectively.

STAGE it is used for the painting over side.

- Check that the stage is clean and free from grease, that the wood is not rotten
- Check that the gantlines to be used are clean and new
- The stage should test to four times the intended load.
- Never rig a stage over a dry dock, quay, barge or lighter alongside. Use stage only when there is water beneath.
- Lizard must be in good condition and well secured

- The gantlines should be of adequate length, and rigged clearly of sharp edges
- A correct stage hitch, together with lowering turns, must be applied.
- Safety lines and harness for each man should be secured to separate point and these must be tended by a stand by man on deck.
- A side ladder, together with a life buoy should be on site.
- All appliances should be on lanyards and gantlines extended down to the water.

24. How ladder is checked on joining a ship

GANGWAY It is across the ship side

- Gangway not to be at an inclination of more than 30 ^{o} to the horizontal.
- Stanchions, rails, intermediate guides (fencing), lifelines to be properly rigged and free of damage.
- Safety net free of damage and properly rigged.
- Bottom platform horizontal to jetty.
- Gangway area properly illuminated.
- Lifebuoy with s.i. light and line, heaving line with rescue quoit available at access area.
- Gangway free of any obstruction or slippery substance.
- Gangway wires (free of damage) and all rollers moving freely.
- ``No Smoking`` and ``No Unauthorized Persons`` signs displayed.
- Fire wallet available at gangway.
- Gangway not to be unattended at any times.

ACCOMODATION LADDER It is along the ship side

- Accommodation ladder not to be at an angle of inclination of more than 55 ^{o} to the horizontal.
- If freeboard is more than 9m pilot ladder must use.
- Accommodation ladder angle not more than 55°.

25. How many types of stopper and how to use?

STOPPER: A short length of fibre or chain with an eye in one end in case of a rope, or a small shackle in the case of chain. Used to take the strain of a mooring rope or topping lift, whilst the rope is being moved from the winch to the bitts.

- Common rope stopper:
- West Country stopper:
- Chain stopper:

26. Which type of stopper is best for manila, polypropylene and nylon rope?

27. How to hoist pilot ladder 2m above water line?

- Lower the pilot ladder as it just touches the water line. (In moving ship ladder starts make slope in aft direction)
- Heave up the ladder steps 2m

BLOCK AND PURCHASES

1. How to take size/diameter of block?
   Size of sheave = size of block

2. Types, uses and parts of cargo block?
   TYPES
   SNATCH BLOCK:
   CHAIN BLOCK:

   PARTS

   WOODEN BLOCK

   - Swivel hook fitment
   - Crown or head block
   - Wood shell
   - Swallow
   - Cheek
   - Inspection plate
   - Pin
   - Sheave
   - Arse of block
   - Fixed or swivel Becket

   METAL BLOCK

   - Head fitment
   - Cross head
   - Rope guard
   - Binding
   - sheave
   - Axle
   - Pin
   - Bush
   - Cheek plate
   - Sheave
   - Through bolt
   - Distance plate

3. What information you will get on the derrick block?
   Wood block: Information on inspection Plate

- SWL of block
- Size of rope or wire for use with in block
- Certificate number (block number)
- Date of certificate of testing the block

Metal block: Information stamped on binding

- SWL of block
- Certificate number (block number)
- Name of manufacturer

4. What are the checks before use of serviced block?
   - Examine the nut or collar of the shank, to ensure that it is securely fastened and free from any visible defect. The shank should be checked for distortion and be seen to turn freely by hand. Any clearances should not be excessive. Grease or oil swivel fitment.
   - Examine the side of binding straps for fracture or corrosion. Ensure that the block number and SWL are distinctive
   - Check that there is no distortion or buckling that would allow the wire to jam between the cheeks and sheaves.
   - Examine for cracks in the metal and check that the bush is not slack in the sheave or causing excessive wear on the axle pin. Each sheave should be seen to turn freely by hand. Sheaves worn in the groove could cause excessive ropewear and should be checked whenever a new is to be rove.
   - Check axle pins for wear, and ensure that they do not rotate. They should be securely held in position by a holding nut. If a split pin is passed through, it should be frequently renewed.
   - Regular lubrication of all moving parts must be carried out or the life of the block and the efficiency of the rig will be impaired. Lubricants must be adequate, and any old congealed lubricants should be removed before applying fresh grease or oil.
   - Block may be painted, provided that grease nipples are not covered or moving parts chocked sufficiently to impair their function. Reference marks should be left clear.

5. Differentiate between
   - Purchase and Tackle
   - Mechanical advantage and Velocity ratio
   - rove to advantage and rove to disadvantage

PURCHASE	TACKLE
Two or more block together by mean of which an applied force is increased	Two or more block together in such a way that the force applied to its hauling part can be increased by the number of sheaves in a block.

MECHANICAL ADVANTAGE	VELOCITY RATIO
The amount by which the pull on the hauling part of rope of tackle is multiplied. If we neglect frictional forces then it is equal to the number of parts of fall at the moving block. M.A = Weight / Applied Force	The ratio between the distance moved by the hauling part and that moved by the moving block It is equal to the number of parts of fall at the moving block. V.R = Distance effort moves / Distance load moves
ROVE TO ADVANTAGE	ROVE TO DISADVANTAGE
When the Hauling part comes from moving block then mechanical advantage is greater. Effort or pull is being applied in the same direction as the achieved movement of the load.	When the Hauling part comes from standing block then mechanical advantage is less. Effort or pull is being applied in the opposite direction to the achieved movement of the load.

6. Types uses, mechanical advantage and velocity ratio of tackles?

TYPE	USE	M.A		V.R	
SINGLE WHIP	A single standing block use for hoisting light loads	no		no	
DOUBLE WHIP	The two single sheave blocks use for hoisting		2		1.67
GUN TACKLE	The two single sheave blocks use for hauling a load in a horizontal direction	2.5	1.67	3	2
LUFF TACKLE	The double sheave and single sheave block rove together with a cordage up to 24mm	3.08	2.3	4	3
HANDY BILLY	The luff tackle having cordage not be greater than 16mm	2.5	1.67	3	2
JIGGER	The luff tackle having cordage not be greater than 20mm	2.5	1.67	3	2
DOUBLE LUFF TACKLE / TWO FOLD PURCHASE	The two double sheave blocks use for general purpose			5	4
GYN TACKLE	The treble and double sheave blocks			6	5
THREE FOLD PURCHASE	The two treble sheave block use extensively in heavy lift work for topping lift and lifting purchase	4.37	3.75	7	6

7. Draw a sketch of luff tackle showing it to advantage?

DECK WORK

1. Name the different paint and primer use on board?

AREA	PRIMER COATS	INTERMEDIATE COATS	FINISHING COATS
Bottom Area			
Boot toping area			
Hull area			
Engine room			
Accommodation			
Cargo holds			
Ballast tanks			

2. Which primer is suitable for aluminium?
   Bituminous Paint

3. How will you test your hydraulic windlass?

4. Empty space why termed enclosed (confined) space?
   - Any space that has been closed or unventilated where only one way of entrance and exit of oxygen.
   - Any space that has been closed or unventilated for some time which may be deficient in oxygen due to full of corrosion and pollution.
   - Any space where new paint and cutting or welding has carried out.
   - Any store-room containing harmful materials emits smoke and harmful gases.
   - Any space which may be contaminated by cargo or gases leaking through a bulkhead or pipeline.

5. Bring out chemical from chemical locker; what is the work called and permit need to enter?
   Cold Work
   Permit to enter into enclose space.

6. Precaution to enter into enclose spaces
   - CO_2 room
   - Duct Keel
   - Double Bottom Tank
   - Pump room

ENCLOSE SPACE ENTRY PRECAUTION

Any sort of entry into enclosed space should only be carried out when permission has been obtained by master or chief officer and persons entering are experienced and follow company ISM checklist

1. Adequate ventilation and illumination.
2. Atmosphere tested and found safe.

3. Space secured for entry.
4. S.C.A.B.A. sets available at entry (apparatus tested).
5. Responsible person available at all times at entry point.
6. Communication –person entering, stand by position, bridge.
7. Personnel protective equipment to be used.
8. Where required breathing apparatus to be used.
9. Testing equipment available for regular checks:

- O_2 analyzer- oxygen deficiency
- Tankscope- measures oxygen in inert atmosphere
- Explosimeter- HC vapour and explosive limit
- Dragger tubes- measures oxygen if correct tube fitted.

DECK EQUIPMENT

1. What are the marking on lead line?

Meters	**Fathoms**	**Marks**
1, 11 and 2	-	1 tail of leather
2, 12 and 22	2	2 tail of leather
-	3	3 tail of leather
3, 13 and 23	13	a piece of blue surge
4, 14 and 24	-	Green and white bunting
5, 15 and 25	5 & 15	a piece of white linen
6, 16 and 26	-	Green bunting
7, 17 and 27	7 & 17	Red bunting
8, 18 and 28	-	Blue and white bunting
9, 19 and 29	-	Red and white bunting
10	10	A leather washer
-	20	Piece of cord with 2 knots
20, 30 and 40	-	Leather washer with 2, 3 or 4 leather strips

2. How to measure depth between the marks on hand lead line?
By the mean of measuring tape

3. How many marks and deeps in hand lead line?
MARK – 9
DEEP – 11

4. State the parts of Patent log machine?

- Clock
- Governor
- Log line
- Fish
- Rotor

DERRICK WORK

1. Define SWL, Proof load, breaking stress?

SAFE WORKING LOAD (SWL) Safe stress at which every component of a lifting apparatus work safely

$$S.W.L = \frac{B.S}{6}$$

BREAKING STRESS (B.S) The stress at which a component will fracture

PROOF LOAD

- **Chains, rings, hooks, shackles, swivels** proof load = 2 x S.W.L
- **Single sheave pulley block** proof load = 4 x S.W.L
- **Multiple blocks up to 20 tonnes S.W.L** proof load = 2 x S.W.L
- **Multiple blocks 21- 40 tonnes S.W.L** proof load = S.W.L + 20 tonnes
- **Multiple blocks over 40 tonnes S.W.L** proof load = 1 ½ x S.W.L
- **Pitched chains, their blocks and all permanently attached gear operated by hand** proof load = 1 ½ x S.W.L
- **S.W.L up to 20 tonnes-gear** proof load = S.W.L. + 25%
- **S.W.L 20 to 50 tonnes- gear** proof load = S.W.L. + 5 tonnes
- **S.W.L over 50 tonnes- gear** proof load = S.W.L. + 10%

2. What are the parts of derricks?
   - Samson post
   - Trumbler
   - Topping lift span
   - Spider band
   - Head block
   - Preventer guy
   - Guy Pendants
   - Guys
   - Cargo Runner
   - Cargo hook
   - Derrick boom
   - Guides
   - Goose neck
   - Monkey Face Plate
   - Bull rope
   - Chain Preventer
   - Heel Block
   - Snatch Block

3. What are the marking on derrick?

4. Head block has more SWL or cargo block?

   Head block has more SWL because as cargo block hook lift up cargo from surface weight of cargo

transfer on the head block.

5. How many types of derricks on board? Precaution of handling derricks?
   - Single Swinging Derrick
   - Hallen Derrick
   - Velle Derrick
   - Stulken Derrick
   - Wing-lead Derrick
   - Heavy or Jumbo Derrick

6. Precaution of union purchase, heavy lifts?

   PRECAUTION OF UNION PURCHASE
   - SWL of Union purchase < 1/3rd x SWL (smaller derrick)
   - Operating angle of derrick ≥ 30 and in no case Operating angle of derrick < 15
   - Maximum angle between cargo runner < 120
   - Runner should not rub against the hatch coaming
   - Winch man should experience

   PRECAUTIION OF HEAVY LIFT
   - Ensure that the stability of the vessel is adequate and the maximum heel acceptable. Remove free surfaces where practicable by 'pressing up' or emptying tanks (large GM – small heel)
   - Rig extra mast stays as necessary
   - Carefully check condition of derrick and gear before use. Ensure free rotation of sheaves. Oil and grease as necessary. Ensure SWL of all gear is adequate and that appropriate valid test certificates are in Chain Register. Check free rotation and slewing about gooseneck.
   - Rig fenders as necessary
   - Ensure all moorings are taut and have men standing by to tend as necessary
   - Put winches in double gear
   - Clear area of deck where weight is to be landed of all obstructions and lay heavy dunnage and secure in position
   - Check ship's data to ensure deck is strong enough to support load. If in doubt, shore up from 'tween deck'
   - Clear all area of all but essential personnel.
   - Ensure winch drivers are competent and fully aware of who is to give directions
   - Secure steadying lines to corners of load
   - Remove rails if possible.
   - Cast off any barges alongside
   - Before lift begins inform all relevant personnel, e.g. engineers, cook and stevedores.

- Raise gangway before lift commences
- Use lifting points sling it using dunnage for sharp corners. If possible use long strops to avoid them pulling together.
- Set minimum angle between horizontal and derrick head 30° and tight steam guys before lifting
- When all is ready, take weight slowly then stop and inspect all around before lifting further. If all is in order proceed with caution.

HATCH WORK

1. Define and purpose of Hatch Access, wedge?

HATCH ACCESS: The entrance of the hatch

WEDGE: Triangular shape of wood or metal used to keep hatches closed and watertight.

2. Prepare deep tanks for loading general cargo?

- The compartment should be swept clean, and all traces of the previous cargo removed then Salt and fresh water washing is carried out
- Dry the cargo hold about 2 or 3 days according to climatic condition
- Bilges area and Rose (Strum) box should be cleaned and all 'bilge suctions' seen to be working satisfactorily. Hold drainage system and tween deck scuppers should be clear and free from blockage.
- Check Spar ceiling, Limber board, Tank top ceiling and underdeck ceiling should be in good condition
- Check Guard rails
- Check hold ventilation system
- Fixed fire/smoke detection system should be tested and seen to function correctly
- Inspect Hatch cover watertight ness and its hard rubber packing
- If needed new, clean and dry dunnage should be laid

3. Precaution while opening hydraulic hatches (Macgregor hatches)?

- Release the side securing lugs, ensuring that they are correctly stowed in flush position with the track
- Clear away any hatch top wedges between hatch sections
- Rig the check wire to the lug of the leading hatch section and turn up the bight of the wire on to cleats or bitts
- Rig the bull wire so as to provide a direct pull to the winch from the leading edge of the hatch cover.
- Complete all work on top of hatch covers. Check that the track ways are clear of all obstructions, such as pieces of dunnage etc.
- Turn down the eccentric wheels by use of bar levers, or by using the jacks under the hatch cover sections.

- Check that the locking pins are securely replaced in the eccentric wheels once the wheels have been turned down to the track, in such a manner that they will not slip out when the wheel rotates or when the hatch is in the vertical stowed position.
- Ensure that all personnel are aware that the hatch cover is about to open, and that the stowage bay for the covers is empty and clear to allow correct stowage of the sections.
- Have a man stand by to ease the check wire about the bitts, and, just before hauling on the bull-wire, remove the locking pins at the ends of the leading hatch section.
- Heave away easily on the bull-wire once the locking pins are removed, taking the weight of the leading hatch section.
- Ease out on the check wire as the bull-wire heaves the hatch open
- Once all hatch sections are in the stowed vertical position, the bull-wire should not be removed until the securing chains from a fixed point are in position to hold sections in the stowage bay area.
- Clear away the check wire, coiling it down to one side of the hatch Do not attempt to detach the check wire from the lug of the leading edge of the hatch.

4. Your vessel is trimmed by astern, what precaution you will take in closing hatch No 1

5. Track way of hatches covered with water how will get rid of water?

NAVIGATION

1. How you take the watch from assistance watch keeper?
2. What are the duties of a look out person? How to report O.O.W
3. What do you mean by sharp look out?
4. Look out duties in bad weather and restricted visibility?
5. Bad weather at night, one of navigation light goes out of orders your action?
6. At night both forward mast head lights are fused what is your action?

7. How would you know you are in fog when you are in open sea at night?

- Temperature will fall
- Dampness on face
- Dew on wind screen and any wooden structure outside bridge
- Side lights are more shining because water droplet cause prismatic effect.
- Dim star disappear and low altitude stars will less bright

8. After escort the pilot to the bridge what you do describe in detail?

COMMUNICATIONS

1. Is jack staff, gaff and flag staff on L.O.A?

[Jack staff: A flag pole in the bow

Flag staff: Pole at the stern from which the ensign is flown

Gaff: Fore and aft spar on the after side of the aftermost mast inclined at about 45 from vertical. used to fly the ensign when at sea.]

Yes

2. Tell any code flags mostly use on board?

A I have diver down, keep well clear at slow speed

B I am taking in, or discharging, or carrying dangerous goods

G I require a pilot

H Pilot on board

J I am on fire and have dangerous cargo on board, keep well clear of me.

O Man over board

Q My vessel is healthy and I request free pratique.

EMERGENCIES
GENERAL EMERGENCIES

1. What is general emergency alarm?
   - 7 or more short blasts followed by 1 long blast
   - Continuous ringing of bell until head counts completed.

2. What is contingency Plan?
   It contains action plan and duties of every possible emergency on board. It has 5 teams for handling emergencies
   - Bridge team
   - Engine room team
   - Attack team
   - Backup team
   - First Aid team

3. What is SOPEP?

   SHIPBOARD OIL POLLUTION EMERGENCY PLAN:

   Every non-tanker of 400 (Gross Registered Tonnage) GRT or above and every tanker of 150 GRT and above must have SOPEP on board in the form of a manual.

   ELEMENTS OF SOPEP:
   - Procedures for oil pollution incidents.
   - List of authorities to be notified.
   - Detailed action to be taken by crew to reduce and control oil discharge.
   - Coordinate procedures and shipboard activities with national and local authorities.

4. When you call Master?
   - If Restricted Visibility is encountered or expected
   - Traffic conditions or the movements of other ships are causing concern
   - If difficulties are experienced in maintaining course

- On failure to sight land a navigation mark or obtain soundings by the expected time
- If ,unexpectedly, land or a navigation mark is sighted or a change in sounding occurs
- On breakdown of the engines, propulsion machinery remote control, steering gear or any easy essential navigational equipment, alarm or indicator
- If radio equipment malfunctions
- In heavy weather, if in any doubt about the possibility of weather damage.
- If ship meets any hazard to navigation, such as ice or a derelict
- In any other emergency or in any doubt.

5. Man over board when you are on watch immediate action and completely describe?
    - Release life buoy with light and smoke signal on the side where the crew member has fallen overboard.
    - Take immediate avoiding action so as not to run over the man over board
    - Sound three prolonged blasts of the ships whistle and repeat as necessary
    - Post a look out with binoculars and instructions to maintain a continuous watch on the man overboard
    - Hoist signal flag 'O'
    - Commence a recovery manoeuvre, such as Williamson turn
    - Engage hand steering, if helmsman available
    - Note ships position, wind speed and direction and time
    - Inform master, if not already on the bridge
    - Inform engine room
    - Place engines on stand-by
    - Muster rescue boat's crew
    - Prepare rescue boat for possible launching
    - Distribute portable VHF radios for communication
    - Rig pilot ladder/nets to assist in the recovery
    - Make ship position available to radio room/GMDSS station
    - Broadcast DISTRESS message to ships in the vicinity.

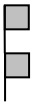
6. What safety precautions to be taken for rough weather?

<u>HEAVY WEATHER PRECAUTIONS</u>

1. Verify vessels position and consider re routing.
2. Update weather report and plot storm movement.
3. Stability- avoid slack tanks and minimise FSE.
4. Warn all departments.
5. Rig lifelines forward and aft.
6. Check cargo lashing.
7. Close all deck ventilation.
8. Anchors to be well secured- spurling pipe cemented, break tight, bow stopper well secured and additional lashing at the hawse pipe.

9. All derricks and cranes secured.
10. Check that accommodation ladder has been well secured.
11. Clear deck of surplus gear.
12. Secure bridge against heavy rolling and pitching.
13. Slacken halyards and remove awnings.
14. Establish heavy weather work routine-reduce manpower on deck.
15. Obtain and update weather reports continuously. Update position.
16. Reduce speed to prevent pounding and engage manual steering in ample time.
17. Revise E.T.A.
18. Make relevant log entries.

7. What are Strom Signals (Mariner hand book)?
INTERNATIONAL SYSTEM OF VISUAL STROM SIGNAL WARNING SIGNALS

Day	*Night*	*Meaning*
		Near gale expected
		Gale storm warning commencing in NW quadrant
		Gale or storm expected commencing in SW quadrant
		Gale or storm expected commencing in NE quadrant
		Gale or storm expected commencing in SE quadrant
		Wind expected to veer
 (Flag may be any suitable colour)		Wind expected to back
		Hurricane expected

8. Use of emergency steering and how to shift from automatic to emergency steering?

Put the steering position to non-follow up from bridge

In case of local operation with manual electric non-follow up switch in steering flat

- Turn the steering selector switch on the steering selector switch on the steering selector switch box in steering engine room to stbd aft or port aft as desired
- According to steering order turn the selected manual electrical non follow-up switch to stbd or port steering
- In case of local operation with manual mechanical in steering engine room
    1. Set the change over switch “off” at the steering stand at the bridge
    2. According to steering order push the mechanical push pin from stbd or port steering at the end of

the solenoid valve

3. Normal maximum rudder angle is 35° to port or stbd
4. Don't exceed 95 RPM when steering to 45° rudder's over 35° because Ship speed on 45° angle less than about 10kts.

9. Course 220 and alter course to 190 show action on emergency wheel?

10. What are the highly sensitive areas?

FIRE

1. What are the basic elements for fire?
    - Oxygen
    - Heat
    - Fuel
    - Chain Reaction

2. How extinguisher stops the fire?
   DESTRUCTION OF FIRE TETRAHED
    - SMOTHERING: This process cuts the supply of **oxygen** to the burning material or reduces the oxygen contents below 8% where it no longer supports combustion. At 15% oxygen in air, flame occurs. this can be carried out by following methods

      Mixing: Introducing *inert gases* or *Co2* to reduce the concentration of oxygen.

      *Separation: P*roducing an obstacle between the burning layer and above air by *Foam* and *dry chemical powder*

      Emulsification: Water droplets are showered on the upper surface of heavy liquid (lubricating oil) on fire which formed layer of oily water mixture which isolates the deeper layer of flammable liquid from oxygen.

      Dilution: Destruction of balance of the flammable liquid and oxygen by high temperature archived by *steam*
    - COOLING: This process lowers the **temperature** of burning material by the mean of water.
    - STARVING: This process removes the not burnt **flammable material** which liable to burn.
    - BREAKING OF CHAIN REACTION: Introducing of inhibitors (halogens) which have unique effect of **interfering and interrupting** the process of combustion **between the molecules of oxygen and flammable vapours of materials**.

3. Types of fire extinguisher?

CLASS OF FIRE	A	B	C	D	E	

TYPE OF FIRE EXTINGUISHER COLOR EXTINGUISHER TYPE	Solid (Wood, paper, plastic) fire	Liquids(oil) fire	Gas fire	Electrical equipment fire	Cooking oils & fats fire	Throw (m)
RED (Water Type)	Y	N	N	N	N	12
PALE CREAM (Chemical Foam Type)	Y	Y	N	N	Y	8
FOAM (AFFF Type)	Y	Y	N	N	N	10
BLUE (Dry chemical powder type)	Y	Y	Y	Y	Y	5
BLACK (Co2 Type)	Y	Y	N	Y	Y	2.5
GREEN (Halon Gas Type)	Y	Y	Y	Y	N	6

4. What precaution you take if there is an electrical fire in master cabin. What extinguisher will be used?

   ACCOMMODATION FIRE AT SEA:

   - Raise alarm. Inform master.
   - Muster all crew- head count. Fire party briefed.
   - Proceed to scene off fire and investigate nature of fire.
   - Shut down all ventilation.
   - Start emergency fire p/p and start boundary cooling at all times from outside accommodation.
   - Isolate electrical circuits.
   - Close all watertight and fire doors.
   - Fire fighters to work in pairs properly equipped .Tackle the electrical fire by using dry chemical powder.

5. You are 3rd officer on watch in Port and no other Officer on board, there is change of shift and between shifts changing time there is

   - Fires in No 2 hold OR
   - Fire in pump room OR
   - Fire in engine room

   What will be your action?

   FIRE

   - Raise the alarm (stop cargo operations, if working)

- Call the local fire brigade and port authority
- Muster all crew check head count and check names of person on shore from port log.
- Remove all non-essential personnel from the vessel.
    - Ensure that no persons are inside place and batten down as soon as practicable, closing off ventilation.
- Assess the situation, by internal inspection if appropriate.
- Start emergency fire pump and start boundary cooling.
- Assemble damage control and fire parties and attempt to restrict and control the fire
- Have ship's personnel at the head of the gangway to act as guides for the local brigade.
- Obtain fire documents, plan etc.(fire wallet)
- Check fire wires, forward and aft.
- Stand by main engines

FIRE IS OUT OF CONTROL

- Evacuate and seal the place
- Check out the amount of CO_2 required to be injected as per Injection Plan
- Open fire cabinet door causing alarm to activate
- Ensure the valve for the place where we don't need CO_2 are closed
- Operate fire handle mechanism to fire the pilot bottles
- Use fixed smothering system (CO_2)

6. A Tanker vessel on fire you have to go and reuse some men explains completely?
    - Rescue vessel should lie to windward of the tanker and fire a rocket when it is safe
    - When risk of ignition exist then distressed tanker should hoist flag B at the masthead, use a red light and in poor visibility sound INTERCO 'GU'= It is not safe to fire a rocket.
    - Rescue vessel may use 'GT1'= watch out for my rocket
    - When firing a rocket across the wind, aim slightly downward before igniting the rocket. The wind will act on the bight of rocket line and deflect the rocket up into the wind.

7. CO_2 room general idea?

GENERAL IDEA

1. Segregated from living accommodation
2. Door must be gas tight
3. Pilot bottle use to activate batteries(set of bottles)
4. Every battery can activate separately

ANCHORING

1. What are the types of anchor onboard?

TYPES OF ANCHOR	HOLDING POWER (H.P.)
Admiralty pattern socked or common anchor	(3 to 4) x weight of anchor
Standard Stockless anchor	(3 to 4) x weight of anchor
Admiralty cast anchor Type AC 14	(7.5 to 12)) x weight of anchor **or** (2 ½ to 3) x [H.P. of Standard Stockless anchor]
Mooring anchor	(6 to 16) x weight of anchor **or** (2 to 4) x [H.P. of Standard Stockless anchor] **High holding power anchor**
Dan forth anchor	14.2 x weight of anchor

2. What is scope of cable, wind rode, Tide Rode, Lee Tide, weather tide, Surge the cable ,Veer the cable, Snub the cable ,walk back, kedging ,cable is nipped ,cat the anchor?

SCOPE OF CABLE = Length of cable from hawse pipe to anchor
Vertical distance from hawse pipe to the sea-bed

WIND RODE: When ship is riding at anchor head to wind.
TIDE RODE: When ship is riding at anchor head to tide.
LEE TIDE: Tidal stream is running in the same direction as wind.
WEATHER TIDE: Tidal stream is flowing in the opposite direction to the wind.
SURGE THE CABLE: To allow the cable or hawser rope to run out under its own weight.
VEER THE CABLE: Pay out cable under power, by walking the gypsy of the windlass.
SNUB THE CABLE: To stop the cable running out by using the break on the windlass.
WALK BACK: Lower the anchor under power
KEDGING: Moving a vessel by means of small anchors and anchor wraps.
CABLE IS NIPPED: Cable goes across the bow .It happened when we do not use weather anchor.
CAT THE ANCHOR: Hanging of an anchor either in hawse pipe (when use panama lead for passing anchor cable for buoy mooring) or fairlead on ship side (when use hawse pipe for passing anchor cable for buoy mooring)

2 Why scope is less in deep water?

Scope is a ratio between length of cable paid from hawse pipe and vertical distance from hawse pipe to the sea-bed. It will decreases if length of the cable paid is same in deep water as in shallow water

3 Is scope is in fraction?

No, scope is always in Natural number

4 Differentiate between

- Kenter lugless joining shackle and D lugged joining shackle/ what are joining shackles and their purpose?
  - Spile pin and rod of same diameter of spile pin
  - Spurling pipe and hawse pipe

KENTER LUGLESS JOINING SHACKLE	'D' LUGGED JOINING SHACKLE
Use to join shackle length of anchor cable. It is much larger and stronger than common link	Use to join the cable to the anchor .The rounded crown part of shackle always face forward toward cable.
SPILE PIN	ROD OF SAME DIAMETER OF SPILE PIN
Tapered pin which holds pin of lugged shackle in place or which goes through all parts of lugless shackle. Spile pin is held in place by means of lead pellet hammered in to cavity at thick end of pin.	
SPURLING PIPE	HAWSE PIPE
The cable passes through these pipes from windlass or cable holder to the cable locker	• Two pipes on the either bow stow the bower anchors • The axis of pipe does not exceed 45 from vertical

5 What are the parts of shackle?

Lugged Joining Shackle

- lugs
- Jaw
- Crown
- Clear
- Bolt

Kenter Lugless Joining Shackle

- 2 halves interlock
- Stud
- Spile Pin
- Lead Pellet

6 What is the name of ½ shackle?

Ganger shackle

7 Why lead is use in joining shackle? How to open joining shackle?

- Lead pellet prevent Shackle's Spile Pin from accidentally falling from shackle
- It can remove easily by hammering its end and if it is jammed easily take out by drift pin.

8 How to find diameter of anchor cable?

The size of chain cable is measured by the diameter of the bar from which the links is made. Take the

calliper and measured the chain from link horizontally and vertically then take mean.

9 Are all links of same size?

LINK	Size of Cable (mm)
Common Link (Intermediate Link)	D
Enlarged Link	1.1D
Open Link (End Link)	1.2D
D Lugged Joining Shackle	1.3D
Kenter Lugless Joining Shackle	1.4D

10 What is Anchor cable marking? If 2 ships lost their anchor at same place and both sailed then after recovering how port authority confirm the anchor of particular ship?

Mark on anchor and cable

Serial Number of the certificate

Certifying Authority

Identification of cable

Kenter Lugless Joining Shackle: To indicate third joining shackle, the third link on each side of the joining shackle is painted white and the stud is bound with seizing wire.

D-Lugged Joining Shackle: Open link on each side of the shackle is ignored when marking the cable. The marking is same as 'Kenter Lugless Joining Shackle'.

11 Explain the construction of devils claw?

12 How will you secure spurling pipe and what is its purpose? What are the extra lashings?

13 How to prepare to let go anchor?

PREPARATIONS WHEN GOING TO ANCHOR:

1. Ask engine room for deck and windlass power.
2. Anchor party standby.
3. Checks to be made-
    - Windlass oil, bottle screw, fair lead, capstan, bitter end and chain locker.
    - All moving parts and gears on the windlass are well greased.
    - Before switching on the windlass power ensure that the anchor breaks are tight and bow stopper is well secured and windlass is not in gear.
    - Take windlass is in gear.
    - Anchor lashings at hawse pipe and **break cement pudding at spurling pipe by taking off the brake and walk the cable back a short distance**.
    - Check over side is clear and anchor sighted.
    - Anchor lights and shapes available.

- When taking in anchor deck water.

1. Switch on windlass. Put windlass in gear, slacken on break and take slight weight on the bow stopper
2. Clear away the bow stopper.
3. Lower away the anchor under power and leave the anchor hanging about 1m above water level.
4. Tighten breaks and disengage windlass from gear.
5. Inform bridge anchor is ready for letting go.

DEEP WATER ANCHORING:

1. Do not let go anchor.
2. The anchor is then walked back all the way to the seabed.
3. As the vessel drops astern the cable will grow. The officer on watch should be aware of the amount of cable being paid out so that too much cable is not paid out till the bitter end.
4. Officer should be aware of the windlass capacity when picking up the anchor- amount of cable paid out plus the weight of the anchor.

Letting go is not prohibited because:

1. Control could be lost due to excessive weight on the cable, thereby resulting in loss of anchor and cable making the vessel unseaworthy.
2. Possibility of serious damage or injury.

14 Master has informed about anchor position, you have to proceed to that position and anchor there?

ANCHOR	RUDDER	ENGINE	REMARKS
Head to wind or tide	Accordingly	Slow ahead	Vessel moves ahead
Anchor stand by	Midship	Stop Engine	Vessel losses her ahead momentum
Walk back anchor	Midship	Slow astern	Vessel stop at anchorage, As propeller wash reaches the ship beam
Let go anchor	Midship	Slow astern	Vessel drift astern
Render anchor cable	Midship	Stop Engine	Vessel losses her astern momentum
Hold anchor cable by their scope	Midship	Stop Engine	Vessel moves toward anchor and riding on her anchor (i.e. Anchor is brought up)

15 How to decide anchor brought up?

Cable tightens then slacks (twice).

- Vessel is stopped, holding the ground and riding her anchor
- When brake is holding cable rising up from the water surface towards the hawsepipe
- Vessel move towards the anchor, causing the cable to make a catenary (Long Stay).

16 How to find out length of anchor cable?

Length of cable (m) = Number of shackles x 27.5 m

Swinging circle (M) = $\frac{\text{L.O.A(m) + Length of cable - UKC}}{1852.3}$

17 Anchor dragging how you know?

- By taking the visual position, vessel come out of turning circle.
- Check vessel gathers sternway.
- By inspecting the disposition of cloth/Flag tie where chain passes over anchor windlass. At dragging the cable will slacken and tighten
- By 'Feeling the cable' (putting the hand on the cable forward of windlass a vibration may felt or we hear vibration of anchor bouncing over sea bottom)
- In poor visibility and soft bottom dropping a lead line onto bottom and noting whether the line tends to lead ahead.
- By ARPA guard ring alarm

SHIP HANDLING

1. What is Slip wire?

It is generally first line to cast off at mooring and last line to let go at unmooring It uses to enable the vessel let herself go, at any time, with out being dependent on the port's linesmen to clear lines from bollards.

2. How you secure ship with anchor cable on single buoy?

- Flake the slip wire (24 mm) on deck to allow free running. Seize the eye of the wire to allow it to pass through the ring of the mooring buoy
- Hang off stbd anchor by good mooring wire and walk back on the windlass as far as the first joining shackle it is best to stopper off the anchor in the hawse pipe and pass cable over the fairlead rather than risk hanging the anchor off outside where it would be difficult to control.
- Break the joining shackle and attach a mooring shackle to the open link on the free end of the cable.
- Bend a manila messenger line (30 mm) to the 3rd studded link of the cable
- Head to tide and approach slow ahead with the buoy slightly on the starboard bow
- Give a touch astern when coming up to the buoy, ship will swing from head, towards the buoy
- When ship hold position lower the slip wire and messenger down to a mooring boat
- Check the man have life jacket who 'jump the buoy'
- The messenger line should be led through the ring of the buoy
- Allow the mooring boat to clear the buoy area then heave
- Make figure of 8 instead of securing eye over bit. It may difficult to let go again.
- When the cable is fast heave in the slack on the windlass so that the weight is taken off the slip wire on board

- Initial contact with and subsequent control of the buoy may also be established with one mooring rope off each bow

3. What is squat? Its maximum effect is forward Part of vessel or aft part? How to reduce effect?
   - The difference between the vertical positions of a vessel moving and stopped.
     When depth > (7 x draught) [considered appreciable]
     When depth < (2 ½ x draught) [Increasing Significantly]
     Squat in open water = $\frac{C_b \times V^2}{100}$, Squat in confined water = $\frac{2 \times C_b \times V^2}{100}$
   - SQUAT BY STERN: If longitudinal centre of buoyancy is aft of centre of floatation
     SQUAT BY HEAD: If longitudinal centre of buoyancy LCB is forward of centre of floatation
   - The effect can reduce by slacken the speed of vessel or take ship in deep waters.

4. Define the following?

TURNING CIRCLE: A roughly circular path when a vessel alters her course under helm through 360° or the path traced out by pivoting point

PIVOTING POINT: It is a point about which a ship rotates. It position vary according to her movement.

Engines Ahead	(1/3rd L.O.A) from Forward
Engines Astern	Rudder Stock
When stopped	Midship
Due to wind	Toward greater windage area.

ADVANCE: Distance travelled by the centre of gravity along the original course

Advance < 5 x Ship's Length

TRANSFER: Distance travelled by the centre of gravity measured from the original track to the point where the vessel has altered her course by 90°

TACTICAL DIAMETER is the transfer for 180°

Tactical diameter < 4 x Ship's Length

FINAL DIAMETER: The diameter of the turning circle when ship's path has finally become approximately circular.

STOPPING DISTANCE: The minimum distance that a vessel needs to rest over the ground

Stopping Distance < 6 x Ship's Length

5. What is manoeuvring data?

It gives the information about

- Steering particulars
- Propulsion particulars
- Bow Thrusters effect

- Tuning circles at Maximum rudder angle in shallow or deep waters while loaded and ballast passage
  Stopping characteristic
  Emergency Manoeuvres

Performance may differ from this record due to environmental, hull and loading condition

6. What are Propeller thrusts? Behaviour of vessel full astern having right handed propeller and left handed propeller?

AXIAL THRUST

- The fore and aft thrust, is a force which causes a ship to move ahead or astern through the water. It is most efficient when the ship is moving ahead.

  [Full Astern Axial Thrust = Half ahead Axial Thrust]
- The stopping distance of a ship depends upon axial thrust

TRANSVERSE THRUST/ SCREW`S EFFECT

- Sideways thrust of the propeller blades as they rotate which produce turning effect
- The upper blades meet less resistance because it is near the water surface and lower blades experience greater reaction to motion of propeller. The upper blade can't easily cancel out the opposite effect of the lower blades.

Behaviour of Vessel having Right Handed Propeller

- When right handed propellers in head movement the resultant thrust tends to cant a vessel's stern to stbd and her head to port. It is apparent when engines are first put ahead from rest. On gathering headway it counteracted by opposite rudder
- When a right handed propeller in stern movement ,the upper blades of propeller are less effective than lower blades and it result stern cants to port and head cants to stbd .The rudder is in effective when going astern.
  [Opposite in left handed propeller]

Behaviour of Vessel having Controllable pitch Propeller

- The canting effect of transverse thrust will always be same direction because shaft always rotate in same direction

7. Shortest turn to port in Twin-screw ship?

Port engine half astern, stbd engine half ahead and rudder midship to turn a control turn.

8. How would you steer Twin-screw ship if stbd side propeller is lost?

Port engine full ahead and helm / rudder on port side.

9. How would you steer the ship, which has lost her rudder in mid ocean?

One engine half ahead, the other various to keep the vessel on course.

10. Turning short turn in narrow channel and consideration while turning?

SHORTEST TURN IN RIGHT HANDED PROPELLER

RUDDER	ENGINE	REMARKS
Hard Stbd	Half Ahead	Vessel turning to stbd, as vessel start to make headway
Midship	Stop	Vessel will lose her head momentum
Midship	Half Astern	Bow cants to stbd, as vessel start to make sternway
Midship	Stop	Vessel will lose her stern momentum
Hard Stbd	Half Ahead	Vessel turning to Stbd

SNUB AROUND THE CABLE

ANCHOR	RUDDER	ENGINE	REMARKS
Put astern to tidal stream, stbd anchor stand by	Hard Stbd	Stop Engine	Vessel turning to Stbd
Let go Stbd anchor at short stay	Midship	Half Astern	Vessel swing around cable
Heave up the anchor	Hard Stbd	Half ahead	Vessel come toward the anchor
Bring anchor to home			Vessel will on reciprocal course

CONSIDERATION WHILE TURNING

- Length of vessel
- Draught and trim of vessel
- Depth and navigable width of water
- Manoeuvring data (Advance, Transfer, Tactical Diameter)
- Distribution and stowage of cargo
- Traffic density
- Wind
- Tide

11. Why port anchor considered the working anchor in the northern hemisphere?

When a gale is blowing up, the wind veers and if second anchor is let to ride then there will be no fouling of cable

12. What is standing moor, running moor Mediterranean moor and Baltic moor?

STANDING (Ordinary, Dropping, Straight) MOOR

Wind and Tide from same direction

ANCHOR	RUDDER	ENGINE	REMARKS
Head to wind or tide	Accordingly	Slow ahead	Vessel moves ahead about half ship's length ahead of position finally bring up.
Weather /off shore anchor stand by	Midship	Stop Engine	Vessel losses her ahead momentum
Walk back weather / off shore anchor	Midship	Slow astern	Vessel stop at anchorage, As propeller wash reaches the ship beam
Let go weather / off shore anchor	Midship	Stop Engine	Vessel drift astern
Render anchor cable	Midship	Stop Engine	Vessel losses her astern momentum
Hold anchor cable by sum of two final length of cable to payout along the wind or tide	Midship	Stop Engine	Vessel moves toward anchor and riding on her anchor (i.e. Anchor is brought up)
Let go lee / on shore anchor	Midship	Stop Engine	Vessel stop moving
Veering or rendering on lee / on shore anchor cable and heaving on riding cable	Accordingly	Dead Slow ahead	Vessel moves ahead
Hold anchors cable by their scope	Midship	Stop Engine	Vessel reaches her position

Wind and Tide from different direction

ANCHOR	RUDDER	ENGINE	REMARKS
Head to wind or tide	Accordingly	Slow ahead	Vessel moves ahead about half ship's length ahead of position finally bring up.
Weather /off shore anchor stand by	Midship	Stop Engine	Vessel losses her ahead momentum
Walk back weather / off shore anchor	Midship	Slow astern	Vessel stop at anchorage, As propeller wash reaches the ship beam
Let go weather / off shore anchor	Weather helm	Slow astern	Vessel drift astern and bow cant away from weather anchor

Same as last above 5 points

Calm Weather

ANCHOR	RUDDER	ENGINE	REMARKS
Head to wind or tide	Accordingly	Slow ahead	Vessel moves ahead about half ship's length ahead of position finally bring up.
Port /off shore anchor stand by	Midship	Stop Engine	Vessel losses her ahead momentum
Walk back port / off shore anchor	Midship	Slow astern	Vessel stop at anchorage, As propeller wash reaches the ship beam
Let go port / off shore anchor	Midship	Slow astern	Vessel drift astern
Render anchor cable	Midship	Stop Engine	Vessel losses her astern momentum
Hold anchor cable by sum of two final length of cable to payout along the wind or tide	Midship	Stop Engine	Vessel moves toward anchor and riding on her anchor (i.e. Anchor is brought up)
Let go stbd / on shore anchor	Midship	Stop Engine	Vessel stop moving
Veering or rendering on stbd / on shore anchor cable and heaving on riding cable	Accordingly	Dead Slow ahead	Vessel moves ahead
Hold anchors cable by their scope	Midship	Stop Engine	Vessel reaches her position

RUNNING (Flying) MOOR

Wind and Tide from same direction

ANCHOR	RUDDER	ENGINE	REMARKS
Head to wind or tide	Accordingly	Slow ahead	Vessel moves ahead
Lee /on shore anchor stand by	Midship	Slow ahead	Vessel moves ahead
Walk back lee / on shore anchor	Midship	Slow ahead	Vessel moves ahead
Let go lee / on shore anchor	Midship	Slow ahead	Vessel moves ahead about half ship's length before of position finally bring up
Render anchor cable	Midship	Slow ahead	Vessel moves ahead
Hold anchor cable by sum of two final length of cable to payout along the wind or tide	Midship	Stop Engine	Vessel loses her head momentum and lee anchor is brought up
Let go weather / off shore anchor	Midship	Stop Engine	Vessel stop moving
Veering or rendering on weather / off shore anchor cable and heaving on sleeping cable	Midship	Slow astern	Vessel drift astern
Hold anchors cable by their scope	Midship	Stop Engine	Vessel reaches her position and riding on her anchor (i.e. Weather anchor is brought up)

Wind and Tide from different direction

ANCHOR	RUDDER	ENGINE	REMARKS
Head to wind or tide	Accordingly	Slow ahead	Vessel moves ahead
Weather /on shore anchor stand by	Weather helm	Slow ahead	Vessel moves ahead
Walk back weather / on shore anchor	Weather helm	Slow ahead	Vessel moves ahead
Let go weather / on shore anchor	Weather helm	Slow ahead	Vessel moves ahead about half ship's length before of position finally bring up
Render anchor cable	Weather helm	Slow ahead	Vessel moves ahead
Hold anchor cable by sum of two final length of cable to payout along the wind or tide	Midship	Stop Engine	Vessel loses her head momentum and weather anchor is brought up
Let go lee / off shore anchor	Midship	Stop Engine	Vessel stop moving
Veering or rendering on lee / off shore anchor cable and heaving on sleeping cable	Lee helm	Slow astern	Vessel drift astern and bow cant toward weather anchor
Hold anchors cable by their scope	Midship	Stop Engine	Vessel reaches her position and riding on her anchor (i.e. Lee anchor is brought up)

Calm Weather

ANCHOR	RUDDER	ENGINE	REMARKS
Head to wind or tide	Accordingly	Slow ahead	Vessel moves ahead
Stbd /on shore anchor stand by	Midship	Slow ahead	Vessel moves ahead
Walk back stbd / on shore anchor	Midship	Slow ahead	Vessel moves ahead
Let go stbd / on shore anchor	Midship	Slow ahead	Vessel moves ahead about half ship's length before of position finally bring up
Render anchor cable	Midship	Slow ahead	Vessel moves ahead
Hold anchor cable by sum of two final length of cable to payout along the wind or tide	Midship	Stop Engine	Vessel loses her head momentum and stbd anchor is brought up
Let go port / off shore anchor	Midship	Stop Engine	Vessel stop moving
Veering or rendering on port / off shore anchor cable and heaving on sleeping cable	Midship	Slow astern	Vessel drift astern
Hold anchors cable by their scope	Midship	Stop Engine	Vessel reaches her position and riding on her anchor (i.e. port anchor is brought up)

STANDING (Ordinary, Dropping, Straight) MOOR

Wind and Tide from same direction

- Head into wind or tide
- Let go weather anchor and rendered her cable to sum of two final length of cable to payout along the wind or tide.
- When weather anchor brought up, let go lee anchor.

- Start to take vessel in between the anchors by veering or rendering on lee anchor cable and heaving on riding cable until she reaches her position. Engine can use to release the stress of windlass by heaving riding cable.

  Wind and Tide from different direction
- Head into wind or tide
- Let go weather anchor
- Slack the riding cable, Use Engine Astern under weather helm, swing the ship about sum of two final length of cable to payout along the wind or tide.

Same as last above 2 points

RUNNING (Flying) MOOR

Wind and Tide from same direction

- Head into stream
- Let go lee anchor, use engine to headway and rendered her cable to sum of two final length of cable to payout
- When lee anchor brought up, let go weather anchor.
- Start to take vessel in between the anchors by veering or rendering on weather anchor cable and heaving on lee cable until she reaches her position

Wind and Tide from different direction

- Head into wind or tide
- Let go weather anchor
- Slack the lee anchor cable, Use Engine Ahead under lee helm, swing the ship about sum of two final length of cable to payout along the wind or tide.

Same as last above 2 points

BALTIC MOOR

Method use for berthing where on shore gale wind in bad weather. The stern mooring wire is attached by the ganger length of the anchor.

- When stem is abreast position on the quay ($1^{1}/_{3}$ L.O.A) let go off shore anchor
- Headway the vessel (½ L.O.A).
- On shore wind will drift the vessel down to her berth, the scope of cable, and wire veered until ship lands alongside.

MEDITERRANEAN MOOR

Quay space is restricted

Required to load / discharge from astern

Do the following steps when we are near to quay on port side. The maximum angle between both anchors is 120.

ANCHOR	RUDDER	ENGINE	REMARKS
Let go offshore anchor	Hard Stbd	Dead slow ahead	Vessel turning to Stbd
Render offshore anchor cable	Midship	Stop Engine	Vessel swing around cable
Let go second anchor	Midship	Half Astern	Vessel stop swinging
Snub offshore anchor cable and render second anchor cable	Midship	Half Astern	Vessel stern will in between mooring bits quay.
Slack both anchors cable	Midship	Half Astern	Vessel will come toward quay. Pass stern mooring line to quay
Hold anchors cable by their scope	Midship	Stop Engine	Manoeuvre vessel by stretching heaving line and secure on bits.

GUIDELINE FOR NEW COMMERS

The choice of best college is always a best step for better professionalism knowledge. If you give less amount with no study in college that less amount is really expensive to take 4 month fake certificate.

According to my sincere advice to all new comers, with out any controversy and self mean join college of Nautical studies running by Marine Nautical Instructors Captain Asad Ali Khan, Captain Samdhani and Captain Khalid Khursheed.

College of Nautical studies is only college in Pakistan up till yet produced capable officers and captain for marine industry.

COURSES	PLACE	AMOUNT
Eligibility • Time Period in CDC PMA Cadets =24 Month Direct Cadets=36 Month Ship Testimonials Basic 5 courses	MMD + DGP&S	300
GMDSS	PMA	Course fee = 25,000 + Exam fee=2,500
NCC	PMA	16,000
PSCRB(Life boat)	PMA	Course fee = 3,800 + Exam fee=500
Advance Fire Fighting	CONS / PROMETI	6,000 / 4,500
Medical First Aid	ST.JOHN SADDAR / PROMETI	1,000 / 1,200
Efficient deck hand PSCRB(Life boat) Medical Form Academy (Dr.) Cadet Steering Certificate Eligibility	CONS+MMD / PROMETI+MMD	Course fee = free + Exam fee= 700
Bridge Team Management	CONS / PROMETI	Free / 8000
International safety management	PROMETI / PNSC	1,000 /Free
Advance Tanker Safety	CONS / PROMETI	13,000 / 11,000

Ship Security officer	CONS / PROMETI	10,000 / 8,000
Class III and IV	CONS / PROMETI	50,000 / 30,000
Exam Fee Class III and IV Photo (1½ x 1½) inch or (37x37) cm Pre Classes certificate = 4Month 80% attendance Eye sight Test Medical Form Academy (Dr.)	MMD	2,800

DGP&S =Director General Port and shipping wing, PMA=Pakistan Marine academy, CONS=College Of Nautical studies

INTERNATIONAL REGULATIONS FOR PREVENTING COLLISIONS AT SEA, 1972 With AMENDMENTS 2002

PART A--GENERAL

Rule 1

Application

(*a*)These Rules shall apply to all vessels upon the high seas and in all waters connected therewith navigable by seagoing vessels.

(*b*)Nothing in these Rules shall interfere with the operation of special rules made by an appropriate authority for roadsteads, harbours, rivers, lakes or inland waterways connected with the high seas and navigable by sea-going vessels if such special rules conform as closely as possible to these Rules.

(*c*)Nothing in these Rules shall interfere with the operation of any special rules made by the government of any state with respect to additional station or signal lights, shapes or whistle signals for ships of war and vessels proceeding under convoy, or with respect to additional station or signal lights or shapes for fishing vessels engaged in fishing as a fleet. These additional station or signal lights, shapes or whistle signals shall, so far as possible, be such that they cannot be mistaken for any light, shape or signal authorized elsewhere under these Rules.

(*d*)Traffic separation schemes may be adopted by the Organization for the purpose of these Rules.

(*e*)Where the Government concerned determines that a vessel of special construction or purpose cannot comply fully with the provisions of any of these Rules with respect to the number, position, range or arc of visibility of lights or shapes, as well as to the disposition and characteristics of sound-signalling appliances, the vessel shall comply with such other provisions in regard to the number, position, range or arc of visibility of lights or shapes, as well as to the disposition and characteristics of sound-signalling appliances as the Government determines to be the closest possible compliance with these Rules in respect of that vessel.

Rule 2

Responsibility

(*a*)Nothing in these Rules shall exonerate any vessel, or the owner, master or crew thereof, from the consequences of any neglect to comply with these Rules or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.

(*b*)In construing and complying with these Rules due regard shall be had to all dangers of navigation and collision and to any special circumstances, including the limitations of the vessels involved, which may make a departure from these Rules necessary to avoid immediate danger.

Rule 3

General Definitions

For the purpose of these Rules, except where the context otherwise requires:

(a) The word "vessel" includes every description of water craft, including non-displacement craft, WIG craft and seaplanes, used or capable of being used as a means of transportation on water.

(b) The term "power-driven vessel" means any vessel propelled by machinery.

(c) The term "sailing vessel" means any vessel under sail provided that propelling machinery, if fitted, is not being used.

(d) The term "vessel engaged in fishing" means any vessel fishing with nets, lines, trawls or other fishing apparatus which restrict manoeuvrability, but does not include a vessel fishing with trolling lines or other fishing apparatus which do not restrict manoeuvrability.

(e) The word "seaplane" includes any aircraft designed to manoeuvre on the water.

(f) The term "vessel not under command" means a vessel which through some exceptional circumstance is unable to manoeuvre as required by these Rules and is therefore unable to keep out of the way of another vessel.

(g) The term "vessel restricted in her ability to manoeuvre" means a vessel which from the nature of her work is restricted in her ability to manoeuvre as required by these Rules and is therefore unable to keep out of the way of another vessel.

The term "vessels restricted in their ability to manoeuvre" shall include but not be limited to:

(i) a vessel engaged in laying, servicing or picking up a navigation mark, submarine cable or pipeline,

(ii) a vessel engaged in dredging, surveying or underwater operations,

(iii) a vessel engaged in replenishment or transferring persons, provisions or cargo while underway,

(iv) a vessel engaged in the launching or recovery of aircraft,

(v) a vessel engaged in mineclearance operations,

(vi) a vessel engaged in a towing operation such as severely restricts the towing vessel and her tow in their ability to deviate from their course.

(h) The term "vessel constrained by her draught" means a power-driven vessel that, because of the vessel's draught in relation to the available depth and width of navigable water, is severely restricted in the vessel's ability to deviate from the course the vessel is following.

(i) The word "underway" means that a vessel is not at anchor, or made fast to the shore, or aground.

(j) The words "length" and "breadth" of a vessel mean her length overall and greatest breadth.

(k) Vessels shall be deemed to be in sight of one another only when one can be observed visually from the other.

(l) The term "restricted visibility" means any condition in which visibility is restricted by fog, mist, falling snow, heavy rainstorms, sandstorms or any other similar causes.

(m) The term "Wing-in-Ground (WIG) craft" means a multimodal craft which, in its main operational mode, flies in close proximity to the surface by utilizing surface-effect action.

PART B--STEERING AND SAILING RULES

SECTION I--CONDUCT OF VESSELS IN ANY CONDITION OF VISIBILITY

Rule 4

Application

Rules in this Section apply in any condition of visibility.

Rule 5

Look-out

Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision.

Rule 6

Safe Speed

Every vessel shall at all times proceed at a safe speed so that she can take proper and effective action to avoid collision and be stopped within a distance appropriate to the prevailing circumstances and conditions.

In determining a safe speed the following factors shall be among those taken into account:

(*a*)By all vessels:
(i) the state of visibility,

(ii) the traffic density including concentrations of fishing vessels or any other vessels,
(iii)the manoeuvrability of the vessel with special reference to stopping distance and turning ability in the prevailing conditions,
(iv) at night the presence of background light such as from shore lights or from back scatter of her own lights,
(v) the state of wind, sea and current, and the proximity of navigational hazards,
(vi) the draught in relation to the available depth of water.

(*b*)Additionally, by vessels with operational radar:
(i) the characteristics, efficiency and limitations of the radar equipment,
(ii) any constraints imposed by the radar range scale in use,
(iii)the effect on radar detection of the sea state, weather and other sources of interference,
(iv) the possibility that small vessels, ice and other floating objects may not be detected by radar at an adequate range,
(v) the number, location and movement of vessels detected by radar,
(vi) the more exact assessment of the visibility that may be possible when radar is used to determine the range of vessels or other objects in the vicinity.

Rule 7

Risk of Collision

(*a*)Every vessel shall use all available means appropriate to the prevailing circumstances and conditions to determine if risk of collision exists. If there is any doubt such risk shall be deemed to exist.

(*b*)Proper use shall be made of radar equipment if fitted and operational, including long-range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observation of detected objects.

(*c*)Assumptions shall not be made on the basis of scanty information, especially scanty radar information.

(*d*)In determining if risk of collision exists the following considerations shall be among those taken into account:

(i) such risk shall be deemed to exist if the compass bearing of an approaching vessel does not appreciably change,

(ii)such risk may sometimes exist even when an appreciable bearing change is evident, particularly when approaching a very large vessel or a tow or when approaching a vessel at close range.

Rule 8

Action to avoid Collision

(*a*)Any action to avoid collision shall be taken in accordance with the Rules of this Part and shall, if the circumstances of the case admit, be positive, made in ample time and with due regard to the observance of good seamanship.

(*b*)Any alteration of course and/or speed to avoid collision shall, if the circumstances of the case admit, be large enough to be readily apparent to another vessel observing visually or by radar; a succession of small alterations of course and/or speed should be avoided.

(*c*)If there is sufficient sea room, alteration of course alone may be the most effective action to avoid a close-quarters

situation provided that it is made in good time, is substantial and does not result in another close-quarters situation.

(*d*)Action taken to avoid collision with another vessel shall be such as to result in passing at a safe distance. The effectiveness of the action shall be carefully checked until the other vessel is finally past and clear.

(*e*)If necessary to avoid collision or allow more time to assess the situation, a vessel shall slacken her speed or take all way off by stopping or reversing her means of propulsion.

(*f*) (i) A vessel which, by any of these Rules, is required not to impede the passage or safe passage of another vessel shall, when required by the circumstances of the case, take early action to allow sufficient sea room for the safe passage of the other vessel.
(ii)A vessel required not to impede the passage or the safe passage of another vessel is not relieved of this latter obligation if approaching the other vessel so as to involve risk of collision and shall, when taking action, have full regard to the action which may be required by the rules of this Part.
(iii)A vessel the passage of which is not to be impeded remains fully obliged to comply with the rules of this Part when the two vessels are approaching one another so as to involve risk of collision.

Rule 9

Narrow Channels

(*a*)A vessel proceeding along the course of a narrow channel or fairway shall keep as near to the outer limit of the channel or fairway which lies on her starboard side as is safe and practicable.

(*b*)A vessel of less than 20 metres in length or a sailing vessel shall not impede the passage of a vessel which can safely navigate only within a narrow channel or fairway.

(*c*)A vessel engaged in fishing shall not impede the passage of any other vessel navigating within a narrow channel or fairway.

(*d*)A vessel shall not cross a narrow channel or fairway if such crossing impedes the passage of a vessel which can safely navigate only within such channel or fairway. The latter vessel may use the sound signal prescribed in Rule 34(*d*) if in doubt as to the intention of the crossing vessel.

(*e*)(i)In a narrow channel or fairway when overtaking can take place only if the vessel to be overtaken has to take action to permit safe passing, the vessel intending to overtake shall indicate her intention by sounding the appropriate signal prescribed in Rule 34(*c*)(i). The vessel to be overtaken shall, if in agreement, sound the appropriate signal prescribed in Rule 34(*c*)(ii) and take steps to permit safe passing. If in doubt she may sound the signals prescribed in Rule 34(*d*).
(ii) This Rule does not relieve the overtaking vessel of her obligation under Rule 13.

(*f*)A vessel nearing a bend or an area of a narrow channel or fairway where other vessels may be obscured by an intervening obstruction shall navigate with particular alertness and caution and shall sound the appropriate signal prescribed in Rule 34(*e*).

(*g*)Any vessel shall, if the circumstances of the case admit, avoid anchoring in a narrow channel.

Rule 10

Traffic Separation Schemes

(*a*)This rule applies to traffic separation schemes adopted by the Organization and does not relieve any vessel of her obligation under any other rule.

(*b*)A vessel using a traffic separation scheme shall:
(i) proceed in the appropriate traffic lane in the general direction of traffic flow for that lane,
(ii) so far as practicable keep clear of a traffic separation line or separation zone,
(iii)normally join or leave a traffic lane at the termination of the lane, but when joining or leaving from either side shall do so at as small an angle to the general direction of traffic flow as practicable.

(*c*)A vessel shall, so far as practicable, avoid crossing traffic lanes but, if obliged to do so, shall cross on a heading as nearly as practicable at right angles to the general direction of traffic flow.

(*d*)(i)A vessel shall not use an inshore traffic zone when it can safely use the appropriate traffic lane within the adjacent traffic separation scheme. However, vessels of less than 20 metres in length, sailing vessels and vessels engaged in fishing may use the inshore traffic zone.
(ii)Notwithstanding subparagraph (i), a vessel may use an inshore traffic zone when *en route* to or from a port, an offshore installation or structure, a pilot station or any other place situated within the inshore traffic zone or to avoid immediate danger.

(*e*)A vessel other than a crossing vessel or a vessel joining or leaving a lane shall not normally enter a separation zone or cross a separation line except
(i) in cases of emergency to avoid immediate danger, or
(ii) to engage in fishing within a separation zone.

(*f*)A vessel navigating in areas near the terminations of traffic separation schemes shall do so with particular caution.

(*g*)A vessel shall so far as practicable avoid anchoring in a traffic separation scheme or in areas near its terminations.

(*h*)A vessel not using a traffic separation scheme shall avoid it by as wide a margin as is practicable.

(*i*)A vessel engaged in fishing shall not impede the passage of any vessel following a traffic lane.

(*j*)A vessel of less than 20 metres in length or a sailing vessel shall not impede the safe passage of a power-driven vessel following a traffic lane.

(*k*)A vessel restricted in her ability to manoeuvre when engaged in an operation for the maintenance of safety of navigation in a traffic separation scheme is exempted from complying with this Rule to the extent necessary to carry out the operation.

(*l*)A vessel restricted in her ability to manoeuvre when engaged in an operation for the laying, servicing or picking up of a submarine cable, within a traffic separation scheme, is exempted from complying with this Rule to the extent necessary to carry out the operation.

SECTION II--CONDUCT OF VESSELS IN SIGHT OF ONE ANOTHER

Rule 11

Application

Rules in this Section apply to vessels in sight of one another.

Rule 12

Sailing Vessels

(*a*)When two sailing vessels are approaching one another, so as to involve risk of collision, one of them shall keep out of the way of the other as follows:
(i) when each has the wind on a different side, the vessel which has the wind on the port side shall keep out of the way of the other,
(ii) when both have the wind on the same side, the vessel which is to windward shall keep out of the way of the vessel which is to leeward,
(iii)if a vessel with the wind on the port side sees a vessel to windward and cannot determine with certainty whether the other vessel has the wind on the port or on the starboard side, she shall keep out of the way of the other.

(*b*)For the purposes of this Rule, the windward side shall be deemed to be the side opposite to that on which the mainsail is carried or, in the case of a square-rigged vessel, the side opposite to that on which the largest fore-and-aft sail is carried.

Rule 13

Overtaking

(*a*)Notwithstanding anything contained in the Rules of Part B, Sections I and II, any vessel overtaking any other vessel shall keep out of the way of the vessel being overtaken.

(*b*)A vessel shall be deemed to be overtaking when coming up with another vessel from a direction more than 22.5 degrees abaft her beam, that is, in such a position with reference to the vessel she is overtaking, that at night she would be able to see only the sternlight of that vessel but neither of her sidelights.

(*c*)When a vessel is in any doubt as to whether she is overtaking another, she shall assume that this is the case and act accordingly.

(*d*)Any subsequent alteration of the bearing between the two vessels shall not make the overtaking vessel a crossing vessel within the meaning of these Rules or relieve her of the duty of keeping clear of the overtaken vessel until she is finally past and clear.

Rule 14

Head-on Situation

(*a*)When two power-driven vessels are meeting on reciprocal or nearly reciprocal courses so as to involve risk of collision, each shall alter her course to starboard so that each shall pass on the port side of the other.

(*b*)Such a situation shall be deemed to exist when a vessel sees the other ahead or nearly ahead and by night she could see the masthead lights of the other in a line or nearly in a line and/or both sidelights and by day she observes the

corresponding aspect of the other vessel.

(*c*)When a vessel is in any doubt as to whether such a situation exists she shall assume that it does exist and act accordingly.

Rule 15

Crossing Situation

(*a*)When two power-driven vessels are crossing so as to involve risk of collision, the vessel which has the other on her own starboard side shall keep out of the way and shall, if the circumstances of the case admit, avoid crossing ahead of the other vessel

Rule 16

Action by Give-way Vessel

Every vessel which is directed to keep out of the way of another vessel shall, so far as possible, take early and substantial action to keep well clear.

Rule 17

Action by Stand-on Vessel

(*a*)(i) Where one of two vessels is to keep out of the way, the other shall keep her course and speed.
(ii) The latter vessel may however take action to avoid collision by her manoeuvre alone, as soon as it becomes apparent to her that the vessel required to keep out of the way is not taking appropriate action in compliance with these Rules.

(*b*)When, from any cause, the vessel required to keep her course and speed finds herself so close that collision cannot be avoided by the action of the give-way vessel alone, she shall take such action as will best aid to avoid collision.

(*c*)A power-driven vessel which takes action in a crossing situation in accordance with subparagraph (*a*)(ii) of this Rule to avoid collision with another power-driven vessel shall, if the circumstances of the case admit, not alter course to port for a vessel on her own port side.

(*d*)This Rule does not relieve the give-way vessel of her obligation to keep out of the way.

Rule 18

Responsibilities between Vessels

Except where Rules 9, 10 and 13 otherwise require:

(*a*)A power-driven vessel underway shall keep out of the way of:
(i) a vessel not under command,
(ii) a vessel restricted in her ability to manoeuvre,

(iii)a vessel engaged in fishing,
(iv) a sailing vessel.

(*b*)A sailing vessel underway shall keep out of the way of:
(i) a vessel not under command,
(ii) a vessel restricted in her ability to manoeuvre,
(iii)a vessel engaged in fishing.

(*c*)A vessel engaged in fishing when underway shall, so far as possible, keep out of the way of:
(i) a vessel not under command,
(ii) a vessel restricted in her ability to manoeuvre.

(*d*)(i) Any vessel other than a vessel not under command or a vessel restricted in her ability to manoeuvre shall, if the circumstances of the case admit, avoid impeding the safe passage of a vessel constrained by her draught, exhibiting the signals in Rule 28.
(ii) A vessel constrained by her draught shall navigate with particular caution having full regard to her special condition.

(*e*)A seaplane on the water shall, in general, keep well clear of all vessels and avoid impeding their navigation. In circumstances, however, where risk of collision exists, she shall comply with the Rules of this Part.

(*f*)(i) A WIG craft shall, when taking off, landing and in flight near the surface, keep well clear of all other vessels and avoid impeding their navigation.
(ii)A WIG craft operating on the water surface shall comply with the Rules of this Part as a power-driven vessel.

SECTION III--CONDUCT OF VESSELS IN RESTRICTED VISIBILITY

Rule 19

Conduct of Vessels in Restricted Visibility

(*a*)This Rule applies to vessels not in sight of one another when navigating in or near an area of restricted visibility.

(*b*)Every vessel shall proceed at a safe speed adapted to the prevailing circumstances and conditions of restricted visibility. A power-driven vessel shall have her engines ready for immediate manoeuvre.

(*c*)Every vessel shall have due regard to the prevailing circumstances and conditions of restricted visibility when complying with the Rules of Section I of this Part.

(*d*)A vessel which detects by radar alone the presence of another vessel shall determine if a close-quarters situation is developing and/or risk of collision exists. If so, she shall take avoiding action in ample time, provided that when such action consists of an alteration of course, so far as possible the following shall be avoided:
(i) an alteration of course to port for a vessel forward of the beam, other than for a vessel being overtaken,
(ii) an alteration of course towards a vessel abeam or abaft the beam.

(*e*)Except where it has been determined that a risk of collision does not exist, every vessel which hears apparently forward of her beam the fog signal of another vessel, or which cannot avoid a close-quarters situation with another vessel forward of her beam, shall reduce her speed to the minimum at which she can be kept on her course. She shall if necessary take all her way off and in any event navigate with extreme caution until danger of collision is over.

PART C--LIGHTS AND SHAPES

Rule 20

Application

(*a*) Rules in this Part shall be complied with in all weathers.

(*b*) The Rules concerning lights shall be complied with from sunset to sunrise, and during such times no other lights shall be exhibited, except such lights as cannot be mistaken for the lights specified in these Rules or do not impair their visibility or distinctive character, or interfere with the keeping of a proper look-out.

(*c*) The lights prescribed by these Rules shall, if carried, also be exhibited from sunrise to sunset in restricted visibility and may be exhibited in all other circumstances when it is deemed necessary.

(*d*) The Rules concerning shapes shall be complied with by day.

(*e*) The lights and shapes specified in these Rules shall comply with the provisions of Annex I to these Regulations.Rule 21

Definitions

(*a*)"Masthead light" means a white light placed over the fore and aft centreline of the vessel showing an unbroken light over an arc of the horizon of 225 degrees and so fixed as to show the light from right ahead to 22.5 degrees abaft the beam on either side of the vessel.

(*b*)"Sidelights" means a green light on the starboard side and a red light on the port side each showing an unbroken light over an arc of the horizon of 112.5 degrees and so fixed as to show the light from right ahead to 22.5 degrees abaft the beam on its respective side. In a vessel of less than 20 metres in length the sidelights may be combined in one lantern carried on the fore and aft centreline of the vessel.

(*c*)"Sternlight" means a white light placed as nearly as practicable at the stern showing an unbroken light over an arc of the horizon of 135 degrees and so fixed as to show the light 67.5 degrees from right aft on each side of the vessel.

(*d*)"Towing light" means a yellow light having the same characteristics as the "sternlight" defined in paragraph (*c*) of this Rule.

(*e*)"All-round light" means a light showing an unbroken light over an arc of the horizon of 360 degrees.

(*f*)"Flashing light" means a light flashing at regular intervals at a frequency of 120 flashes or more per minute.

Rule 22

Visibility of Lights

The lights prescribed in these Rules shall have an intensity as specified in section 8 of Annex I to these Regulations so as to be visible at the following minimum ranges:

(*a*)In vessels of 50 meters or more in length:
--a masthead light, six miles,
--a sidelight, three miles,
--a stern light, three miles,
--a towing light, three miles,
--a white, red, green or yellow all-round light, three miles.

(*b*)In vessels of 12 meters or more in length but less than 50 meters in length:
--a masthead light, five miles; except that where the length of the vessel is less than 20 meters, three miles,
--a sidelight, two miles,
--a stern light, two miles,
--a towing light, two miles,
--a white, red, green or yellow all-round light, two miles.

(*c*)In vessels of less than 12 meters in length:
--a masthead light, two miles,
--a sidelight, one mile,
--a stern light, two miles,
--a towing light, two miles,
--a white, red, green or yellow all-round light, two miles.

(*d*)In inconspicuous, partly submerged vessels or objects being towed:
--a white all-round light, three miles.

Rule 23

Power-driven Vessels Underway

(*a*)A power-driven vessel underway shall exhibit:
(i) a masthead light forward,
(ii) a second masthead light abaft of and higher than the forward one; except that a vessel of less than 50 metres in length shall not be obliged to exhibit such light but may do so,
(iii)sidelights,
(iv) a stern light.

(*b*)An air cushion vessel when operating in the non-displacement mode shall, in addition to the lights prescribed in paragraph (*a*) of this Rule, exhibit an all-round flashing yellow light.

(*c*)A WIG craft only when taking off, landing and in flight near the surface shall, in addition to the lights prescribed in paragraph (*a*) of this Rule, exhibit a high intensity all-round flashing red light.

(*d*)(i) A power-driven vessel of less than 12 meters in length may in lieu of the lights prescribed in paragraph (*a*) of this Rule exhibit an all-round white light and sidelights.

(ii)A power-driven vessel of less than seven meters in length whose maximum speed does not exceed seven knots may in lieu of the lights prescribed in paragraph (*a*) of this Rule exhibit an all-round white light and shall, if practicable, also exhibit sidelights.

(iii)The masthead light or all-round white light on a power-driven vessel of less than 12 meters in length may be

displaced from the fore and aft centreline of the vessel if centreline fitting is not practicable, provided that the sidelights are combined in one lantern which shall be carried on the fore and aft centreline of the vessel or located as nearly as practicable in the same fore and aft line as the masthead light or the all-round white light.

Rule 24

Towing and Pushing

(*a*)A power-driven vessel when towing shall exhibit:
(i) instead of the light prescribed in Rule 23(*a*)(i) or (*a*)(ii), two masthead lights in a vertical line. When the length of the tow, measuring from the stern of the towing vessel to the after end of the tow exceeds 200 meters, three such lights in a vertical line,
(ii) sidelights,
(iii)a sternlight,
(iv) a towing light in a vertical line above the sternlight,
(v) when the length of the tow exceeds 200 metres, a diamond shape where it can best be seen.

(*b*)When a pushing vessel and a vessel being pushed ahead are rigidly connected in a composite unit they shall be regarded as a power-driven vessel and exhibit the lights prescribed in Rule 23.

(*c*)A power-driven vessel when pushing ahead or towing alongside, except in the case of a composite unit, shall exhibit:
(i) instead of the light prescribed in Rule 23(*a*)(i) or (*a*)(ii), two masthead lights in a vertical line,
(ii) sidelights,
(iii)a sternlight.

(*d*)A power-driven vessel to which paragraph (*a*) or (*c*) of this Rule applies shall also comply with Rule 23(*a*)(ii).

(*e*)A vessel or object being towed, other than those mentioned in paragraph (*g*) or this Rule, shall exhibit:
(i) sidelights,
(ii) a sternlight,
(iii)when the length of the tow exceeds 200 metres, a diamond shape where it can best be seen.

(*f*)Provided that any number of vessels being towed alongside or pushed in a group shall be lighted as one vessel,
(i) a vessel being pushed ahead, not being part of a composite unit, shall exhibit at the forward end, sidelights,
(ii) a vessel being towed alongside shall exhibit a sternlight and at the forward end, sidelights.

(*g*)An inconspicuous, partly submerged vessel or object, or combination of such vessels or objects being towed, shall exhibit:
(i) if it is less than 25 metres in breadth, one all-round white light at or near the forward end and one at or near the after end except that dracones need not exhibit a light at or near the forward end,
(ii) if it is 25 metres or more in breadth, two additional all-round white lights at or near the extremities of its breadth,
(iii)if it exceeds 100 metres in length, additional all-round white lights between the lights prescribed in subparagraphs (i) and (ii) so that the distance between the lights shall not exceed 100 metres,
(iv) a diamond shape at or near the aftermost extremity of the last vessel or object being towed and if the length of the tow exceeds 200 metres an additional diamond shape where it can best be seen and located as far forward as is practicable.

(*h*)Where from any sufficient cause it is impracticable for a vessel or object being towed to exhibit the lights or shapes

prescribed in paragraph (*e*) or (*g*) of this Rule, all possible measures shall be taken to light the vessel or object towed or at least to indicate the presence of such vessel or object.

(*i*)Where from any sufficient cause it is impracticable for a vessel not normally engaged in towing operations to display the lights prescribed in paragraph (*a*) or (*c*) of this Rule, such vessel shall not be required to exhibit those lights when engaged in towing another vessel in distress or otherwise in need of assistance. All possible measures shall be taken to indicate the nature of the relationship between the towing vessel and the vessel being towed as authorized by Rule 36, in particular by illuminating the towline.

Rule 25

Sailing Vessels Underway and Vessels under Oars

(*a*)A sailing vessel underway shall exhibit:
(i) sidelights,
(ii) a sternlight.

(*b*)In a sailing vessel of less than 20 metres in length the lights prescribed in paragraph (*a*) of this Rule may be combined in one lantern carried at or near the top of the mast where it can best be seen.

(*c*) A sailing vessel underway may, in addition to the lights prescribed in paragraph (*a*) of this Rule, exhibit at or near the top of the mast, where they can best be seen, two all-round lights in a vertical line, the upper being red and the lower green, but these lights shall not be exhibited in conjunction with the combined lantern permitted by paragraph (*b*) of this Rule.

(*d*) (i) A sailing vessel of less than seven metres in length shall, if practicable, exhibit the lights prescribed in paragraph (*a*) or (*b*) of this Rule, but if she does not, she shall have ready at hand an electric torch or lighted lantern showing a white light which shall be exhibited in sufficient time to prevent collision.
(ii) A vessel under oars may exhibit the lights prescribed in this Rule for sailing vessels, but if she does not, she shall have ready at hand an electric torch or lighted lantern showing a white light which shall be exhibited in sufficient time to prevent collision.

(*e*)A vessel proceeding under sail when also being propelled by machinery shall exhibit forward where it can best be seen a conical shape, apex downwards.

Rule 26

Fishing Vessels

(*a*) A vessel engaged in fishing, whether underway or at anchor, shall exhibit only the lights and shapes prescribed in this Rule.

(*b*)A vessel when engaged in trawling, by which is meant the dragging through the water of a dredge net or other apparatus used as a fishing appliance, shall exhibit:
(i) two all-round lights in a vertical line, the upper being green and the lower white, or a shape consisting of two cones with their apexes together in a vertical line one above the other,
(ii) a masthead light abaft of and higher than the all-round green light; a vessel of less than 50 metres in length shall not be obliged to exhibit such a light but may do so,
(iii)when making way through the water, in addition to the lights prescribed in this paragraph, sidelights and a

sternlight.

(*c*)A vessel engaged in fishing, other than trawling, shall exhibit:
(i) two all-round lights in a vertical line, the upper being red and the lower white, or a shape consisting of two cones with their apexes together in a vertical line one above the other,
(ii) when there is outlying gear extending more than 150 metres horizontally from the vessel, an all-round white light or a cone apex upwards in the direction of the gear,
(iii)when making way through the water, in addition to the lights prescribed in this paragraph, sidelights and a sternlight.

(*d*)The additional signals described in Annex II apply to a vessel engaged in fishing in close proximity to other vessels engaged in fishing.

(*e*)A vessel when not engaged in fishing shall not exhibit the lights or shapes prescribed in this Rule, but only those prescribed for a vessel of her length.

Rule 27

Vessels not under Command or Restricted in their Ability to Manoeuvre

(*a*)A vessel not under command shall exhibit:
(i) two all-round red lights in a vertical line where they can best be seen,
(ii) two balls or similar shapes in a vertical line where they can best be seen,
(iii)when making way through the water, in addition to the lights prescribed in this paragraph, sidelights and a sternlight.

(*b*)A vessel restricted in her ability to manoeuvre, except a vessel engaged in mineclearance operations, shall exhibit:
(i) three all-round lights in a vertical line where they can best be seen. The highest and lowest of these lights shall be red and the middle light shall be white,
(ii) three shapes in a vertical line where they can best be seen. The highest and lowest of these shapes shall be balls and the middle one a diamond,
(iii)when making way through the water, a masthead light or lights, sidelights and a sternlight, in addition to the lights prescribed in subparagraph (i),
(iv) when at anchor, in addition to the lights or shapes prescribed in subparagraphs (i) and (ii), the light, lights or shape prescribed in Rule 30.

(*c*)A power-driven vessel engaged in a towing operation such as severely restricts the towing vessel and her tow in their ability to deviate from their course shall, in addition to the lights or shapes prescribed in Rule 24(*a*), exhibit the lights or shapes prescribed in subparagraphs (*b*)(i) and (ii) of this Rule.

(*d*)A vessel engaged in dredging or underwater operations, when restricted in her ability to manoeuvre, shall exhibit the lights and shapes prescribed in subparagraphs (*b*)(i), (ii) and (iii) of this Rule and shall in addition, when an obstruction exists, exhibit:
(i) two all-round red lights or two balls in a vertical line to indicate the side on which the obstruction exists,
(ii) two all-round green lights or two diamonds in a vertical line to indicate the side on which another vessel may pass,
(iii)when at anchor the lights or shapes prescribed in this paragraph instead of the lights or shape prescribed in Rule 30.

(*e*)Whenever the size of a vessel engaged in diving operations makes it impracticable to exhibit all lights and shapes prescribed in paragraph (*d*) of this Rule, the following shall be exhibited:
(i) three all-round lights in a vertical line where they can best be seen. The highest and lowest of these lights shall be red and the middle light shall be white,
(ii) a rigid replica of the International Code flag "A" not less than one metre in height. Measures shall be taken to ensure its all-round visibility.

(*f*)A vessel engaged in mineclearance operations shall, in addition to the lights prescribed for a power-driven vessel in Rule 23 or to the lights or shape prescribed for a vessel at anchor in Rule 30 as appropriate, exhibit three all-round green lights or three balls. One of these lights or shapes shall be exhibited near the foremast head and one at each end of the fore yard. These lights or shapes indicate that it is dangerous for another vessel to approach within 1 000 metres of the mineclearance vessel.

(*g*)Vessels of less than 12 metres in length, except those engaged in diving operations, shall not be required to exhibit the lights and shapes prescribed in this Rule.

(*h*)The signals prescribed in this Rule are not signals of vessels in distress and requiring assistance. Such signals are contained in Annex IV.

Rule 28

Vessels Constrained by their Draught

A vessel constrained by her draught may, in addition to the lights prescribed for power-driven vessels in Rule 23, exhibit where they can best be seen three all-round red lights in a vertical line, or a cylinder.

Rule 29

Pilot Vessels

(*a*)A vessel engaged on pilotage duty shall exhibit:
(i) at or near the masthead, two all-round lights in a vertical line, the upper being white and the lower red,
(ii) when underway, in addition, sidelights and a sternlight,
(iii)when at anchor, in addition to the lights prescribed in subparagraph (i), the light, lights or shape prescribed in Rule 30 for vessels at anchor.

(*b*)A pilot vessel when not engaged on pilotage duty shall exhibit the lights or shapes prescribed for a similar vessel of her length.

Rule 30

Anchored Vessels and Vessels Aground

(*a*)A vessel at anchor shall exhibit where it can best be seen:
(i) in the fore part, an all-round white light or one ball,
(ii) at or near the stern and at a lower level than the light prescribed in subparagraph (i), an all-round white light.

(*b*)A vessel of less than 50 metres in length may exhibit an all-round white light where it can best be seen instead of the lights prescribed in paragraph (*a*) of this Rule.

(*c*)A vessel at anchor may, and a vessel of 100 metres and more in length shall, also use the available working or equivalent lights to illuminate her decks.

(*d*)A vessel aground shall exhibit the lights prescribed in paragraph (*a*) or (*b*) of this Rule and in addition, where they can best be seen:
(i) two all-round red lights in a vertical line,
(ii) three balls in a vertical line.

(*e*)A vessel of less than seven metres in length, when at anchor, not in or near a narrow channel, fairway or anchorage, or where other vessels normally navigate, shall not be required to exhibit the lights or shape prescribed in paragraphs (*a*) and (*b*) of this Rule.

(*f*)A vessel of less than 12 metres in length, when aground, shall not be required to exhibit the lights or shapes prescribed in subparagraphs (*d*)(i) and (ii) of this Rule.

Rule 31

Seaplanes

Where it is impracticable for a seaplane or a WIG craft to exhibit lights and shapes of the characteristics or in the positions prescribed in the Rules of this Part she shall exhibit lights and shapes as closely similar in characteristics and position as is possible.

PART D--SOUND AND LIGHT SIGNALS

Rule 32

Definitions

(*a*)The word "whistle" means any sound signalling appliance capable of producing the prescribed blasts and which complies with the specifications in Annex III to these Regulations.

(*b*)The term "short blast" means a blast of about one second's duration.

(*c*)The term "prolonged blast" means a blast of from four to six seconds' duration.

Rule 33

Equipment for Sound Signals

(*a*)A vessel of 12 metres or more in length shall be provided with a whistle, a vessel of 20 metres or more in length shall be provided with a bell in addition to a whistle, and a vessel of 100 metres or more in length shall, in addition, be

provided with a gong, the tone and sound of which cannot be confused with that of the bell. The whistle, bell and gong shall comply with the specification in Annex III to these Regulations. The bell or gong or both may be replaced by other equipment having the same respective sound characteristics, provided that manual sounding of the prescribed signals shall always be possible.

(*b*)A vessel of less than 12 metres in length shall not be obliged to carry the sound signalling appliances prescribed in paragraph (*a*) of this Rule but if she does not, she shall be provided with some other means of making an efficient sound signal.

Rule 34

Manoeuvring and Warning Signals

(*a*)When vessels are in sight of one another, a power-driven vessel underway, when manoeuvring as authorized or required by these Rules, shall indicate that manoeuvre by the following signals on her whistle:

--one short blast to mean "I am altering my course to starboard",
--two short blasts to mean "I am altering my course to port",
--three short blasts to mean "I am operating astern propulsion".

(*b*)Any vessel may supplement the whistle signals prescribed in paragraph (*a*) of this Rule by light signals, repeated as appropriate, whilst the manoeuvre is being carried out:

(i) these light signals shall have the following significance:

--one flash to mean "I am altering my course to starboard",
--two flashes to mean "I am altering my course to port",
--three flashes to mean "I am operating astern propulsion",

(ii) the duration of each flash shall be about one second, the interval between flashes shall be about one second, and the interval between successive signals shall be not less than 10 seconds,
(iii)the light used for this signal shall, if fitted, be an all-round white light, visible at a minimum range of five miles, and shall comply with the provisions of Annex I.

(*c*)When in sight of one another in a narrow channel or fairway:
(i) a vessel intending to overtake another shall in compliance with Rule 9(*e*)(i) indicate her intention by the following signals on her whistle:
--two prolonged blasts followed by one short blast to mean "I intend to overtake you on your starboard side",
--two prolonged blasts followed by two short blasts to mean "I intend to overtake you on your port side",
(ii) the vessel about to be overtaken when acting in accordance with Rule 9(*e*)(i) shall indicate her agreement by the following signal on her whistle;
--one prolonged blast, one short, one prolonged and one short blast, in that order.

(*d*)When vessels in sight of one another are approaching each other and from any cause either vessel fails to understand the intentions or actions of the other, or is in doubt whether sufficient action is being taken by the other to avoid collision, the vessel in doubt shall immediately indicate such doubt by giving at least five short and rapid blasts on the whistle. Such signal may be supplemented by a light signal of at least five short and rapid flashes.

(*e*)A vessel nearing a bend or an area of a channel or fairway where other vessels may be obscured by an intervening obstruction shall sound one prolonged blast. Such signal shall be answered with a prolonged blast by any approaching vessel that may be within hearing around the bend or behind the intervening obstruction.

(*f*)If whistles are fitted on a vessel at a distance apart of more than 100 metres, one whistle only shall be used for giving manoeuvring and warning signals.

Rule 35

Sound Signals in Restricted Visibility

In or near an area of restricted visibility, whether by day or night, the signals prescribed in this Rule shall be used as follows:

(*a*)A power-driven vessel making way through the water shall sound at intervals of not more than two minutes one prolonged blast.

(*b*)A power-driven vessel underway but stopped and making no way through the water shall sound at intervals of not more than two minutes two prolonged blasts in succession with an interval of about two seconds between them.

(*c*)A vessel not under command, a vessel restricted in her ability to manoeuvre, a vessel constrained by her draught, a sailing vessel, a vessel engaged in fishing and a vessel engaged in towing or pushing another vessel shall, instead of the signals prescribed in paragraph (*a*) or (*b*) of this Rule, sound at intervals of not more than two minutes three blasts in succession, namely one prolonged followed by two short blasts.

(*d*)A vessel engaged in fishing, when at anchor, and a vessel restricted in her ability to manoeuvre when carrying out her work at anchor, shall instead of the signals prescribed in paragraph (*g*) of this Rule sound the signal prescribed in paragraph (*c*) of this Rule.

(*e*)A vessel towed or if more than one vessel is towed the last vessel of the tow, if manned, shall at intervals of not more than two minutes sound four blasts in succession, namely one prolonged followed by three short blasts. When practicable, this signal shall be made immediately after the signal made by the towing vessel.

(*f*)When a pushing vessel and a vessel being pushed ahead are rigidly connected in a composite unit they shall be regarded as a power-driven vessel and shall give the signals prescribed in paragraph (*a*) or (*b*) of this Rule.

(*g*)A vessel at anchor shall at intervals of not more than one minute ring the bell rapidly for about five seconds. In a vessel of 100 metres or more in length the bell shall be sounded in the forepart of the vessel and immediately after the ringing of the bell the gong shall be sounded rapidly for about five seconds in the after part of the vessel. A vessel at anchor may in addition sound three blasts in succession, namely one short, one prolonged and one short blast, to give warning of her position and of the possibility of collision to an approaching vessel.

(*h*)A vessel aground shall give the bell signal and if required the gong signal prescribed in paragraph (*g*) of this Rule and shall, in addition, give three separate and distinct strokes on the bell immediately before and after the rapid ringing of the bell. A vessel aground may in addition sound an appropriate whistle signal.

(*i*)A vessel of 12 metres or more but less than 20 metres in length shall not be obliged to give the bell signals prescribed in paragraphs (*g*) and (*h*) of this Rule. However, if she does not, she shall make some other efficient sound signal at intervals of not more than 2 minutes.

(*j*)A vessel of less than 12 metres in length shall not be obliged to give the above mentioned signals but, if she does not, shall make some other efficient sound signal at intervals of not more than 2 minutes.

(*k*)A pilot vessel when engaged on pilotage duty may in addition to the signals prescribed in paragraphs (*a*), (*b*) or (*g*) of this Rule sound an identity signal consisting of four short blasts.

Rule 36

Signals to attract Attention

If necessary to attract the attention of another vessel any vessel may make light or sound signals that cannot be mistaken for any signal authorized elsewhere in these Rules, or may direct the beam of her searchlight in the direction of the danger, in such a way as not to embarrass any vessel. Any light to attract the attention of another vessel shall be such that it cannot be mistaken for any aid to navigation. For the purpose of this Rule the use of high intensity intermittant or revolving lights, such as strobe lights, shall be avoided.

Rule 37

Distress Signals

When a vessel is in distress and requires assistance she shall use or exhibit the signals described in Annex IV.

PART E--EXEMPTIONS

Rule 38

Exemptions

Any vessel (or class of vessels) provided that she complies with the requirements of the International Regulations for Preventing Collisions at Sea, 1960, the keel of which is laid or which is at a corresponding stage of construction before the entry into force of these Regulations is exempted from compliance therewith as follows:

(*a*)The installation of lights with ranges prescribed in Rule 22, until four years after the date of entry into force of these Regulations.

(*b*)The installation of lights with colour specifications as prescribed in section 7 of Annex I to these Regulations, until four years after the date of entry into force of these Regulations.

(*c*)The repositioning of lights as a result of conversion from Imperial to metric units and rounding off measurement figures, permanent exemption.

(*d*) (i) The repositioning of masthead lights on vessels of less than 150 metres in length, resulting from the prescriptions of section 3(*a*) of Annex I, permanent exemption.
(ii) The repositioning of masthead lights on vessels of 150 metres or more in length, resulting from the prescriptions of section 3(*a*) of Annex I, until nine years after the date of entry into force of these Regulations.

(*e*)The repositioning of masthead lights resulting from the prescriptions of section 2(*b*) of Annex I, until nine years after the date of entry into force of these Regulations.

(*f*)The repositioning of sidelights resulting from the prescriptions of sections 2(*g*) and 3(*b*) of Annex I, until nine years after the date of entry into force of these Regulations.

(*g*)The requirements for sound signal appliances prescribed in Annex III, until nine years after the date of entry into force of these Regulations.

(*h*)The repositioning of all-round lights resulting from the prescription of section 9(*b*) of Annex I, permanent exemption.

ANNEX I
POSITIONING AND TECHNICAL DETAILS OF LIGHTS AND SHAPES

1. **Definition**

(*a*)The term "height above the hull" means height above the uppermost continuous deck. This height shall be measured from the position vertically beneath the location of the light.

2. **Vertical positioning and spacing of lights**

(*a*)On a power-driven vessel of 20 metres or more in length the masthead lights shall be placed as follows:

(i) the forward masthead light, or if only one masthead light is carried, then that light, at a height above the hull of not less than six metres, and, if the breadth of the vessel exceeds six metres, then at a height above the hull not less than such breadth, so however that the light need not be placed at a greater height above the hull than 12 metres,

(ii) when two masthead lights are carried the after one shall be at least 4.5 metres vertically higher than the forward one.

(*b*)The vertical separation of masthead lights of power-driven vessels shall be such that in all normal conditions of trim the after light will be seen over and separate from the forward light at a distance of 1 000 metres from the stem when viewed from sea level.

(*c*)The masthead light of a power-driven vessel of 12 metres but less than 20 metres in length shall be placed at a height above the gunwale of not less than 2.5 metres.

(*d*)A power-driven vessel of less than 12 metres in length may carry the uppermost light at a height of less than 2.5 metres above the gunwale.

(*d.*1)Where a masthead light is carried in addition to sidelights and a sternlight or where the all-round light described in subparagraph (*c*)(i) of Rule 23 is carried in addition to sidelights, the masthead light or the all-round light shall be carried at least one metre higher than the sidelights.

(*e*)One of the two or three masthead lights prescribed for a power-driven vessel when engaged in towing or pushing another vessel shall be placed in the same position as either the forward masthead light or the after masthead light, provided that, if carried on the aftermast, the lowest after masthead light shall be at least 4.5 metres vertically higher than the forward masthead light.

(*f*) (i)The masthead light or lights prescribed in Rule 23(*a*) shall be so placed as to be above and clear of all other lights and obstructions except as described in subparagraph (ii).

(ii) When it is impracticable to carry the all-round lights prescribed by Rule 27(*b*)(i) or Rule 28 below the masthead lights, they may be carried above the after masthead light(s) or vertically in between the forward masthead light(s) and after masthead light(s), provided that in the latter case the requirement of section 3(*c*) of this Annex shall be complied with.

(*g*)The sidelights of a power-driven vessel shall be placed at a height above the hull not greater than three-quarters of that of the forward masthead light. They shall not be so low as to be interfered with by deck lights.

(*h*)The sidelights, if in a combined lantern and carried on a power-driven vessel of less than 20 metres in length, shall be placed not less than one metre below the masthead light.

(*i*)When the Rules prescribe two or three lights to be carried in a vertical line, they shall be spaced as follows:

(i) on a vessel of 20 metres in length or more, such lights shall be spaced not less than two metres apart, and the lowest of these lights shall, except where a towing light is required, be placed at a height of not less than four metres above the hull,

(ii) on a vessel of less than 20 metres in length, the lights shall be spaced not less than one metre apart and the lowest of the lights shall, except where a towing light is required, be placed at a height of not less than two metres above the gunwale,

(iii)when three lights are carried they shall be equally spaced.

(*j*)The lower of the two all-round lights prescribed for a vessel when engaged in fishing shall be at a height above the sidelights not less than twice the distance between the two vertical lights.

(*k*)The forward anchor light prescribed in Rule 30(*a*) (i), when two are carried, shall not be less than 4.5 metres above the after one. On a vessel of 50 metres or more in length this forward anchor light shall be placed at a height of not less than six metres above the hull.

3. **Horizontal Positioning and Spacing of Lights**

(*a*)When two masthead lights are prescribed for a power-driven vessel, the horizontal distance between them shall not be less than one-half of the length of the vessel but need not be more than 100 metres. The forward light shall be placed not more than one-quarter of the length of the vessel from the stem.

(*b*)On a power-driven vessel of 20 metres or more in length the sidelights shall not be placed in front of the forward masthead lights. They shall be placed at or near the side of the vessel.

(*c*)When the lights prescribed in Rule 27(*b*)(i) or Rule 28 are placed vertically between the forward masthead light(s) and the after masthead light(s) these all-round lights shall be placed at a horizontal distance of not less than two metres from the fore and aft centreline of the vessel in the athwartship direction.

(*d*)When only one masthead light is prescribed for a power-driven vessel, that light shall be exhibited forward of amidships, except that a vessel of less than 20 m in length need not exhibit that light forward of amidships but shall exhibit it as far forward as is practicable.

4. **Details of location of direction-indicating lights for fishing vessels, dredgers and vessels engaged in underwater operations**

(*a*)The light indicating the direction of the outlying gear from a vessel engaged in fishing as prescribed in Rule 26(*c*)(ii) shall be placed at a horizontal distance of not less than two metres and not more than six metres away from the two all-round red and white lights. This light shall be placed not higher than the all-round white light prescribed in Rule 26(*c*)(i) and not lower than the sidelights.

(*b*)The lights and shapes on a vessel engaged in dredging or underwater operations to indicate the obstructed side and/or the side on which it is safe to pass, as prescribed in Rule 27(*d*)(i) and (ii), shall be placed at the maximum practical horizontal distance, but in no case less than two metres, from the lights or shapes prescribed in Rule 27(*b*)(i) and (ii). In no case shall the upper of these lights or shapes be at a greater height than the lower of the three lights or shapes prescribed in Rule 27(*b*)(i) and (ii).

5. **Screens for Sidelights**

The sidelights of vessels of 20 metres or more in length shall be fitted with inboard screens painted matt black and shall meet the requirements of section 9 of this Annex. On vessels of less than 20 metres in length the sidelights, if necessary to meet the requirements of section 9 of this Annex, shall be fitted with inboard matt black screens. With a combined lantern, using a single vertical filament and a very narrow division between the green and red sections, external screens need not be fitted.

6. **Shapes**

(*a*)Shapes shall be black and of the following sizes:
(i) a ball shall have a diameter of not less than 0.6 metre,
(ii) a cone shall have a base diameter of not less than 0.6 metre and a height equal to its diameter,
(iii)a cylinder shall have a diameter of at least 0.6 metre and a height of twice its diameter,
(iv) a diamond shape shall consist of two cones as defined in subparagraph (ii) above having a common base.

(*b*)The vertical distance between shapes shall be at least 1.5 metres.

(*c*)In a vessel of less than 20 metres in length shapes of lesser dimensions but commensurate with the size of the vessel may be used and the distance apart may be correspondingly reduced.

7. **Colour Specification of Lights**

The chromaticity of all navigation lights shall conform to the following standards, which lie within the boundaries of the area of the diagram specified for each colour by the International Commission on Illumination (CIE).

The boundaries of the area for each colour are given by indicating the corner co-ordinates, which are as follows:

(i) *White*

x 0.525 0.525 0.452 0.310 0.310 0.443

y 0.382 0.440 0.440 0.348 0.283 0.382

(ii) *Green*

x 0.028 0.009 0.300 0.203

y 0.385 0.723 0.511 0.356

(iii) *Red*

x 0.680 0.660 0.735 0.721

y 0.320 0.320 0.265 0.259

(iv) *Yellow*

x 0.612 0.618 0.575 0.575

y 0.382 0.382 0.425 0.406

8. **Intensity of lights**

(*a*)The minimum luminous intensity of lights shall be calculated by using the formula:

$I = 3.43 \times 10^6 \times T \times D^2 \times K^{-D}$
where I is luminous intensity in candelas under service conditions,
T is threshold factor 2×10^{-7} lux,
D is range of visibility (luminous range) of the light in nautical miles,
K is atmospheric transmissivity.

For prescribed lights the value of K shall be 0.8, corresponding to a meteorological visibility of approximately 13 nautical miles.

(*b*)A selection of figures derived from the formula is given in the following table:

Range of visibility (luminous range) of light in nautical miles D	Luminous intensity of light in candelas for K = 0.8 I
1	0.9
2	4.3
3	12
4	27
5	52
6	94

NOTE: The maximum luminous intensity of navigation lights should be limited to avoid undue glare. This shall not be achieved by a variable control of the luminous intensity.

9. **Horizontal Sectors**

(*a*) (i) In the forward direction, sidelights as fitted on the vessel shall show the minimum required intensities. The intensities shall decrease to reach practical cut-off between one degree and three degrees outside the prescribed sectors.

(ii) For sternlights and masthead lights and at 22.5 degrees abaft the beam for sidelights, the minimum required intensities shall be maintained over the arc of the horizon up to five degrees within the limits of the sectors prescribed in Rule 21. From five degrees within the prescribed sectors the intensity may decrease by 50 per cent up to the prescribed limits; it shall decrease steadily to reach practical cut-off at not more than five degrees outside the prescribed sectors.

(*b*)(i)All-round lights shall be so located as not to be obscured by masts, topmasts or structures within angular sectors of more than six degrees, except anchor lights prescribed in Rule 30, which need not be placed at an impracticable height above the hull.

(ii) If it is impracticable to comply with subparagraph (i) by exhibiting only one all-round light, two all-round lights shall be used suitably positioned or screened so that they appear, as far as practicable, as one light at a distance of one mile.

10. **Vertical Sectors**

(*a*)The vertical sectors of electric lights as fitted, with the exception of lights on sailing vessels underway, shall be such that
(i) at least the required minimum intensity is maintained at all angles from five degrees above to five degrees below the horizontal,
(ii) at least 60 per cent of the required minimum intensity is maintained from 7.5 degrees above to 7.5 degrees below the horizontal.

(*b*)In the case of sailing vessels underway, the vertical sectors of electric lights as fitted shall be such that
(i) at least the required minimum intensity is maintained at all angles from five degrees above to five degrees below the horizontal,
(ii) at least 50 per cent of the required minimum intensity is maintained from 25 degrees above to 25 degrees below the horizontal.

(*c*)In the case of lights other than electric these specifications shall be met as closely as possible.

11. **Intensity of non-electric lights**

Non-electric lights shall so far as practicable comply with the minimum intensities, as specified in the table given in section 8 of this Annex.

12. **Manoeuvring Light**

(*a*)Notwithstanding the provisions of paragraph 2(*f*) of this Annex the manoeuvring light described in Rule 34(*b*) shall be placed in the same fore and aft vertical plane as the masthead light or lights and, where practicable, at a minimum height of two metres vertically above the forward masthead light, provided that it shall be carried not less than two metres vertically above or below the after masthead light. On a vessel where only one masthead light is carried the manoeuvring light, if fitted, shall be carried where it can best be seen, not less than two metres vertically apart from the masthead light.

13. **High-speed Craft***

The masthead light of high-speed craft with a length-to-breadth ra

(*a*) The masthead light of high-speed craft may be placed at a height related to the breadth of the craft lower than that prescribed in subparagraph 2(*a*)(i) of this Annex, provided that the base angle of the isosceles triangles formed by the sidelights and masthead light, when seen in end elevation, is not less than 27°.

(*b*) On high-speed craft of 50 metres or more in length, the vertical separation between foremast and mainmast light of 4.5 metres required by subparagraph 2(*a*)(ii) of this Annex may be modified provided that such distance shall not be less than the value determined by the following formula:

$$y = [(a + 17?)C/1000] + 2$$

where

y is the height of the mainmast light above the foremast light in metres;

a is the height of the foremast light above the water surface in service condition in metres;

? is the trim in service condition in degrees; and

C is the horizontal separation of masthead lights in metres.

* Refer to the *International Code of Safety for High-Speed Craft, 1994* and the *International Code of Safety for High-Speed Craft, 2000*.

14. **Approval**

(*a*)The construction of lights and shapes and the installation of lights on board a vessel shall be to the satisfaction of the appropriate authority of the State whose flag the vessel is entitled to fly.

ANNEX II
ADDITIONAL SIGNALS FOR FISHING VESSELS FISHING IN CLOSE PROXIMITY

1. **General**

The lights mentioned herein shall, if exhibited in pursuance of Rule 26(*d*), be placed where they can best be seen. They shall be at least 0.9 metre apart but at a lower level than lights prescribed in Rule 26(*b*)(i) and (*c*)(i). The lights shall be visible all round the horizon at a distance of at least one mile but at a lesser distance than the lights prescribed by these Rules for fishing vessels.

2. **Signals for trawlers**

(*a*) Vessels of 20 m or more in length when engaged in trawling, whether using demersal or pelagic gear, shall exhibit

(i) when shooting their nets: two white lights in a vertical line,
(ii) when hauling their nets: one white light over one red light in a vertical line,
(iii)when the net has come fast upon an obstruction: two red lights in a vertical line

(*b*) Each vessel of 20 m or more in length engaged in pair trawling shall exhibit

(i) by night, a searchlight directed forward and in the direction of the other vessel of the pair,

(ii) when shooting or hauling their nets or when their nets have come fast upon an obstruction, the lights prescribed in paragraph 2(*a*) above.

(*c*) A vessel of less than 20 m in length engaged in trawling, whether using demersal or pelagic gear or engaged in pair trawling, may exhibit the lights prescribed in paragraph (*a*) or (*b*), as appropriate.

3. **Signals for purse seiners**

Vessels engaged in fishing with purse seine gear may exhibit two yellow lights in a vertical line. These lights shall flash alternately every second and with equal light and occultation duration. These lights may be exhibited only when the vessel is hampered by its fishing gear.

ANNEX III
TECHNICAL DETAILS OF SOUND SIGNAL APPLIANCES

1. **Whistles**

(*a*)*Frequencies and range of audibility*

The fundamental frequency of the signal shall lie within the range 70-700 Hz. The range of audibility of the signal from a whistle shall be determined by those frequencies, which may include the fundamental and/or one or more higher frequencies, which lie within the range 180-700 Hz (± 1%) for a vessel of 20 metres or more in length, or 180-2100 Hz (± 1%) for a vessel of less than 20 metres in length and which provide the sound pressure levels specified in paragraph (*c*) below.

(*b*)*Limits of fundamental frequencies*

To ensure a wide variety of whistle characteristics, the fundamental frequency of a whistle shall be between the following limits:

(i) 70-200 Hz, for a vessel 200 metres or more in length,

(ii) 130-350 Hz, for a vessel 75 metres but less than 200 metres in length,

(iii)250-700 Hz, for a vessel less than 75 metres in length.

(*c*)*Sound signal intensity and range of audibility*

A whistle fitted in a vessel shall provide, in the direction of maximum intensity of the whistle and at a distance of 1 metre from it, a sound pressure level in at least one 1/3rd octave band within the range of frequencies 180-700 Hz (± 1%) for a vessel 20 metres or more in length, or 180-2100 Hz (± 1%) for a vessel less than 20 metres in length, of not less than the appropriate figure given in the table below.

Length of vessel in metres	1/3-octave band level at 1 metre in dB referred to 2 x 10^{-5} N/m^2	Audibility range in nautical miles
200 or more	143	2
75 but less than 200	138	1.5
20 but less than 75	130	1
	120*1	
Less than 20	115*2	
	111*3	0.5

***1 when the measured frequencies lie within the range 180-450Hz**

***2 when the measured frequencies lie within the range 450-800Hz**

***3 when the measured frequencies lie within the range 800-2100Hz**

The range of audibility in the table above is for information and is approximately the range at which a whistle may be heard on its forward axis with 90 per cent probability in conditions of still air on board a vessel having average background noise level at the listening posts (taken to be 68 dB in the octave band centred on 250 Hz and 63 dB in the octave band centred on 500 Hz).

In practice the range at which a whistle may be heard is extremely variable and depends critically on weather conditions; the values given can be regarded as typical but under conditions of strong wind or high ambient noise level at the listening post the range may be much reduced.

(*d*)*Directional Properties*

The sound pressure level of a directional whistle shall be not more than 4 dB below the prescribed sound pressure level on the axis at any direction in the horizontal plane within 45 degrees of the axis. The sound pressure level at any other direction in the horizontal plane shall be not more than 10 dB below the prescribed sound pressure level on the axis, so that the range in any direction will be at least half the range on the forward axis. The sound pressure level shall be measured in that 3rd-octave band which determines the audibility range.

(*e*)*Positioning of Whistles*

When a directional whistle is to be used as the only whistle on a vessel, it shall be installed with its maximum intensity directed straight ahead. A whistle shall be placed as high as practicable on a vessel, in order to reduce interception of the emitted sound by obstructions and also to minimize hearing damage risk to personnel. The sound pressure level of the vessel's own signal at listening posts shall not exceed 110 dB (A) and so far as practicable should not exceed 100 dB (A).

(*f*)*Fitting of more than one whistle*

If whistles are fitted at a distance apart of more than 100 metres, it shall be so arranged that they are not sounded simultaneously.

(*g*)*Combined whistle systems*

If due to the presence of obstructions the sound field of a single whistle or of one of the whistles referred to in paragraph 1(*f*) above is likely to have a zone of greatly reduced signal level, it is recommended that a combined whistle system be fitted so as to overcome this reduction. For the purposes of the Rules a combined whistle system is to be regarded as a single whistle. The whistles of a combined system shall be located at a distance apart of not more than 100 metres and arranges to be sounded simultaneously. The frequency of any one whistle shall differ from those of the others by at least 10 Hz.

ANNEX IV
DISTRESS SIGNALS

1. The following signals, used or exhibited either together or separately, indicate distress and need of assistance:

(*a*) a gun or other explosive signal fired at intervals of about a minute;

(*b*)a continuous sounding with any fog-signalling apparatus;

(*c*)rockets or shells, throwing red stars fired one at a time at short intervals;

(*d*)a signal made by radiotelegraphy or by any other signalling method consisting of the group ...---... (SOS) in the Morse Code;

(*e*)a signal sent by radiotelephony consisting of the spoken word "Mayday";

(*f*)the International Code Signal of distress indicated by N.C.;

(*g*)a signal consisting of a square flag having above or below it a ball or anything resembling a ball;

(*h*)flames on the vessel (as from a burning tar barrel, oil barrel, etc.);

(*i*)a rocket parachute flare or a hand flare showing a red light;

(*j*)a smoke signal giving off orange-coloured smoke;

(*k*)slowly and repeatedly raising and lowering arms outstretched to each side;

(*l*)the radiotelegraph alarm signal;

(*m*)the radiotelephone alarm signal;

(*n*)signals transmitted by emergency position-indicating radio beacons;

(*o*) approved signals transmitted by radio communication systems including survival craft transponders.

2. The use or exhibition of any of the foregoing signals except for the purpose of indicating distress and need of assistance and the use of other signals which may be confused with any of the above signals is prohibited.

3. Attention is drawn to the relevant sections of the *International Code of Signals*, the *Merchant Ship Search and Rescue Manual* and the following signals:

(*a*)a piece of orange canvas with either a black square and circle or other symbol appropriate for identification from the air; and

(*b*)a dye marker.

UK ORAL NOTES

Fire situations

At all times muster crew and take a head count.

Fire in port (cargo operations or bunker operations):

1. Raise the alarm.
2. Inform port authorities.
3. Inform the Master.
4. Cease cargo or bunker operations. Caste off bunker barge that is alongside.
5. Non essential persons to be sent ashore.
6. One man standby at the gangway with cargo plan, fire wallet, international shore connection to act as a guide for shore fire party.
7. Muster all crew- **head count**. Fire party briefed.
8. Proceed to scene off fire and investigate.
9. Shut down all **ventilation**.
10. Start emergency fire p/p. Try to fight the fire by conventional means.
11. Maintain boundary cooling at all times.
12. After fire brigade comes-

- Hand over fire wallet.
- Co-ordinate closely and assist as required.
- Constant check on stability at all times.

If **cargo space** fire- close and batten down hatches.

If **accommodation** fire then isolate all electrical circuits.

Cargo space fire (at sea):

1. Raise alarm.
2. Inform master.
3. Reduce speed.
4. If fire is forward then bring wind to the quarter and if fire is aft then bring wind to aft.
5. Muster all crew- **head count**. Fire party briefed.
6. Proceed to scene off fire and investigate.
7. Shut down all **ventilation**.
8. Start emergency fire p/p. Try to fight the fire by conventional means.
9. Maintain boundary cooling at all times.
10. Refer to the cargo plan with regard to the type of cargo on fire and if any dangers associated with it.
11. Commence boundary cooling and check adjacent compartment for additional fire risk.
12. Consider ballasting the adjacent tanks after calculation of GM of the vessel.
13. Inject fixed CO^2.
14. Investigate port of refuge facility and inform port authorities.

Accommodation fire at sea:

1. Raise alarm. Inform master.
2. Muster all crew- **head count**. Fire party briefed.
3. Proceed to scene off fire and investigate.
4. Shut down all **ventilation**.
5. Start emergency fire p/p. Try to fight the fire by conventional means.
6. Maintain boundary cooling at all times.
7. Close all watertight and fire doors.
8. Isolate electrical circuits.
9. Boundary cooling.
10. Fire fighters to work in pairs properly equipped- investigate and tackle the fire by conventional means.

Galley fire at sea:

1. First six points as above.
2. Due regards to be given to the type of extinguishing agent being used-

- Foam- oil stoves.
- DCP- electrical fires.
- CO_2 can be used as smothering agent.

Fire at sea: (engine room)

1. Raise the alarm.
2. Inform the master
3. Reduce the vessels speed. Engage manual steering. Display N.U.C. lights. Weather reports, open communication with other vessels in the vicinity and send urgency signal.
4. Close all ventilation, fire and watertight doors.
5. Muster all crew- take a head count. Emergency fire p/p running.
6. **Isolate all electrical units**. Commence boundary cooling.
7. Fight fire by conventional means.
8. Main fire party to be properly equipped. Back up party ready at all times.
9. C/O not to enter as he monitors progress and communication with the bridge. Proper communication between bridge and engine room. Keep bridge informed accordingly of sequence of events.

At all times fire fighters to be well equipped with breathing apparatus and fireman suit. Checks on apparatus must be carried out prior to entering space.

<u>Releasing of CO_2 at sea</u>:

CO_2 is only released when fire is out of control.

Before releasing:

1. Seal engine room.
2. All ventilation to be closed.
3. Fuels and boiler within engine room to be shut down.
4. Evacuate and seal the engine room. **Head count**.
5. Check out the amount of CO^2 required to be injected as per the planned injection information (found in CO^2 room and remote station).

6. Open fire cabinet door causing alarm to activate.
7. Operate fire handle mechanism to fire the pilot bottles, which fires the bank of bottles in the engine room. Ensure hold valves are closed.

Planned injection information:

1. CO_2 arrangement plan.
2. Procedure of firing.
3. Number of bottles designated for each place protected.
4. Number of non return valves.

After releasing:

1. Always advisable to wait before carrying out an investigation.
2. Maintain boundary cooling and observe temperature at various levels.
3. Once a distinct fall in temperature has been observed an internal inspection and assessment may be carried out.
4. Breathing apparatus to be donned when entering the space. Checks on breathing apparatus. 2/E and oiler to enter.
5. Inspection to be carried out with spray fire fighting equipment, safety line and communication checked prior to entry.
6. Once it has been confirmed that fire has been brought under control an additional assessment by chief engineer.
7. When both opinions agreed upon damage control party to be sent in for cooling down work.

Learn CO_2 arrangement system diagram, has been asked before.

Precautions when using a CO_2 extinguisher:

1. Always read instructions before firing.
2. Remove safety pin.
3. Do not touch any metal part of the extinguisher.
4. Direct nozzle away and fire.

Contents of a fire wallet:

1. General arrangement plan.
2. Shell expansion plan.
3. Ventilation plan.
4. Fire fighting equipment plan.
5. Position of all watertight doors.
6. Stability information, cargo plan cargo manifest- if dangerous goods carried.
7. Crews list.
8. Electric data.

Operation of emergency fire pump:

1. Check lubrication.
2. Check salt water cooling.
3. Turn on fuel.

4. Decompress the cylinders.
5. Crank the fly wheel.
6. When fly wheel is freely rotating compress the cylinders.
7. Once engine starts firing adjust the throttle.

CO_2 Three way valve:

1. Samples of smoke pass through a three way valve to the smoke detector system.
2. This valve is shut but sample passes into the smoke detector.
3. Once it is confirmed that there is fire open the valve.
4. Smothering gas or CO^2 can be injected into the hold via the valve.

Pre operational checks of breathing apparatus:

1. Ensure bypass v/v is fully closed.
2. Open cylinder valve to check if cylinders are fully charged, whistle will be heard as the pressure rises.
3. Close cylinder valve. Provided it does not fall to zero in less than 30 sec then the set is leak tight.
4. Demist mask visor with anti dim solution.
5. Don apparatus put on mask and open cylinder valves.
6. Inhale deeply twice or thrice to ensure that air is flowing freely from the demand v/v and the exhalation valve is functioning correctly.
7. Close cylinder v/v and inhale until air in the mask is exhausted. Now inhale deeply, the mask must collapse on the face indicating an airtight fitness of both mask exhalation v/v.
8. Reopen cylinder v/v.

Class A: dry fires (wood, paper, textiles)~ water, dry powder.

Class B: combustible liquids (kerosene, petrol etc.)~ foam, dry powder.

Class C: electrical fires~ CO^2, halon.

Class D: fire in light metals.

Class E: petroleum gases.

Class F: spontaneously combustible materials~ water, foam and dry powder.

Emergency stop valve:

1. This is usually of quick closing type. It fitted between the settling tank and the cold filters.
2. This valve has an extended spindle or of remote control type to the deck to enable the oil to be shut off in the case of a fire out break.

Safety

Safe means of access:

1. Gangway not to be at an inclination of more than 30 ^{o} to the horizontal.
2. Accommodation ladder not to be at an angle of inclination of more than 55 ^{o} to the horizontal.

3. Staunchions, rails, intermediate guides, lifelines to be properly rigged and free of damage.
4. Safety net free of damage and properly rigged.
5. Bottom platform horizontal to jetty.
6. Gangway area properly illuminated.
7. Lifebuoy with s.i. light and line, heaving line with rescue quoit available at access area.
8. Gangway free of any obstruction or slippery substance.
9. Gangway wires (free of damage) and all rollers moving freely.
10. ``No Smoking`` and ``No Unauthorized Persons`` signs displayed.
11. Fire wallet available at gangway.
12. Gangway not to be unattended at any times.

What are you looking for at the top of the gangway in port?

1. Fire wallet and international shore connection.

Pilot ladder:

1. A single length of ladder should be used.
2. Whenever the distance to the waterline exceeds 9m then a combination ladder to be used in conjunction with a pilot ladder.
3. Treads of the ladder must be made of hard wood (ash, oak, elm, or teak).
4. Steps (must remain horizontal at all times)-

- Dimensions- not less than 48Omm x 115mm x 25mm.
- Spacing- not less than 300mm and nor more than 380mm apart.

1. Four lower steps to be constructed of rubber.
2. Side ropes consist of manila rope 18mm in diameter.
3. Manropes of diameter not less than 20mm in diameter.
4. Spreaders-

- Dimensions- 1800mm – 2000mm in length.
- They must be so fixed so that the lowest spreader comes no lower than the 5^{th} step from the bottom.
- Intervals between spreaders not to exceed 9 steps.

1. The bulwark ladder must be well secured to the bulwark.

- Stanchion spacing- 700 – 800mm.
- Stanchion- not to extend more than 1200mm above bulwark.

<u>Man entry into enclosed spaces</u>

Any sort of entry into enclosed space should only be carried out when permission has been obtained by master or chief officer and persons entering are experienced.

1. Adequate ventilation and illumination.
2. Atmosphere tested and found safe.
3. Space secured for entry.
4. S.C.A.B.A. sets available at entry (apparatus tested).

5. Responsible person available at all times at entry point.
6. Communication –person entering, tanktop, bridge.
7. Personnel protective equipment to be used.
8. Where required breathing apparatus to be used.
9. Testing equipment available for regular checks:

- O_2 analyser- oxygen deficiency
- Explosimeter- HC vapour and explosive limit
- Tankscope- measures oxygen in inert atmosphere
- Dragger tubes- measures oxygen if correct tube fitted.

Pumproom entry:

1. Ventilation should be provided at least 15` before entering and to be continuously running.
2. A permanently rigged **rescue harness and line** should be at the top at all times.
3. O_2 content 21%.
4. Gas generation in oily bilges should be reduced by spreading a foam layer over the oil.
5. Means of communication established.
6. Competent man standby on the top.
7. Advice the officer on entry and exit.
8. Explosimeter readings at various levels.
9. Adequate illumination.
10. One **SCABA** standby on top.
11. **ELSA** at bottom platform.

Tank entry:

1. Permission from chief officer.
2. Tank clean.
3. Tank not pressurised.
4. Tank inerted and gas freed.
5. Tank containing 21% oxygen.
6. Cargo system shut down.
7. Tank isolated from I.G.
8. Notices placed at tank IG isolating valves, cargo tank, cargo control room.
9. Fresh air being supplied to the tank.
10. Breathing apparatus and lifeline available.

Tank ventilation:

1. Forced ventilation: use of canvas to direct air in through one manhole and then out through another manhole in the same tank.
2. Mechanical ventilation: use of small portable blowers connected to canvas or plastic shoots and the free and at the bottom of the tank. If blower not available then the use of deck compressed air.

Why should there be 21% O_2 in the tank prior entry or hot work?

Air that contains 21% oxygen will not support human life.

Bunkering procedures:

1. Conduct a safety meeting with master and C/E. discuss the bunker plan and which tank the bunkers is being taken in.
2. Accordingly calculate the stability of the vessel. Keep a check on the stability of the vessel and all stages of bunkering taking into account the free surface effect at various stages.
3. Emergency shut down procedure agreed.
4. ``B`` flag or red bunker light on.
5. Seal the deck.
6. Drip trays plugged.
7. 3 way communication- bunker station, manifold and tank.
8. Bonding wire and fire wire rigged.
9. Fire fighting equipment ready- fire extinguisher and fire hose pressurized with emergency fire pump.
10. Oil spill gear at manifold.
11. Display ``No Smoking`` signs and ``No unauthorized persons on board``.
12. Display emergency telephone numbers.
13. Two means of access- forward part of vessel and access from ship to bunker station.
14. Accommodation doors shut.
15. Air-condition on internal circulation.
16. Overboard to be checked regularly for any spillage.
17. Contingency plan for fire or oil spillage.
18. Entries in oil record book.
19. Tank vents open.
20. Flame arresters on vents.

Taking over as chief officer:

1. Check certificates and validity.
2. Register of ship lifting appliances and gear.
3. Ships plan.
4. Garbage record book.
5. Oil record book.
6. LSA/FFA maintenance record book.
7. Planned maintenance scheme checks.
8. General condition of ship and defects list.
9. Possession of all important keys.
10. Condition of stores inventories and requisition.
11. Overtime sheets.
12. Navigational equipment.
13. Deck log book.
14. Ongoing or future surveys.
15. Cargo aspect:

- Records of all past loading and discharges.
- Ship stability booklet, cargo plan, cargo manifest, ship stability booklet,
- Present situation regarding cargo and stowage.
- Expected time of completion and departure.
- Any draft restrictions in port of departure or arrival.
- Reserves on board- oil, ballast, fresh water, cargo etc.
- Loadicator- general operation, test condition, take custody of instruction manual and back up floppy.

IMDG

Classes of dangerous cargo:

Class 1 : explosives

Class 2 : gases compressed, liquefied or dissolved under pressure.

Class 3 : inflammable liquids.

Class 4.1 : inflammable solids.

Class 4.2 : inflammable solids or substances liable to spontaneous combustion.

Class 4.3 : inflammable solids or substances which when in contact with water emit flammable gases.

Class 5.1 : oxidising substances.

Class 5.2 : organic peroxides.

Class 6.1 : poisonous toxic substances.

Class 6.2 : infectious substances.

Class 7 : radio active substances.

Class 8 : corrosives.

Class 9 : miscellaneous dangerous cargo which presto a danger not covered by other classes.

Marking:

The following requirements shall be complied with-

1. The package must be clearly marked with the correct technical names of goods and an indication must be given with the hazards that could arise during the transportation of the goods.
2. Markings must comply with IMDG.
3. The outer material of the package will survive 3 months immersion and the marking must be durable.
4. If the outer material does not survive 3 months then the inner receptacle which will survive 3 months must be durably marked.
5. If the goods are carried in a container then the unit must have distinctive labels on the external.

Packing:

1. Shall be in good condition.
2. Of such a character that an interior surface with which the contents may come in contact is not dangerously affected by the substance being conveyed and capable of withstanding the ordinary risk of carriage at sea.
3. Where absorbent or cushioning is being used-

- Capable of minimising the danger to which the liquid may give rise.
- Prevent movement and ensures that the receptacle remains surrounded.
- Absorb liquid in the event of breakage.

1. Receptacles shall have an ullage at the filling temperature sufficient to allow for the highest temperature during the voyage.
2. Cylinders or receptacles under pressure shall have been adequately constructed, tested and correctly filled.
3. Empty receptacles shall be considered as dangerous and be treated as dangerous cargo unless they have been cleaned and dried.

Stowage:

1. Dangerous cargo should be stowed safely appropriately according to the nature of the cargo. Incompatible goods to be separated from one another.
2. Explosives to be stored in magazines and to be kept securely closed at sea. They should be kept far away from electricals.
3. Goods which give dangerous vapours should be stowed in well-ventilated places.
4. Ships carrying inflammable liquids and gases special precautions should be taken against fire and explosion.
5. Substances liable to spontaneous heating should not be carried unless adequate precautions have been taken.

Cargo work

Precautions when going alongside to load a tanker:

1. Stability aspect-

- Details of cargo.
- Disposition of cargo.
- GM, stresses, drafts.
- Ballasting of tanks- FSE.
- Bunker distribution.
- Draft restrictions or special requirements in next port.

1. Ships main transmitting aerials off.
2. Electric cables or portable equipment disconnected.
3. Switch of radars when vessel comes alongside- 10cm radar could induce electrical potential into into nearby conductors at berth.
4. Proper lighting at berth.
5. Are sea and overboard discharge v/v sealed and closed.
6. Deck sealed.
7. All accommodation external doors, port holes etc to be closed.
8. Air-condition on re-circulation.
9. Start pump room ventilation at least 15` before arrival. Blowers to be on continuously.
10. Ship shore bonding.
11. Proper means of access available between ship and shore.
12. Compliance of terminal safety and pollution regulations.
13. Placards-

- No unauthorized personnel.
- No smoking signs.
- No naked lights.
- Emergency escape routes clearly shown.

1. Moorings- ship personnel are responsible and a continuous check is to be kept.
2. Emergency towing wire forward and aft.
3. Fire-fighting equipment-

- Fire hoses connected to ships fire main one forward and one aft of the manifold and pressurised.
- Ensure that ship and shore international shore connection available for use at all times.
- Emergency fire pump standby at all times and ready for immediate use.
- In cold weather the freezing of water should be avoided by bleeding of water over-side or by crack opening the drain valve.
- Terminal fire fighting equipment ready at all times.
- Foam monitors directed towards the manifold.
- Portable fire extinguishers preferably of DCP.

1. Oil spill equipment available as per SOPEP manual.
2. Proper communication available-

- Between shore tanks, manifold and CCR.
- Emergency contact numbers available.

1. V/l at all times ready to move under power.
2. Documentation-

- Ships particulars.
- Bill of lading.
- Statement of facts.
- Empty tank certificates.
- Draft and trim.
- Maximum draft and trim expected.
- Quantity of cargo to be loaded or discharged.
- Nature of cargo (if discharging).
- Distribution of cargo on board (if discharging).
- If vessel has I.G. system and slop tank disposal system. Confirmation on the fact that the vessel if fully inerted. Any dirty ballast in slops.
- O^2 content of tanks.
- Defects in hull, machinery etc.
- If any repairs that could delay the cargo operations.
- Details of statutory certificates and their period of validity.

1. Get vessel ready for tank inspection.
2. Discharge and loading plan agreed upon.
3. Obtain ship shore safety checklist.

Transferring of engine room bilges into slops:

Via the MARPOL connection.

Transferring slops:

Via the MARPOL line at manifold or cargo manifold.

Gas freeing:

Displacement method: makes use of a pipe opening at the bottom of the tank which displaces HC vapour at the bottom of the tank.

Dilution method: relies on highly powered fans which blows air to the bottom of the tank thus diluting the petroleum vapour at the bottom of the tank. E.g. portable driven fans or eductor driven fans.

For tank entry LFL must always be 1%.

Limits of flammability:

Upper flammable limit: 10% gas to 90% air.

Lower flammable limit: 1% gas to 99% air.

For reception of cargo: 40% LFL.

In inerted condition:

1. Oxygen level in tank if below 11% will not support combustion.
2. Maximum permissible allowance is 8%.

Learn and understand the flammability range diagram**.**

Preparation of bulk cargo hatch prior loading:

1. Secure hatch openings and ensure safe access for grabs.
2. Remove spar ceilings and stow them safely.
3. Sweep out hold completely and remove all traces of previous cargo. Consider a fresh water rinse. Ensure that the hold is clear of all previous cargo prior to loading.
4. Bilges-

- Well cleaned.
- Test suction.
- Cover bilge lid with burlap and cement.

1. Check water tightness and securing arrangements of hatches.
2. Check ventilation arrangement.
3. Ensure adequate lighting.
4. Check moisture content is below transportable moisture limit.
5. Check fire fighting / detection / alarm / and smothering system.
6. Where fire hazard risk avails no source of ignition. Display appropriate placards.
7. Post warning notices.
8. Rig shifting boards if necessary.

9. Rig cargo thermometers as necessary.
10. Remove unwanted dunnage.
11. Stability aspect-

- Stresses.
- GM
- Stability adequate.

Hazards of loading coal:

1. Emission of flammable gases (methane). Methane which is lighter than air tends to settle in the upper regions of the cargo space. Flammable range being 5% - 15%.
2. Some coals liable to spontaneous combustion, carbon monoxide is toxic and has a flammable range of 12% - 75%.
3. Liquefaction- cargo that is likely to shift if saturated with water.

Read through the MGN notices**.**

On board Safety:

On every sea going ship on which more than 5 workers are employed the company is required to employ a safety officer.

Safety officers duties:

1. Endeavour to ensure that the Code of Safe Working Practices are being followed.
2. Endeavour to ensure that the employers occupational health and safety policies are complied with. Investigate their complaints.
3. Carry out occupational health and safety inspection to every accessible part of the ship at least once every three months.
4. Investigate: accidents, dangerous occurrences, potential hazards to health or safety, make recommendations to master regarding the reoccurrence of an accident or to remove a hazard or any deficiency to the ship.
5. Stop any work at any time, which he reasonably believes, that may cause an accident. Inform master immediately.
6. Ensure so far as possible safety instructions, rules and guidance are complied with.

Checks to be made by safety officer:

1. Means of access- inspected, in safe condition, unobstructed.
2. Fixtures- due to which seaman may trip or cause particular overhead hazard. These should be painted and distinctly marked.
3. Guard rails- in place, secured and in good condition.
4. Proper illumination.
5. Ventilation adequate.
6. Machinery adequately guarded.
7. Permits to work issued as required.
8. Level of supervision adequate particularly for inexperienced crew.

Checks in machinery space:

1. Is the engine room safe to enter?
2. Is the machinery space adequately guarded?
3. Safety operation instructions clearly displayed.
4. Are lighting at different levels adequate.
5. Is the area clear of combustible material, rags, etc?
6. Level of supervision of inexperienced crew adequate.
7. All personnel should be properly equipped.
8. Means of escape- proper signs and adequate lighting.
9. Maintenance of LSA / FFA equipment up to standard.

Any accident or dangerous occurrence to be an important part of the safety officers duty. Actual reporting of an accident will be carried out by the master but it is the safety officer's duty to investigate the incident and to assist the master to complete the accident report form.

Safety representative(have powers but no duties):

1. Participate in any of the investigations conducted by safety officer provided the latter agrees so after notifying the Master.
2. Regarding the crews occupational health and safety, hazardous work that requires to be suspended, consult Master and safety officer making recommendations.
3. Inspect any of the safety officer's records.

Employer appoints a safety committee (mandatory on all ships) electing the safety representatives.

Membership of the committee must include master as chairman.

Duties of the safety committee:

1. Ensure that the provision of safe working practise is complied with.
2. Improve standards of safety consciousness amongst the crew.
3. Inspect safety officers records.
4. Ensure the observance of employers occupational health and safety policies. Consider and take appropriate action if required.
5. Keep a record of all proceedings.

Method of improving safety awareness:

1. Movies
2. Posters
3. Publications
4. Informal talks
5. Maintenance of safety equipment
6. Drills
7. Marine safety cards
8. Accident reports
9. Permit to work system

ISM

Objectives:

1. Observe safe operation of ships
2. Prevent pollution
3. Prevent loss of life and damage
4. Project environment

- Designated person from compare – DPA designated person ashore
- Master responsible from ship
- Internal audits
- Reports non confirmative NCR – non conformance report
- Corrective action
- Log all activities
- Have an approved SMS (safety management system)

Dry-docking

Normal dry-dock period once every 2 years.

General repair list:

Standard items:

1. Hull cleaning and surface preparation.
2. Survey of ships bottom (sighting the bottom).
3. Anchors- including ranging and marking, turned end to end.
4. Chain locker- chipping, painting, bitter end and chain locker educting system.
5. Sea v/v and sea chest to be inspected, overhauled and painted.
6. Anodes- location, weight and size.
7. Inspection and overhaul and load test of lifting equipment.
8. Tank, hold and closing appliances to be to be inspected and overhauled.

Repair items:

1. Renewal of piping.
2. Cargo handling equipment.
3. Hatch closing arrangement.
4. Bulkhead leaks.
5. Replacement of ships side rails.
6. Electrical cables.
7. Fire fighting equipment.

Documentation:

Check and consult with the master the following:

1. General arrangement plan.
2. Shell expansion plan.
3. Fire plan.

4. Repair list.
5. Plug plan.
6. Stability data.
7. Cargo plan if docking with cargo- inform shore authorities for shoring and position of shoring required.
8. Rigging plan.
9. Inform dock authorities in plenty of time regarding any projections on the hull.
10. Post docking information if any.

Stability aspect (chief officers duties before entering the dock):

1. Free surface effect in tanks to be removed or reduced.
2. GM to be positive when going to the dry-dock and throughout the critical period. When going out ships constants will change- mud, new plates, etc.
3. Consult dock authorities for required draft and trim. Generally a small trim by stern is required. More the trim the more the critical period.
4. All round sounding of all tanks.

On board preparations:

1. Hatches and beams stowed in position.
2. Derricks and cranes stowed in position.
3. Adequate fendering required.
4. FFA ready.
5. Inform head of all departments.
6. Inform c/e to take shore power facilities.
7. Required notices posted.
8. Security- lock up spaces.
9. Rig fenders

Logging down events:

1. Time the dock gates open.
2. Time vessel enters the dock (bow and stern).
3. Time dock gates close.
4. Pumping out commenced.
5. Time Lines ashore.
6. Time the vessel touches the blocks.
7. Time all sewn on the blocks forward and aft.
8. Dock draining completed.
9. Time gangway walkable.
10. Vessel certified gas free.
11. Utilities connected.

When coming out:

1. Time when authority to flood certificate has been signed.
2. Time flooding commenced.
3. Time all lines cast off.
4. Time dock gates open.
5. Time vessel clears lock gates forward and aft.

When in the dock:

1. Have documentation ready and repair list.
2. Sound all tanks once again.
3. Tank plugs when being removed sight their removal and retained.
4. Close all overboard discharges.
5. 2 means of safe access.
6. Take over facilities from docking master.

Facilities from docking master:

1. Toilets.
2. Electric shore connection.
3. Fire line pressurised, fire men on board.
4. Emergency numbers.
5. Bonding wire.
6. Garbage disposal.
7. Gas free certificates.
8. Hotwork permits.

When coming out of the dock:

1. Check that all repairs have been done to satisfaction. All departments to also to check.
2. Checks that all **plugs** removed to be placed back in position and have been visually sighted.
3. Any securing on echo sounder or logs to be removed.
4. Propeller and rudder to be clear of any obstruction.
5. Any loose objects or staging overhanging on ships side to be removed.
6. General check on the anchor- anchor secured and marked.
7. Check that the overboard is clear.
8. **I shall be the last person to leave the dock**.
9. All soundings to be same as before when the vessel entered the dock.
10. Recalculate stability, trim and +ve GM to be maintained throughout.
11. Go through the checklist- obtain satisfied and written from the master.
12. Sign Authority to Flood Certificate.
13. Flooding stopped before rising the forward to check if overboard valves are not leaking.

Why enter the dock with a small stern trim:

1. Sole Piece is the strongest part of the ship.
2. Dragging ship head to centreline is easier.
3. Gradual loss of GM.

Work on cable:

1. Cable is ranged and inspected visually for any damage or hairline fractures by hammering each link.
2. If any part of the cable is corroded and worn more than 10% of diameter then it should be renewed.
3. Anchor is changed end to end- all parts of the cable experience equivalent stresses over the years.
4. Remarking of the cable.
5. Overhauling of the bitter end.

Why do soundings have to be taken and recorded before entering a dry dock and leaving one?

To ensure similar stability state at the time of leaving the dock as it was when entering._

Cargo handling gear

Lifting plant regulations:

1. Good design, construction and of adequate strength for the purpose of which it is intended.
2. Slings to be of good construction.
3. To be used in safe proper manner and safe working load not be exceeded.
4. Persons operating to be competent and experienced authorised by a responsible officer.
5. After 1993 lifting plant to be tested every 5 years.
6. No lifting plant to be used unless it has been tested at least once every 12 months by chief officer.
7. No plant to be used after installation or repair unless it has been tested then thoroughly examined by a competent person.
8. Each lifting appliance is to be clearly marked with the following-

- SWL
- Means of identification.

1. Each item of the lifting gear is to be clearly marked with SWL.
2. Full account is to be taken of the principles and guidelines in CSWP chapter 17.

Certificate obtained within 28 days of testing and retained on board for a period of 2 years.

Lifting appliance given a static test using a proof load or a dynamometer (static test).

Proof Load: exceeds a SWL by a given percentage or weight to check the safety of a derrick or a crane.

The proof load is to be applied by hoisting movable weights by using the cargo purchase and with the weights in the hoisted position the hoisted position the derricks are to be swung in both directions as far as possible.

Tests on Derricks:

SWL PROOF LOAD

Up to 20 t: SWL + 25% (if less than 15t then dynamometer may be used)

20t – 50t: SWL + 5 t

50t and more: SWL + 10%

Condemning of a wire:

1. In any 8 diameter when 10% of the strands are broken.
2. For standing rig (steel wire rope)- 6 X 6 wires per strand.
3. For running rig-

- Flexible steel wire rope- 6 X 12/18/48 wires per strand.
- Extra flexible steel wire rope- 6 X 36 wires per strand.

The extra flexible steel wire rope has a fibre core for lubrication.

Breaking Stress: 20 D^2 / 500

Safe Working Load: Breaking Stress / 6

Union Purchase SWL: 1/3 SWL of single derrick

Safe Angle Between Runners: 90º and 120º occasionally.

Code of safe working practise says that a mass in excess of SWL should not be lifted unless:

1. A test is carried out.
2. The weight and the proof load is known.
3. Lift is a straight lift by a single appliance.
4. Lift is supervised by a competent person.
5. The competent person has given in writing that it is safe to do so.
6. No person is exposed to danger.

Register of ship lifting appliance and cargo handling gear:

1. Certificates and tests together with reports of examination.
2. Certificates and identity number recorded on certificate of loose gear- blocks, shackles, bridle etc.
3. When testing a lifting plant the following are recorded- name and status of competent person, SWL, proof load.
4. Details of regular maintenance, defects and repairs.

Rigging Plan:

1. Position of derricks producing maximum force.
2. Position of guys and preventers to resist maximum forces.
3. Position size and SWL of blocks.
4. Position of inboard and outward booms.
5. Length size and SWL of runner, topping lift, guys and preventers.
6. Maximum angle between runners.
7. Maximum headroom (permissible height of cargo hook above hatch coaming).
8. Position and size of deck eye plates.
9. SWL of shackles.
10. Guidance on maintenance of derricks.
11. Combined diagram showing forces for a load of 1 tonne or the SWL.

Information regarding derrick strength if found- in the Register of Lifting Appliances and Cargo Handling Gear.

Overhauling goose neck (yearly):

1. Ensure vessel provides stable platform (i.e. vessel should be at anchor free from any rolling or pitching).
2. Secure the derrick head in its crutch.
3. Remove and overhaul derrick heel block.
4. Secure a purchase of appropriate SWL on mast or Samson Post and to the derrick.
5. A direct lift can be obtained over the derrick heel by unshipping the derrick topping block and securing the purchase by a strap to the derrick heel.
6. Withdraw horizontal and vertical bolts and nuts and recondition them.
7. Unship the derrick and secure in its temporary crutch.
8. Clean all parts and check for- wear and tear, hairline fractures, and particular attention to the bolts.
9. All parts to be properly lubricated and reassemble the goose neck area to its operational condition.
10. Make relevant entries in ``Register of ship Lifting Appliances and Cargo Gear``.

Thorough examination:

Means a detailed examination by a competent person supplemented by stripping the gear down for inspection if judged necessary.

1. A competent person to examine all gears.
2. Any test involving proof load.
3. Every 12 months thorough examination which includes- dismantling of all loose gear and hidden parts as judged necessary to arrive at a reliable conclusion as safety of plant is examined.
4. Certificate numbers.
5. Examination performed e.g. initial, yearly, 5 yearly, if any repairs or damage etc.
6. Declaration of competent person to be signed and dated.
7. Remarks to be signed and dated.

Competent person: someone over 18 years in age possessing practical and theoretical knowledge and actual experience of the type of plant being examined. His job will be to discover any defects or weakness and assess their importance in relation to strength, stability, and function of the equipment.

Care of cargo blocks:

1. Check swivel head and sheave (also check grooves on sheave for wear down) for free movement.
2. Examine side plate for distortion or buckling.
3. Check axial pin- ensure no play and check thread of pin.
4. Check split pin and distance piece.
5. Oil surface of blocks.
6. Do not paint grease nipples and statutory markings.

Maintenance of cargo handling equipment:

1. Weekly: grease nipples on winches, blocks, derricks cranes.
2. 3 months: auxiliary equipment (chains, rings, hooks, swivels, blocks and shackles).
3. 6 months: a thorough overall check of the above equipment.

- Grease nipples checked.
- Derrick: stripped and all auxiliary equipment gear taken apart examined greased and reassembled.
- Winches to be overhauled with engineer.
- Location and identification number of each item complying with the rigging plan.
- Amend the rigging plan if any part of the gear has been replaced.

- Each item to have a certificate.

1. 12 months: derust, paint and overhaul derrick gooseneck.
2. All gear should be inspected before use.

Precautions when loading a heavy lift:

1. Stability-

- Ensure stability if the vessel is adequate and maximum heel is acceptable.
- Eliminate FSE.
- Large GM available since rise in G is going to occur.

1. Rid extra mast stays as necessary.
2. Check condition of derrick and gear before use (all moving parts to be freely rotating).
3. Rig fenders.
4. Gangway up.
5. Moorings taut (men standby in case of an emergency).
6. Cast off all barges.
7. Unauthorised personnel sent ashore. Inform head of all departments before lift commences.
8. Check ships data to ensure deck is strong enough to support load (Deck Load Capacity Plan).
9. Clear area of deck where load is to be placed and adequate dunnage to be placed to spread load evenly.
10. Winch driver competent.
11. One person at all times giving directions.
12. Put winches in double gear.
13. Set strong steam guys before lifting. Secure steadying lines at ends of the load.
14. Lateral drag- simultaneously slacken on topping lift and runner wire to keep plumbline intact. Derrick to be plumb over the weight at all times.

Vessel laid up and you join as chief officer:

1. Consult rigging plan, register of ship lifting appliances and cargo handling gear, deck capacity plan, stability information booklet.
2. Rig derrick correctly.
3. Bring in surveyor.

Can you load a 25t weight with a derrick of 25t SWL:

Practically speaking no. Due allowance is to be made for other parts of the lifting gear- slings, shackles is also to be taken into account.

What would you do if you were to load a heavy lift on a tank top?

1. Check the deck load capacity plan.
2. Ballast the tank top for additional precaution.

Publications and Record Books

M- Notices: merchant ship notices which are published by the MCA and recommendations contained in it should be complied with. It is a method by which the MCA promulgates information, which is quickly brought to the attention of seafarers, management and those associated with the industry.

They are divided into three categories:

Merchant Shipping Notices (white coloured): convey mandatory information that must be complied with under UK law. In otherwards they explain and amplify statutory requirements.

Marine Guidance Notices (blue coloured): SOLAS, MARPOL, etc.

Marine Information Notes (green coloured): administrative information aimed at training establishments.

Each notice will be affixed as follows: **(M):** for merchant ships

(F): for fishing vessels

(M+F): for merchant ships and fishing vessels

Oil Record Book:

Every oil tanker of 150 GRT and above and every vessel of 400 GRT and above other than a tanker shall be provided with an Oil Record Book Part I (Machinery Space Operations).

Every oil tanker of 150 GRT and above shall also be provided with Oil Record Book Part II (Cargo / Ballast Operations).

Entries: Any movement of oil in and out of the vessel and internal shifting of oil.

Non Tankers:

1. ballasting or cleaning of fuel tanks.
2. discharge of ballast or water from fuel oil tanks, which have been ballasted or cleaned.
3. disposal of oil residues.
4. discharge overboard or disposal otherwise of bilge water which has accumulated in machinery space.
5. Bunkering operations.

Tankers:

1. loading of oil cargo.
2. discharging of oil.
3. internal transfer of oil during the voyage.
4. ballasting of cargo tanks and dedicated clean ballast tanks.
5. cleaning of cargo tanks including crude oil washing.
6. discharge of ballast except from segregated ballast tanks.
7. discharge of water from slop tanks.
8. closing of all applicable valves or similar device after slop tank discharge operations.
9. closing of v/v necessary for isolation of dedicated clean ballast tanks from cargo and stripping lines after slop tank discharge operations.

Control of discharge of oil (as per Marpol):

Any discharge of oil into the sea is prohibited except when the following conditions are satisfied-

1. tanker is not within a special area.
2. tanker is more than 50 nm from the nearest land.
3. tanker is proceeding enroute.
4. instantaneous discharge of oil content does not exceed 30 litres / nautical mile.
5. total quantity of oil discharged into the sea does not exceed-

- 1/ 15,000 of the total quantity of the particular cargo of which the residue formed a part (for existing tankers).

- 1/30,000 of the total quantity of the particular cargo of which the residue formed a part (for new tankers).

1. the tanker has in operation an oil discharge monitoring equipment and slop tank arrangement.

For a ship of 400 GRT and above other than an oil tanker and from machinery space bilges excluding cargo p/p room bilges of an oil tanker unless mixed with oil cargo residue-

1. The ship is not within a special area.
2. The ship is more than 12 nautical miles away from the nearest land.
3. The ship is proceeding enroute.
4. The oil content of the affluent is less than 15ppm.
5. The ship has an oil discharging monitoring and controlling system, oily water separating equipment, oil filtering equipment or any other installation as required by regulation.

Garbage Record Book

1. every vessel of 12m or more in length shall display placards informing the crew and passengers of the disposal requirements of garbage.
2. every ship of 400grt and above certified to carry 15 passengers or more shall carry a garbage management plan and a garbage record book.
3. v/l`s which are exempted-

- A vessel certified to carry 15 passengers or more if engaged in a voyage of one hour or less.

- fixed or floating offshore installations.

Contents of Garbage Management Plan:

1. Designated person who is incharge of carrying out the plan.
2. Procedures for collecting, processing, stowing and disposing the garbage.

Garbage Special Areas:

1. Antarctic
2. Baltic Sea
3. Black Sea
4. Mediterranean Sea

5. North Sea
6. Persian Gulf
7. Red Sea
8. Wider Caribbean

Classes of Garbage:

1. Plastics.
2. Floating dunnage, lining and packing material.
3. Ground down paper products, rags, glass, metals bottles and crockery.
4. Paper products, rags, glass, metal bottles, crockery.
5. Food waste.
6. Incinerator Ash.

Entries to be made in the Garbage Record Book:

1. when garbage is discharged into the sea, reception facilities ashore or other vessels.
2. when garbage is incinerated.
3. accidental or other exceptional discharge of garbage.

- time of occurrence.
- port or position of vessel at the time of occurrence.
- category of garbage and estimated amount in m^3.
- reason of disposal and remarks.

Garbage disposal outside Special Areas:

1. no plastics.
2. floating materials- more than 25 nautical miles.
3. food, crockery, bottles, rags, meals, cans etc- more than 12 nautical miles.
4. food crockery etc comminuted- more than 3 nautical miles.

Inside special areas:

1. food wastes- more than 12 nautical miles.
2. in wider Caribbean region food wastes comminuted- more than 3 nautical miles.

<u>Ship Board Oil Pollution Emergency Plan (SOPEP)</u>

Every non-tanker of 400 GRT or above and every tanker of 150 GRT and above must have SOPEP on board in the form of a manual. The plan should consist of the following:

1. **The procedure to be followed by master or another person having charge of the ship to report an oil pollution incident.**

When:

- If discharge exceeds MARPOL limits.
- Discharge to save life or property.
- Discharge resulting from damage.
- Threat or probability of discharge.

How:

- By quickest available means to coastal radio station, designated ship movement reporting system or RCC at sea.
- By quickest available means to local authorities in port.

What:

- Initial report.
- Follow up report.
- Cargo / ballast bunker disposition.
- Characteristics of oil spilled.
- Slick movement.
- Weather and sea conditions.

1. **List of authorities to be contacted in the event of an oil spill.**

Who:

- Nearest coast station.
- Harbour and terminal authorities.
- Ship owners / managers / P & I authorities.

1. **A detailed description of the action to be taken immediately by persons on board to reduce or discharge of oil following the incident.**

In case of spills caused by casualties:

- Immediate action to preserve life and property.
- Immediate action to prevent escalation of the incident.
- Damage assessment procedures.

In case of operational spills:

- Preventive measures and procedures.
- Actions in the event of-

- Pipeline leakage.
- Tank overflow.
- Hull leakage.

1. **The procedures and point of contact on the ship for co-ordinating ship board action with national and local authorities in combating the pollution.**

- Action required initiating response.
- Ships responsibility regarding monitoring clean up activities.
- Assistance that can be provided by the ship.
- Details of any materials carried on board to assist the cleaning on deck spills.
- Details of oil spill response arrangement and policies.
- Guidance on record keeping and sampling procedures.

1. **List plans and drawings.**

- Company organisational charts.
- List of key contacts-

- Company.
- P & I club and correspondents.
- Agents.

- Ships particulars.
- General arrangement plan.
- Table of tank capacities.
- Piping and pumping plan.
- Bunker disposition.
- Mid ship section plan.
- Plan indicating frame spacing.
- Damage stability data.
- Cargo stowage plan.
- Cargo certificates of quality.
- List and disposition of shipboard clean up material.
- Record of shipboard oil pollution emergency drills.

What he wants to hear:

The points that are mentioned in bold, he should not go into details.

Surveys:

Preparation of Loadline survey:

1. Check that access and openings in superstructure are in good condition-

- Dogs, clamps and hinges to be free and well greased.

- Gaskets and watertight openings to be free of cracks.

- Doors should be able to be opened from both sides.

1. Machinery space openings to be checked on exposed weather deck.
2. Cargo hatches-

- Hatches and access to be weather tight.
- Portable wooden hatch covers to be in good condition- tarpaulins in good conditions and at least 2 provided for each hatch cover.

1. Ventilators- opening and closing arrangement to be free.
2. Air pipes- opening and closing arrangement to be functioning freely.
3. Free ports in good condition.
4. Manholes and flush scuttles- watertight.
5. Check efficiency securing of portable beams.
6. Guard rails and bulwark to be of satisfactory, lifelines to be rigged.
7. Below the freeboard deck check- cargo ports, side scuttles and openings to have must have efficient internal watertight dead lights.
8. Non return and overboard valves functioning properly.

Cargo Ship Safety Equipment Survey:

Life saving appliances:

1. Lifeboat-

- Stores and equipment.

- Particular attention to bottom boards and buoyancy material.

- Thwarts free of cracks.

1. Overhaul and grease which davits and blocks. Falls to be renewed or turned end to end. Repaint markings on the lifeboat.
2. When boats are in water run the boats ahead and astern.
3. Inflatable liferafts to be serviced within the last 12 months.
4. Lifebuoys- si lights, grab lines, markings well painted.
5. Lifejackets- lights, whistles and markings.
6. Pyrotechnics- expiry dates.

Fire Fighting appliances:

1. Fire control plans legible.
2. Check fire hoses, nozzles and applicators in good condition.
3. Test emergency fire pump.
4. Overhaul all extinguishers.
5. Test and overhaul fixed fire equipment system.
6. Check breathing apparatus and fireman's suit.
7. Check fire and smoke detection system.

Other checks:

1. Emergency lighting system.

2. Check closing arrangements for- ventilators, skylits, doors and funnel.
3. Check navigational equipment.
4. Check pilot ladders and pilot hoists.

In general all checks to be carried out as per the record of inspection form at the back of the SEQ certificate.

Emergencies

Engine failure (v/l rolling heavily):

1. NUC lights.
2. V/l on hand steering.
3. Inform master.
4. Bring vessel head to wind.
5. Increase weights forward by filling up the forepeak and consider walking back anchor up to 4 to 5 shackles. This will increase the weight forward considering the pivot point of the vessel to shift forward resulting a sailing effect.
6. To reduce the rolling-

- Winging out weights- increases the rolling period.
- Reduce GM by ballasting TST`s.

Manoverboard

1. Helm hard over on the side which the man has fallen.
2. Release lifebuoy with smoke signal. If possible release the SART.
3. Press GPS MOB button.
4. Sound emergency alarm.
5. Main engines for immediate manoeuvring.
6. Inform master.
7. Post lookouts.
8. Sound emergency signal ``O`` on fog signal. Broadcast by VHF to all vessels in the vicinity. Hoist ICS flag ``O``.
9. Turn out rescue boat- muster crew and standby.
10. Continuous monitoring of vessels position on chart.
11. Update weather reports.
12. Log book entries.

Collision

1. Stop engines and obtain an assessment of the situation. It may be prudent to maintain a few revolutions in the engines to avoid the other vessel form flooding and consequent sinking when both vessels are separating.
2. Sound emergency alarm.
3. Switch on deck lights and NUC lights.
4. Inform master. Inform engine room and all departments.
5. Broadcast message to all ships in the vicinity.
6. Carry out head count and damage assessment.
7. Muster damage control parties and detail duties.
8. Order bilge pumps and ballast pumps to start pumping out effected area.

9. Shut all watertight doors and fire doors.
10. Communication officer- standby to obtain weather report. Navigational officer to update vessels position and assist master as required.
11. Prepare survival craft for immediate launching if situation demands.

Chief officers duties:

1. Internal sounding of all tanks- check watertight integrity.
2. Machinery space wet or dry.
3. Head count- check for casualties.
4. Investigate pollution possibilities.
5. Will consider ballasting to bring damaged portion above waterline.

Masters legal obligations:

1. Standby to render assistance.
2. Exchange information with master of other information-

- General particulars of other vessel.
- Port of departure.
- Port of destination.

1. Report accident to Marine Accident Investigation Bereau (MAIB).
2. Make entries in official log book.

<u>Grounding</u>

1. Stop engines.
2. Sound emergency alarm.
3. Display aground lights and switch on deck lights.
4. Inform master and all departments.
5. Broadcast warning message to all vessels in the vicinity and continuous VHF watch maintained.
6. Position on chart investigated and safe port options investigated.

Chief officers duties:

1. Extent and position of damage.
2. Head count- casualties.
3. Check watertight integrity of hull- internal and external soundings. After soundings have been made air pipes and sounding pipes to be well secured. This will prevent oil pollution and water pressure causing the oil to rise upwards.
4. Condition of machinery wet or dry.
5. Shut all watertight doors and fire doors.
6. Obtain damage reports from all departments.
7. Refer to vessels damage stability information.
8. Damage control party mustered and reduce the ingress of water.
9. Consider the possibility of fire or oil pollution hazards.

10. Determine nature of bottom. Determine time of next high water.
11. Lifeboat ready and swung out. LSA / FFA equipment standby.
12. Appropriate entries made in logbook.

After grounding there is no damage to hull or watertight integrity. What will you do next?

I will call for an underwater survey.

Beaching

Is defined as taking the ground intentionally as occurs for 2 reasons-

- To prevent the loss of the vessel when damaged below the waterline.
- When it is the intention to refloat after watertight integrity has been restored.

Procedure:

1. Take on full ballast before beaching.
2. Consider bow first if bow damaged and stern first if stern damaged at about 90 ^{o} to the tide.
3. Consider letting go the weather anchor first, this would prevent the vessel from slewing parallel to the beach.
4. Should the vessel be damaged stern then stern first approach would be desirable. In this case it could be made in the form of a Mediterranean Moor, letting go both anchors which may be used to heave the vessel of when the time comes.
5. Anti slew wires to be used in conjunction with the anchor.
6. Make internal and external soundings after beaching.

Suggestions to master when refloating the vessel:

1. Master to be informed at all times.
2. Calculate times of immediate high water.
3. Consider reducing weights on board- deballasting and jettison as last option.
4. Damage stability.
5. Consider dropping an anchor to prevent a damaged ship from sliding into deeper waters.
6. Tug to standby at all times when refloating.

Anti pollution measures following emergencies:

1. Plug all scuppers.
2. Repair damage and leaking areas.
3. Pump out surplus to barges or other vessels or transfer to other tanks internally.
4. Organise oil pollution barrier and chemical dispersants.
5. Consider listing or trimming vessel to bring damaged portion over water line.

Heavy weather precautions

19. Verify vessels position and consider re routing.
20. Update weather report and plot storm movement.
21. Stability- avoid slack tanks and minimise FSE.
22. Warn all departments.

23. Rig lifelines forward and aft.
24. Check cargo lashing.
25. Close all deck ventilation.
26. Anchors to be well secured- spurling pipe cemented, break tight, bow stopper well secured and additional lashing at the hawse pipe.
27. All derricks and cranes secured.
28. Check that accommodation ladder has been well secured.
29. Clear deck of surplus gear.
30. Secure bridge against heavy rolling and pitching.
31. Slacken halyards and remove awnings.
32. Establish heavy weather work routine-reduce manpower on deck.
33. Obtain and update weather reports continuously. Update position.
34. Reduce speed to prevent pounding and engage manual steering in ample time.
35. Revise e.t.a.
36. Make relevant log entries.

Chopper operations

Working precautions:

1. Do not secure any line passed down.
2. Do not touch winchman, stretcher, hook or wire until earthed.
3. Do not fire rockets or line throwing apparatus.
4. Do not direct strong light towards chopper.
5. No radio communication during radio operations.
6. Avoid wasting time as fuel is expensive.

Navigational requirements:

1. Alter course towards rendezvous position.
2. Prepare deck reception.
3. Continuous communication with chopper.
4. Display r.a.m. lights.
5. Continuously monitor own ships position and other vessels in the vicinity.

Engagements:

1. Display wind indicator.
2. V/l on manual steering.
3. Course altered to pilot's instructions.
4. Maintain maximum manoeuvring speed.
5. Clear of all navigational obstructions and maintain adequate sea room.
6. Log all events.

High line operations:

This operation is employed when there is-

- Exposed rigging.

- Rough seas.
- Numerous persons.

1. Aircraft will establish a high hover position clear of all obstructions.
2. Weighted heaving line is passed down towards the vessel.
3. Hoist wire will then be lowered down once deck crew have got hold of weighted heaving line.
4. Chopper will then traverse backwards to gain visual contact.
5. Aircrew man descends and deck crew to heave on heaving line.
6. Aircraft maintains station, aircrewman organises double hoist transfer for vessel.

Precautions:

1. Display windsock.
2. Ensure all rigging and obstructions, loose objects about the helicopter landing area is clear. Loose objects could come in contact with the rotor blades.
3. Deck party correctly dressed and well equipped- wearing brightly colour waistcoats and protective helmets.
4. Communication between chopper, deck and bridge.
5. Fireman standby fully equipped.
6. Fire p/p running with adequate pressure on deck.
7. Fire hoses, extinguishers, foam monitors and portable foam applicators ready. Foam applicator nozzles pointing towards landing area.
8. The following to be standby-

- Large axe.
- Crowbar.
- Wire cutter
- Red emergency signal torch.
- Marshalling battons at night.
- First aid equipment.

1. Rescue party detailed, manoverboard rescue boat ready for lowering.
2. Static hook hander is properly equipped- helmet, rubber gloves, and rubber soled shoes.
3. At night if operating adequate light available without blinding chopper.
4. Display proper lights or shapes.
5. Clear access to and from operational area.

Additionally requirements for tankers:

1. Ships with I.G. system- have pressure released from tanks within 30` of commencement of chopper operations and pressure released to slightly positive.
2. Tank openings closed.

Additional requirements for bulk carriers:

1. Surface ventilation ceased.
2. Hatch openings fully battened down.

Additional requirements for gas carriers:

1. Avoid vapour emissions on deck.

-

Distress

Preparations when proceeding to a distress:

1. Prepare hospital.
2. Plot rendezvous position and continue updating target position. Highlight navigational dangers.
3. Radar on long range scanning and systematic plotting of targets detected.
4. Communication officer standby.
5. V/l on manoeuvring speed and manual steering.
6. Post extra lookouts as high as possible.
7. Pass own details with relevant search and rescue operation update to RCC.
8. Prepare rescue boat and emergency crew.
9. Obtain weather reports.
10. Maintain internal and external position.
11. Rig guest wrap (a rope that extends from forward to aft).
12. Advice owners agents and reschedule e.t.a.

Chief Officers duties:

1. Rig a good strong rope from bow to quarter (guest wrap).
2. Rig derrick on each side with platform cargo sling ready to help injured or helpless survivors out of water.
3. Rig fenders on each side- to bring lifeboats safely alongside.
4. Get rescue boat ready and crew standby, keep liferaft ready but do not inflate.
5. Check rescue boat equipment.
6. Proper communication between rescue boat and vessel.
7. Medical party and first aid party standby.
8. Ships signalling equipment and LTA standby.

When approaching the scene:

1. Post extra lookouts.
2. Reduced speed and manual steering employed.
3. Continuous radar watch.
4. Get in touch with RCC and follow instructions.
5. Make own vessel visible to survivors- at night signalling lamp and by day black smoke or use ships whistle.
6. Do not dump anything overboard- this may confuse the survivors.

Factors that are taken into account when choosing On Scene Commander:

1. On board communication equipment.
2. Whether doctor or trained medical staff on board.
3. Hospital and casualty treatment facilities.
4. Vessels characteristics- freeboard, speed manoeuvrability ETA.

What determines the spacing in a search pattern?

1. Type of object being searched.
2. Meteorological visibility.
3. Track spacing may be decreased to increase the probability of detection or decreased to increase the area covered in a given time.
4. Sea condition.
5. Time of day.
6. Effectiveness of observers.

Information picked up from survivors:

1. Ships name and call sign.
2. Complement.
3. Whether other survivors are still in the vicinity.
4. Casualties- names.

Always remember to approach casualties from leeward and liferaft from windward.

Learn diagrams of various search patterns. Read IAMSAR (International Aeronautical and Maritime Search and Rescue) manual also.

When can a master decline to proceed to a search and rescue:

1. Putting own vessel, crew or passengers in danger.
2. Bunker capacity does not permit.
3. Weather conditions are unfavourable.
4. Loadline zone does not permit.
5. When it is not practical to do so.

Anchor operations

Preparations when going to anchor:

1. Ask engine room for deck and windlass power.
2. Anchor party standby.
3. Checks to be made-

- Windlass oil, bottle screw, fair lead, capstan, bitter end and chain locker.
- All moving parts and gears on the windlass are well greased.
- Anchor lashings at hawse pipe and cement at spurling pipe is clear.
- Before switching on the windlass power ensure that the anchor breaks are tight and bow stopper is well secured and windlass is not in gear.
- Check overside is clear and anchor sighted.
- Anchor lights and shapes available.
- When taking in anchor deck water.

1. Switch on windlass. Put windlass in gear, slacken on break and take slight weight on the bow stopper.
2. Clear away the bow stopper.
3. Lower away the anchor under power and leave the anchor hanging about 1m above water level.
4. Tighten breaks and disengage windlass from gear.

5. Inform bridge anchor is ready for letting go.

Deep water anchoring:

1. Do not let go anchor.
2. The anchor is then walked back all the way to the seabed.
3. As the vessel drops astern the cable will grow. The officer on watch should be aware of the amount of cable being paid out so that too much cable is not paid out till the bitter end.
4. Chief officer should be aware of the windlass capacity when picking up the anchor- amount of cable paid out plus the weight of the anchor.

Letting go is not prohibited because:

1. Control could be lost due to excessive weight on the cable, thereby resulting in loss of anchor and cable making the vessel unseaworthy.
2. Possibility of serious damage or injury.

When taking up the anchor you realise it is not coming up anymore?

Drop astern to shallower waters thus relieving the weight of the chain on the windlass, then bring up the anchor.

If for some reason it is not practical to do so. Action?

Bring the anchor up using the derrick.

Another vessel dragging anchor towards own vessel:

1. Inform master.
2. Sound 5 or more rapid blasts on the whistle.
3. Call on VHF- station identification.
4. Engines to be ready for immediate manoeuvring.
5. Anchor party standby.
6. Pay out more cable. Go ahead and steam over own cable.
7. Provide the vessel with a sheer with a hard over action.
8. Make relevant entries in logbook.

Markings on an anchor:

1. Makers name or initials.
2. Progressive number.
3. Weight.
4. Number of certificate.

Anchor certificate:

1. Type of anchor.
2. Weight excluding stock in KGs.
3. Weight of stock and head.
4. Length of shank and arm in mm.

5. Diameter of trend.
6. Proof load applied in tonnes.
7. Identification of proving house, official mark and government mark.
8. Number of test certificate.
9. Year of licence.
10. Number and date of drop test.

Test on cables:

9. Less than 12.5 mm cables to be tested.
10. Three links are taken from each length (27.5 m) for a tensile breaking test.
11. If this is successful then the total length of the cable will be subjected to a tensile proof test.

Read clearing a foul hawse and tests on anchors form House.

Removing a Kenter Lugs shackle:

1. Remove lead pellet by using a punch and a drift.
2. Remove spile pin.
3. The stud can be extracted and then 2 halves of the shackle will be separated by means a top swage obtained from the manufacturer.

SOLAS

Fire Fighting Appliance (cargo ships)

Capacity of fire pumps (Total required capacity not more than 180 m^3/hr):

- Each fire pump (other than Emergency fire pump) shall have a capacity not less than 80 % of total required capacity divided by minimum no of required fire pumps but in any case not less than 25 m^3/hr.
- Each pump capable of delivering at least 2 required jets of water.
- G/S, Ball, Bilge pumps accepted as fire pumps provided:

- Not normally used for pumping oil.

- If used occasionally have suitable changeover arrangements fitted.

Emergency Fire pump:

- Capacity not less than 40 % of total required capacity of the fire pumps but in any case not less than 25 m^3 / hr.
- Capable of delivering 2 jets of water with minimum pressure (at a 3rd hydrant – not a SOLAS requirement) not less than 2.1 bar.
- Diesel power source of pump started in cold condition of 0° C by hand or by power at least 6 times within a period of 30 minutes and at least twice within 1st 10 minutes.
- Tank to have sufficient fuel for at least 3 hours and reserve fuel outside main machinery space to allow the pump to run for additional 15 hours.

(Total suction head and the net positive suction head of the pump to be such that they will provide for the required capacity and pressure under all conditions of list, trim, roll and pitch likely to be encountered in service)

- No direct access between engine room and emergency fire pump. If access provided, through and airlock.
- Isolation valves in tankers to be fitted on the fire main on poop and tank deck at intervals not more than 40 meters to pressure integrity of fire main system.

(Diameter of fire main: sufficient for maximum discharge from 2 pumps operating simultaneously except for cargo ships the diameter need be sufficient for a discharge of 140 m^3 / hour.

Fire hydrants:

- Number and position such that at least two jets of water not from the same hydrant can reach any part of the ship.
- One shall be from a single length of a hose.
- Engine room hydrant – one on each side and one in tunnel.

Fire hoses:

- Passenger ships: One fire hose for each hydrant.
- Cargo ships: One for each 30 meter length of the vessel and one spare but in no case less than 5 in nos.
- (Length of hose not less than 18 meter if breadth of vessel more than 27 meter then hose length of 27 meter but not more) – not in SOLAS.

Fire nozzles:

- All nozzles of dual purpose type i.e. spray and jet in corroborating a shut off.
- Standard nozzle size = 12mm, 16mm and 19mm.
- For accommodations and service spaces a nozzle side greater than 12mm need not be used.
- Machinery spaces more than 19mm need not be used.

CO_2 Systems:

- Cargo spaces: Quantity of CO_2 available be sufficient to give a minimum volume of gas equal to 30 % of the gross volume of largest cargo space so protected by the ship.
- Machinery spaces: Quantity of CO_2 available be sufficient to give a minimum volume of gas equal to 40 % of the gross volume of space (excluding casing) or 35 % of the gross volume of space (including casing). For machinery spaces, the fixed piping system shall be such that 85 % of the gas can be discharged into the space within 2 minutes.
- For the purpose of the above volume of free CO_2 shall be calculated at 0.56 m^3 / kg.
- Two separate controls shall be provided for releasing

- One control shall be used to discharge the gas from its storage container.

- The other to open the valve of the piping which conveys the gas to the protected space.

Fire extinguishers:

- All of approved type and design capacity of portable extinguisher not more than 13.5 litres and not less than 9 litres.
- Spare charges for 100 % of extinguishers.
- Portable foam applicator consists of an air foam nozzle of an inductor type capable of being connected to the fire main by a fire hose and a portable tank of at least 20 litres.
- Foam making liquid and one spare tank.
- Rate of foam 1.5 m^3 / minute.
- One of the portable fire extinguishers intended for use in any space to be stowed outside the entrance.

- Boiler room:

- One set of portable foam applicator unit required.

- At least 2 portable fire extinguisher

- At least 1 approved foam type extinguisher of capacity 135 litres.

- A receptacle containing sand or sawdust impregnated with soda.

- Any fixed fire-extinguishing system – e.g. CO_2, foam, water spray.

- Spaces with internal combustion machinery:

- Any fixed extinguishing system.

- At least 1 set of foam applicator unit.

- Sufficient number of foam type extinguisher capacity 45 litres plus sufficient number of portable foam so placed that walking distance between extinguishers not more than 10 meters.

- High expansion foam: (fixed type system in machinery space)

- Sufficient to fill the greatest space to be protected at a rate of at least 1 meter in depth / minute.

- Produce a volume of foam equal to 5 times the volume of the space.

- Expansion ratio of not less than 5 liters/m^2/minute.

- Sprinklers: Application rate of not less than 5 liters/m^2/minute.

Fire mans outfit:

7. Fire proof protective clothing outer surface waterproof.
8. Boots and gloves of rubber or non-conductive of electricity.
9. Rigid helmet.
10. Electric safety lamp (approved type) minimum burning period 3 hours.
11. An axe (approved type with cover)
12. Breathing apparatus.

- SCBA at least 1200 litres capacity or capable of functioning for at least 30 minutes. Normal breathing rate 40 litres / minute.

- Fire proof line attached to harness.

- All ships at least 2 fireman's outfit's.
- To carry at least 4 sets of fire mans outfits widely spread. > **for tankers**.

International shore connection:

- Outside diameter: 178 mm
- Inside diameter: 64 mm
- Bolt circle diameter: 132 mm
- Slots in flange4 holes: 19 mm in diameter
- Flange thickness: minimum 14.5 mm
- Bolts and nuts4 nos: each 16 mm in diameter, 50 mm in length
- Washers: 8 nos.

Fixed deck foam systems: (tanker's – low expansion)

8. Capable of delivering foam to entire cargo tank deck as well as into a cargo tank if the is ruptured.
9. Control station outside and away from cargo area and readily accessible, simple and rapid operation.
10. Rate of foam not less than 0.6 litres/ m^2/ minute.
11. Sufficient supply of foam concentrate to produce foam for at least 20 minutes. (IG system fitted)
12. Foam supplied through foam monitors and applicators. (1250 litre/min)
13. Capacity of any monitors at least 3 liter/m^2/minute.
14. Capacity of applicator not less than 400 litres/minute and throw not less than 15 meter

Inert gas systems: (cargo tank protection):

12. Maintaining O_2 content less than 8 % by volume in any part of cargo tank.
13. Positive pressure at all times.
14. Maintaining O_2 content less than 5 % in the IG main.
15. System capable of delivering IG to cargo tanks at a rate of at least 125 % of the maximum discharge rate.
16. 2 blowers : capacity 20000 m^3/hr
17. IG : capacity 1000 m^3 / hr
18. Vacuum : 200 mm wg
19. High pressure : 1200 mm wg

<u>Steering gear: (regulation 29)</u>

- All ships to be provided with main and auxiliary steering gear, independent from each other.

Main steering gear:

1. Rudderstock shall be
2. Adequate strength and capable of steering the ship at maximum ahead speed.
3. Capable of putting rudder over from 35° one side to 35° other side at its deepest draft and maximum ahead service speed and 35° on either side to 30° on other side in 28 seconds.

4. Operated by power and designed so as not to incur damage at maximum astern speed.

Auxiliary steering gear:

1. Adequate strength and capable of steering at a navigable speed.
2. Capable of putting the rudder 15° one side to 15° the other side in 60 seconds, when vessel at deepest draft and running ahead at ½ maximum ahead service speed or 7 knots whichever is greater.

- Steering gear control from Navigation Bridge and locally.
- Auxiliary steering gear controls from locally and if power operated also operable from Navigation Bridge.
- Steering capability to be regained in not more than 45 seconds after the loss of one power system.

Emergency power: (capable of illuminating):

- Passenger ships: not less than 36 hours
- Cargo ships: not less than 18 hours
- Navigation bridge, navigation lights, navigation equipment, aldis, whistle, accommodation, alleyway, stairway, machinery space, control stations, radio room, LSA gear, FFA gear, communication.

Tests and drills:

- Test is within 12 hours of departure.
- Emergency steering drills once every 3 months.

<u>Pilot hoists</u>:

Construction-

1. A mechanical powered winch with brake.
2. Two separate falls.
3. A ladder consisting of a rigid upper part on which the pilot stands and a flexible lower past of a short length of pilot ladder which enables a person to board from or disembark a launch.

- Hand operating gear in emergencies.
- Safety limit switch.
- Emergency stops (capable to be operated by person in the hoist)
- Speed of hoist 15 – 30 meter's / minute.
- Hoist securely attached to ships structure not side rails.
- Falls long enough to do the job and still have 3 times on the drum.

Ladder section –

1. Rigid part – 2.5 meters long.
2. Non skid steps for safe access and safe hand holds
3. Spreader with rollers fitted at lower end to roll freely on shipside.
4. Flexible lower part must be 8" steps long.

- New hoists subjected to over load test of 2.2 times the working load.
- Operating test of 10 % over load.

- Every 6 months regular test rigging and inspection which includes a load test of 150 KGs.
- Entry in ships official log book.

Life saving appliances:

Life buoys: Length < 100: min no of life buoys = 8

100 < 150: min no of life buoys = 10

150 < 200: min no of life buoys = 12

> 200: min no of life buoys = 14

Requirements:

1. Outer diameter not more than 800 mm
2. Inner diameter not less than 400 mm
3. Constructed of buoyant material.
4. Mass not less than 2.5 KGs (MOB not less than 4 KGs)
5. Support 14.5 kg of iron for 24 hours in fresh water.
6. Withstand a drop into water from a stowage position to waterline in light condition or 30 meter whichever is greater.
7. Fitted with a grab line not less than 9.5 mm in diameter. Grab line secured at 4 equidistant points. Length not less than 4 times the outside diameter.

- Painted international orange / highly visible colour.
- Readily available on both sides of vessel. At least one at stern. No permanent securing.
- At least one buoy on each side fitted with buoyant life line (2 x stow height or 30 meter)
- At least ½ the no of life buoys with SI lights (2 hours)
- At least 2 with smoke floats (15 minutes)
- Marked in roman - name and port of registry.

Life jackets:

Requirements –

1. One for every person on board + 25 % extra.
2. Fitted with retro reflective tape + life jacket lights (visibility 1 mile)
3. For children 10 % of the no of passengers on board

Construction –

1. Correctly donning within 1 minute.
2. Capable of wearing inside out
3. Can jump from a height of 4.5 meters into water
4. Turn the body of an unconscious person in 5 sec's
5. Lifts the mouth 128 mm clear of the water
6. Fitted with a whistle
7. Buoyancy not reduced by more than 5 % after 24 hour immersion in fresh water

Immersion suits:

Requirements –

1. Unpacked + donned within 2 minutes
2. Permit the wearer to climb up and down a vertical ladder at least 5 meter in length
3. Jump from a height of 4.5 meter into the water
4. Cover the whole body with exception of face.
5. Core temperature does not fall more than 2° C after a period of 6 hours in water of temperature 0° - 2° C
6. Turn the wearer face up in 5 seconds.

- Provided for every person assigned to crew rescue boat.
- Cargo ships for each life boat at least 3 suits or if necessary 1 for each person on board
- TPA for persons on board not provided for by immersion suits.
- Immersion suits and TPA not required if ---

1. Vessel had total enclosed life boats for 100 % of compliment on each side
2. Free fall life boat for 100 % of compliment
3. Engaged in warm climates
4. If vessel less than 85 meters than davit launched life rafts required 100 % of compliment

Rescue boats:

1. Capable of being launched from stowage position with parent vessel making a headway of 5 knots.
2. Means of rapid recovery
3. Capability to manoeuvre at 6 knots for 4 hours and tow the largest life raft with full compliment at 2 knots.
4. Function – recover persons from water, marshal survival craft.
5. In a state of continuous readiness (launching in 5 minutes)
6. Stowed clear of other survival craft.

Requirements –

1. Length not less than 3.8 meters and not more than 8.5 meters.
2. Capable of carrying at least 5 seated persons and 1 lying down.

Additional equipment –

1. One buoyant line of 50 meter length for towing purpose.
2. Two buoyant rescue quoits with 30 meter line
3. Efficient radar reflector or SART.
4. Water proof 1st aid kit
5. TPA for 10 % or 2 of the total capacity
6. A search light
7. Walkie talkie

Muster and drills:

- Boats and fire drill once a month

- Within 24 hours of vessel leaving port if more than 25 % of crew have not participated in a drill in the previous month
- Passenger ships : muster within 24 hours of embarkation

Training manuals:

Bridge, engine room, crew mess room, officers mess room.

- Lifeboats launched and manoeuvred in water once every 3 months, during a drill.
- Free fall life boats: if impracticable to launch every 3 months then should be davit lowered every 3 months, provided that the life boat is free fall launched at once in 6 months.
- Rescue boats : launched and manoeuvred once a month in any case once every 3 months

Onboard training:

- Use of LSA and FFA to be given to new crew as soon as joining or within 2 weeks.
- Individual instructions on all LSA within 2 months
- Use of davit launched life rafts within 4 months

Maintenance and inspection

Page 45 of 1 Lifeboat falls:

- Turned end for end at intervals not more than 30 months (2 ½ years)
- Renewed not more than 5 years unless required earlier.

Weekly inspections:

- All survival craft, rescue boats and launching appliances inspected visually
- Engines of life boats and rescue boats run ahead and astern for not less than 3 minutes
- General emergency alarm (if not done daily)

Monthly inspections:

- All LSA, lifeboats and rescue boat equipment using checklist provided.
- Report logged

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Servicing of life rafts and HRU (life jackets inflatable, rescue boats inflatable)

- Every 12 months can be extended for additional 5 months but not more.
- Disposable HRU's (HAMAR) 2 years life cycle.

Passenger vessels engaged in short international voyages:

- Life boats for at least 30 % of passenger + life rafts for remaining.
- In addition – life rafts for at least 25 % of passenger's

Passenger ships engaged in international voyages additional requirements:

- Lifeboats: partially or totally enclosed life boats for 50 % of total complement on each side.
- Life rafts may be substituted for boats but boats capacity should never be less than 37.5% of the total compliment
- Rafts must be davit launched
- In addition life rafts for 25 % of the compliment
- Rescue boat: one on each side.

Cargo ships additional requirements:

- Lifeboats one or more totally enclosed on each side for 100 % of compliment.
- Life rafts to accommodate total no of persons on board if not readily transferable for launching on either side of ship, total capacity on each side for 100 % of compliment.
- If free fall life boat, then life rafts on each side for 100 % of compliment and at least one side of ship to have davit launched rafts.

Vessel less than 85 meter in length:

- Life raft on each side for 100 % complement – if life rafts are not readily transferable then additional life rafts to be provided so that total capacity on each side = 150 % of complement.
- Rescue boat can be counted for crew.
- Where survival craft are stowed in a position which is more than 100 meter from stern or stem, she shall carry additional life raft (6 person) forward or aft as practicable.
- Such life rafts are manually operated.

Marking on life rafts:

1. Name and port of registry of ship (not on container)
2. Makers name or trade mark
3. Serial number
4. Name of approving authority
5. Capacity
6. SOLAS
7. Type of emergency pack (A ~ B)
8. Length of painter
9. Drop test height (maximum stowage height above water level)
10. Launching instructions and last service date

- Life rafts : capable of staying afloat for a period of 30 days in all sea conditions
- Weak link breaking strain 2.2 ± 0.4 kn.
- HRU automatic release of life raft @ depth of 4 meter.
- Life boat engines: capable of running to provide a speed of 6 knots for a period of 24 hours – shall have a sufficient fuel to last 24 hours.
- To be capable of carrying a life raft of 25 person with full compliment and equipment with a speed of 2 knots.

Marking on the life boats:

1. Dimensions

2. Capacity
3. Name and port of registry of vessel on each side of bow
4. Lifeboat number on each side of bow and also on top of boat to identify from air.
5. Retro reflective tape all round at intervals of 12"

Fire protected life boats:

Capable of protecting the persons inside when enveloped in a continuous fire for not less than 8 minutes

Self contained air supply:

To provide breathable air with engines running for a period not less than 10 minutes pressure not less than outside atmospheric pressure and not more than 20 mbs above the outside atmospheric pressure.

Line throwing apparatus:

- Capable of throwing a line with reasonable accuracy
- Have not less than 4 projectiles each capable of carrying the line at least 230 mm in calm weather.
- Include not less than 4 lines of breaking strength 2 Kn.
- Instructions and diagrams on separation (pains Wessex) (schermuly)

Pyrotechnics in life boats and rescue boat and life rafts:

- 6 hand flares
- 4 rocket parachutes
- 2 buoyant smoke floats

Hand flares:

1. Contained in water tight casing
2. Instructions and diagram on operating procedure
3. Burn bright red colour
4. Burning period not less than 1 minute (10 seconds in water – submerged 100 meter below water

Parachute flares:

1. Contained in water tight casing
2. Instructions and diagram on operation procedure
3. Reach an altitude of 300 meter (fixed vertically) and eject paraflare
4. Burn bright red colour not less than 30000 candelas
5. Burning period not less than 40 seconds descent not more than 5 meter/ second

Smoke float:

1. Contained in water tight casing
2. Instructions and diagram on operation procedure
3. Emit smoke of highly visible colour (orange) for not less than 3 minutes in calm water. No flame.
4. Not suspended in sea way (smoke for 10 seconds if submerged in water)

SOLAS appendix 3

Certificates and documents required to be carried on board ships:

All ships (validity of certificates):

1. Certificate of registry: 5 years
2. International loadline certificate: 5 years
3. Intact stability: life long
4. International tonnage certificate: life long
5. Deratting or de-ratting exemption certificate: 6 months
6. Oil record book: to be kept on board for 3 years
7. Cargo ship safety construction certificate: 5 years
8. Cargo ship equipment certificate: 2 years
9. Cargo ship safety radio certificate: 1 year
10. D.O.C. with for ships carrying dangerous cargo: 5 years

For passenger ships: including no 1 to no 10 and also

Passenger ship safety certificate: 1 year

For ships carrying liquid cargo in bulk: including no 1 to 12 and also

1. International oil pollution prevention certificate for the carriage of noxious liquids in bulk (NLS certificate) validity: 5 years
2. Cargo record book validity: kept for 3 years
3. Certificate of fitness for carriage of dangerous chemicals/liquefied gasses in bulk validity: 5 years
4. Grain stability booklet for grain carriers (document of authorisation for grain carriage)
5. International oil pollution prevention (IOPP) 5 yrs
6. Certificate of insurance of other financial security in respect of civil liability for oil pollution (CLC)
7. Noise survey report
8. Ship board oil pollution emergency plan (SOPEP) vessels response to pollution prevention (VRPP)
9. For oil tankers equal to or more than 100 GRT
10. Other ships equal to or more than 400 GRT

Under ISM Code:

1. Document of compliance issued for every company complying with the ISM code copy of certificate to be held on ship
2. Safety management certificate issued for every ship complying with ISM (also company must comply = DOC)

About cargo stowage:

Weight / area of cargo = loading expression in t/m^2

If cargo = 30 t maximum loading of deck = 2.5 t/m^2

Then minimum area over which the weight must be spread = 30/2.5 = 12 m^2

And therefore use good dunnage and safer to add 5 % to the weight when calculating the area.

Go through-

- **Hanging of anchor.**
- **Clearing foul hawse.**
- **All moors. Advantages and disadvantages.**

QUESTION AND ANSWER FOR MASTER ORAL EXAMINATION

CERTIFICATE/DOCUMENTS.

Q: What are the Statutory documents you will take over from outgoing Master ?

A: **SAFETY & MARPOL:**

1) Safety Construction Certificate. (SOLAS)
2) Safety Equipment Certificate. (SOLAS)
3) Passenger Ship Safety Certificate. (SOLAS)
4) Safety Radio Certificate. (SOLAS)
5) Load line Certificate.
6) Safe Manning Documents. (SOLAS)
7) Stability Booklet.
8) Certificate of Lifting Appliance.
9) Charts and Publication.
10) Operation Manuals.
11) De-rat Certificate.
12) FFA / LSA test and report.
13) Life raft servicing Certificate
14) GMDSS Certificate
15) ISM / SMS / DOC / SMC. (SOLAS)
16) MSNS / MINS / MGNS
17) Medical Locker / Stores / Narcotics
18) Declaration of Health
19) IMDG Code. (SOLAS)
20) IOPP Certificate.
21) Garbage Certificate
22) SOPEP
23) OLB
24) Exemption Certificate (SOLAS)

COMMERCIAL:

1) ISO 9002 QA
2) Registry
3) Tonnage
4) Light dues
5) Certificate of Class
6) B/L , Mate/R
7) Cargo manifest

8) Charter party
9) P & I Club information
10) Customs Documents
11) Port Clearance
12) Notes and Letter of Protest.

PERSONNEL:

1) Articles / Contracts
2) Certificate of Competency
3) Passport and CDC
4) Working Hours / Rest log
5) Cash / Bond Portage
6) Overtime / Stores
7) Provision / Stores
8) Personnel reports / appraisal
9) Training log
10) Medical.

As per SMS Company should have a checklist to go through to avoid missing any item.

Q: What you will enter in OLB

A: 1) The off going master should make an entry in the narrative section to the effect that he has delivered to me all documents relating to the ship and the crew and both he and I would sign this entry.

2) I would add my Name and Certificate no. to the list on the front cover.

Q: What are the items cover by (1) Safety Construction (2) Safety Equipment (3) Load Line Certificate ?

A: **Safety Constructions:**

1) Structural Strength
2) Machinery and electrical installations
3) Fire Protection
4) Windlass and Mooring equipment
5) Steering gears & requirements for UMS
6) Communications Bridge / ER and Bridge / Alternative steering position

Safety Equipment:

1) LSA & FFA Equipment,
2) Navigating Lights, Shapes & Sound Signals
3) Pilot Ladders & Hoist
4) Gyro Compass, Echo sounder, Nautical Publications, Emergency lighting.
5) OLB, Damage Control appliance.
6) Fire plan.

Load Line:

1) Assignment of freeboard and marking of Load Line
2) Ship's structure and fittings for water-tight integrity (i.e. hatch way's, Ship side openings, Non-return valve, Sounding pipe, Opening in ends of Superstructures, Vents, Air pipes, Freeing ports)
3) Crew Protection (i.e. Crew access and guard-rails, life line).
4) Loadicator, Stability book.

Q: Certificate validity?

A:

Name of Certificate	validity
1. Safety equipment	2 year
2. International Load line	5 year
3. Certificate of registry	5 year
4. Safety Construction	5 year
5. Certificate of Fitness	5 year
6. IOPPC	5 Year
7. Safety Radio	1 year
8. De-rat Certificate	6 months
9. Safe Manning Certificate.	5 years
10. Life raft servicing Certificate	2 Years
11. GMDSS Certificate	5 Years
12. ISM / SMS / DOC/SMC	5 Years
13. Tonnage Certificate	
14. Certificate of Class	

Q: What is a safe manning certificate? What would you fined on it and how it is determine? Validity?
A: Safe manning certificate: to confirms minimum person to be carried onboard a v/l to carried out full operation.

The certificate would issued on the basis of minimum person required on to operate:

1. V/L to alongside,
2. V/L to cast off,
3. Port operation including cargo watch, gangway watch,
4. At Sea: a) Safe Navigation watch on Bridge.
   b) Engine room Watch.
   c) Radio watch.
5. Safety maintenance work in E/R.
6. Safety maintenance work on Deck.
7. Safe handle the operation in an emergency.
8. Environmental protection.
9. Cleanness for Fire safety.

Validity: nil.

Q: What is Note of Protest ? When to Note of Protest ?

A: **NOTING PROTEST:**

- Noting protest may help resist cargo loss or damage claims on the owner.
- A protest is a solemn declaration made on oath by Shipmaster that circumstances beyond his control have, or may have, given rise to loss and / or damage to his ship or its cargo, or have caused him to take action (such as leaving an unsafe port) which may render his owners liable to legal action by another party.
- A protest (without an extension) is a simple statement of fact, without added details.

WHEN NOTE OF PROTEST:

1) After every case of General average
2) After wind and / or sea conditions have been encountered which may have damaged cargo or caused failure to make a cancelling date.
3) After Cargo is shipped in a condition likely to deteriorate during the forthcoming voyage.
4) After the ship has been damage from any cause.
5) After a serious breach of the C/P by the charterer or his agent (e.g. Undue delay, refusal to load, cargo not of a sort)
6) After the consignee fails to discharge or take delivery of the cargo or fails to pay freight.

- Protest should be noted as soon as possible after arrival and always with in 24h of arrival.
- If in connection with cargo, it should b noted before breaking bulk.

Search and Rescue

Q: What is Master obligations on having a distress message?

A: a) While in a position to able to provide assistance on receiving a signal from any source, acknowledge receipt of message and is bound to proceed with all speed to their assistance. If possible informing them or the search and rescue service that the ship is doing so, & enter in the OLB.

b) The Master of ship in distress or the search and rescue service concerned, after consultation, so far as may be possible, with the master of ship which answer the distress alert, has the right to requisition one or more of those ships such as the master of the ship in distress or the search and rescue service considers best able to render assistance, and it shall be the duty of the masters of the ship or ships so requisitioned to comply with the requisition by continuing to proceed with all speed to assistance of persons in distress.

c) Master of ships shall be released from the obligation imposed by paragraph (a) of this regulation on learning that their ships have not been requisitioned and that one or more other ships have been requisitioned and are complying with the requisition. This decision shall, if possible, be communicated to the other requisitioned ships and to the search and rescue service.

d) The master of a ship shall be released from the obligation imposed by paragraph (a) of this regulation, and, if the ship has been requisitioned, from the obligation imposed by paragraph (b) of this regulation, on being informed by the persons in distress or by the search and rescue service or by the master of another ship which has reached such persons that assistance is no longer necessary.

e) The provisions of this regulation do not prejudice the convention for the Unification of Certain of Law Relating to Assistance and Salvage at Sea, signed at Brussels on 23 September 1910, particularly the obligation to render assistance imposed by article 11 of that Convention.

Q: What preparation you will make whilst proceeding for distress?

A:

- Establish a traffic co-ordination system among v/l's proceeding to same area of distress.
- Radar plots on v/l's in the vicinity.
- Estimate ETA's of own and other v/l assisting.
- Asses distress situation to prepare for operation on scene.

<u>On-Board Preparation :</u>

<u>Life Saving and Rescue equipment's:</u>

1) Life boat.
2) Inflatable life raft

3) Life jackets
4) Survival suits for crew.
5) Life buoys
6) Breeches buoys
7) Line throwing apparatus
8) Portable VHF radios for communications with the ship and boats deployed.
9) Buoyant lifelines.
10) Heaving lines
11) Non-sparkling boat hooks or graping hooks.
12) Hatches.
13) Rescue baskets
14) Litters
15) Pilot ladders
16) Scrambling nets
17) International Cod of Signals.
18) On board radio (MF/HF) equipment's
19) Fire fighting equipment's
20) Portable ejector pumps
21) Binoculars
22) Cameras
23) Bailers and
24) Oars.

Signalling Equipment's:

1) Signalling lamps
2) Search light
3) Torches
4) Flare pistol with colour coded signal flares.
5) Buoyant VHF/UHF marker beacons.
6) Floating lights
7) Smoke generators
8) Flame and smoke floats
9) Dye markers
10) Loud hailers.

Preparation for Medical assistance, including:

1) Stretchers.
2) Blankets.
3) Medical supplies and medicines.
4) Clothing.
5) Food.
6) Shelter.

Miscellaneous:

1) If fitted crane for hoisting on each side of ship with cargo net for recovering of survivors.
2) Line running from bow to stern at the water's edge on both side for boats and craft to secure alongside.
3) On the lowest weather deck, pilot ladders and man rope to assist survivors boarding the vessel.
4) Lifeboat ready for use as a boarding station.
5) Line throwing apparatus ready for making connection with either ship in distress or survival craft.
6) Flooding light set in appropriate locations, if recovery at night.

Q: When vessel not Assisting?

A: The master deciding not to proceed to the scene of a distress due to sailing time involved and in the knowledge that a rescue operation is under way should:

- Make an appropriate entry in the ship's log book.
- If the master had previously acknowledged and respond to the alert, report the decision not to proceed to the SAR service concerned.
- Consider reports unnecessary if no contact has been made with the SAR service.
- Reconsider the decision not to proceed nor report to the SAR service when vessel in distress is far from land or in an area where density of shipping is low.

Q: What information you will gather from the survivors?

A: 1) What was the time and date of the incident?
2) Did you bail out or was the aircraft ditched ?
3) If you bail out, at what altitude ?
4) How many others you see leave air craft by parachute ?
5) How many ditched with the air craft ?
6) How many survivors did you see in the water ?
7) What floating gears had they ?
8) What was the total number of persons on board ?
9) What caused the emergency ?
10) What was the last known position ?
11) Were any of persons able to leave by life boat or raft ?
12) How long was the survivor in the water
13) Were search craft seen before, if so dates and times of sighting ?
14) Were any signals or devices used to try to attract the attention of search craft ? if so what were they and when were they used ?
15) About their medical history
16) All information should be noted.

Q: What is the purpose of questioning ?

A: 1) To ensure that all survivors are rescued.
2) To attend to the physical welfare of each survivor.
3) To obtain information which may assist and improve SAR service.

- Care must be taken to avoid worsening a survivors condition by excessive interrogation.
- If the survivors is frightened or excited, the questioner should assess these statements carefully.

Note: Questions should be asked avoid suggesting answers to the survivor. Explain that the information required is for the success of the SAR operation and may be of great value for future SAR operations.

Q: On-Scene Co-ordination

A: # The types of facilities involved in the response and the region of the SAR incident affect on-scene co-ordination.

Available facilities may be include:

- designated SRUs
- civil aircraft and vessels, military and naval or other facilities with SAR capability.

In remote regions, SAR aircraft may not always be available, to participate.

In most oceanic region, ships will normally be available, depending on shipping density.

Ships may receive information from land-based SAR authorities or by monitoring distress traffic.

No advice received from these authorities can set aside the duties of any master as set forth in regulation V/10 of SOLAS 1974 (see appendix A).

Q: Who will be On-Scene Co-ordinator (OSC)?

A: 1. When two or more SAR facilities conduct operations together, the SMC should designated an OSC.

2. If this is not practicable, facilities involved should designate, by mutual agreement, an OSC.

3. This should be done as early as practicable and preferably before arrival within the search area.

4. Until an OSC has been designated, the first facility arriving at the scene should assume the duties of an OSC.

5. When deciding how much responsibility to delegate to the OSC, the SMC normally considers the communications and personnel capabilities of the facilities involved.

Q: What is duties of OSC?

A: # Co-ordinate operations of all SAR facilities on-scene.

Receive the search action plan from the SMC or plan the search or rescue operation, if no plan is otherwise available. (See Planning and Conducting the Search in this section.)

Modify the search action or rescue action plan as the situation on- scene dictates, keeping the SMC advised (do in consultation with the SMC when practicable.)

Co-ordinate on-scene communications.

Monitor the performance of other participating facilities.

Ensure operations are conducted safely, paying particular attention to maintaining safe separations among all facilities, both surface and air.

Make periodic situation reports (SITREPs) to the SMC. The standard SITREP format may be found in appendix D. SITREPs should include but not be limited to:

- Weather and sea conditions
- the results of search to date
- any actions taken

- any future plans or recommendations.

Maintain a detailed record of the operation:
- on-scene arrival and departure times of SAR facilities, other vessels and aircraft engaged in operation
- areas searched
- track spacing used
- sightings and leads reported
- actions taken
- result obtained.

Advise the SMC to release facilities no longer required.
Report the number and names of survivors to the SMC.
Provide the SMC with the names and designations of facilities with survivors aboard.
Report which survivors are each facility.
Request additional SMC assistance when necessary (for example, medical evacuation of seriously injured survivors).

Q: Planning and Conducting the Search

A: General:

- For surface and air facilities to search patterns and procedures must be pre-planned so ships and aircraft can co-operate in co-ordinated operations with the minimum risk and delay.

- Standard search patterns have been established to meet varying circumstances.

Responsibilities of OSC

- The OSC should obtain a search action plan from the SMC via the RCC or RSC as soon as possible. Normally, search planning is performed using trained personnel, advanced search planning techniques, and information about the incident or distressed craft not normally available to the OSC. However, the OSC may still need to plan a search under some circumstances. Search operations should commence as soon as facilities are available at the scene. If a search plan has not been provided by the SMC, the OSC should do the planning until an SMC assumes the search planing function. Simplified techniques are presented below.

- Modify search plans based on changes in the on-scene situation, such as:
  arrival of additional assisting facilities
  receipt of additional information
  changes in weather, visibility, lighting conditions etc.

- In case of language difficulties, the International Code of Signals and Standard Marine Navigational Vocabulary should be used.

- On assuming the duty, the OSC should inform the appropriate CRS or ATS unit and keep it informed of developments at regular intervals.

- The OSC should keep the SMC informed at regular intervals and whenever the situation has changed.

♣ Planning the Search

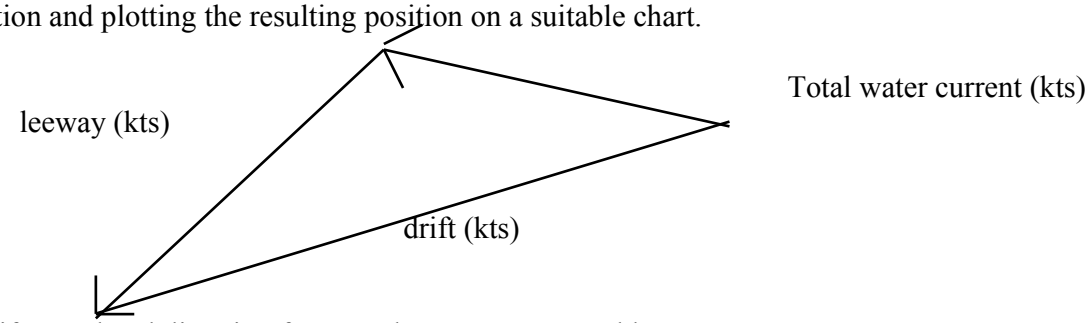
Datum

- It will be necessary to establish a datum, or geographic reference, for the area to be searched. The following factors should be considered:

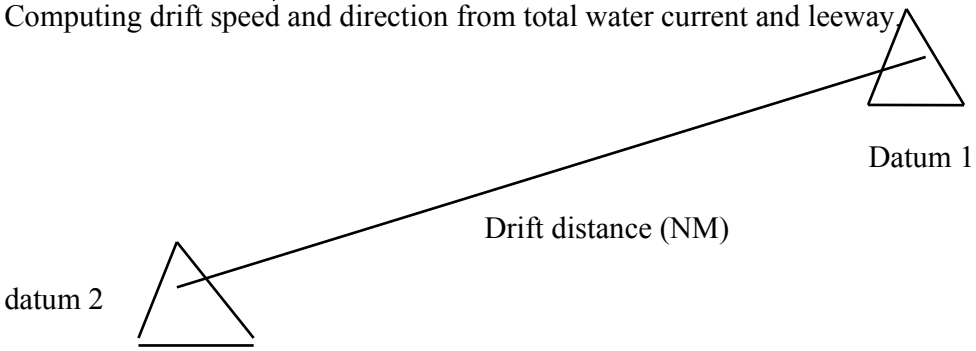
reported position and time of the SAR incident
any supplementary information such as DF bearing or sightings
time interval between the incident and the arrival of SAR facilities
estimated surface movements of the distress craft or survival craft, depending on drift (The two figures following this discussion are used in calculating drift.) The datum position for the search is found as follows:

- drift has two components: leeway and total water current
- leeway direction is downwind
- leeway speed depends on wind speed
- the observed wind speed when approaching the scene may be used for estimating leeway speed of liferafts by using the graph following this discussion (Persons in the water (PIW) have no leeway while liferaft stability and speed vary with or without drogue or ballast.)
- total water current may be estimated by computing set and drift when approaching the scene
- drift direction and speed is the vector sum of leeway and total water current

drift distance is drift speed multiplied by the time interval between the incident time, or time of the last computed datum, and the commenced search time
datum position is found by moving from the incident position, or last computed datum position, the drift distance in the drift direction and plotting the resulting position on a suitable chart.



Computing drift speed and direction from total water current and leeway

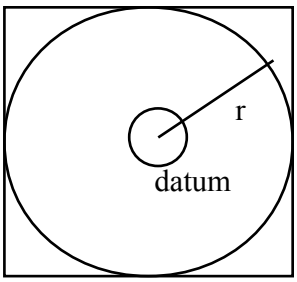


determining a new datum
(drift distance = drift speed X drift time)

- **<u>Plot the Search area:</u>**

draw a circle centred on datum with radius R.
using tangents to the circle, from a square as shown below
if several facilities will be searching at the same time, divided the square into sub-areas of the appropriate size and assign search facilities accordingly.

Most probable area

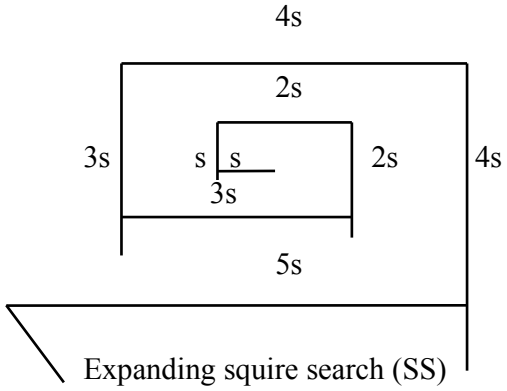


Use r =10 miles for initial area

■ Search Patterns

Expanding Squire Search (SS)

- Most effective when the location of the search object is known within relatively close limits.
- The commence search point is always the datum position.
- Often appropriate for vessels or small boats to use when searching for persons in the water or other search objects with little or no leeway.
- Due to small area involved, this procedure must not be used simultaneously by multiple aircraft at similar altitudes or by multiple vessels.
- Accurate navigation is required; the first is usually oriented directly into the wind to minimize navigational errors.
- It is difficult for fixed-wing aircraft to fly legs close to datum if S is less than 2 NM.



Sector Search (VS)

- Most effective when the position of the search object is accurately known and the search area is small.
- Used to search a circular area centred on a datum point.
- Due to small area involved, this procedure must not be used simultaneously by multiple aircraft at a similar altitudes or by multiple vessels.
- An aircraft and a vessel may be used together to perform independent sector searches of the same area.
- A suitable marker (for example, a smoke float or a radio beacon) may be dropped at the datum position and used as a reference or navigational aid marking the centre of the pattern.

- For aircraft, the search pattern radius is usually between 5 NM and 20 NM.
- For Vessel, the search pattern radius is usually between 2 NM and 5 NM, and each turn is 120º, normally turned to starboard.

■ FURTHER ACTION ON COMPLETION OF INITIAL PHASE

- The OSC will normally consider the initial phase to have been completed when, in the absence of further information, searching ships have competed one search of the most probable area.
- If at that stage nothing has been located, it will be necessary for the OSC to consider the most effective method of continuing the search.
- Failure to locate the search object may be due to one or more of the following causing:

ž errors in position owing to navigational inaccuracies or inaccuracy in the distress communications reporting the position. This is especially likely to apply if the position of datum was based on an estimated position using incomplete information
ž an error in drift estimation
ž failure to the search object during the search although it was in the search area. This is most likely to occur if the search object is a small craft, or survivors in the water
ž the craft having sunk without a trace. Other than the case of a small ship or craft in rough weather, experience has shown that there are usually some trace, even if only debris or oil patches.

■ Navigational inaccuracies of Searching Ships

- This is most likely to apply when navigational fixes cannot be obtained. In this situation, the OSC may:

ž re-search the same area, allowing for added drift during the time elapsed since calculating last datum;
ž expand the most probable area, after allowing for added drift, and search the expanded area; or
ž expand the area more in one direction than another, depending on circumstance and information available.

- Determine a new probable area based upon any additional information received.
- Where information is received to indicate that the original datum was grossly inaccurate, determining an entirely new probable area would be advisable.
- A small search object, which is easily missed in the day time, may become visible at night time if it shows lights, flares, or other pyrotechnics.
- The OSC should, therefore, consider using surface craft at night to re-search areas covered by day.
- It is good practice when searching for survivors in small craft, in survival craft, or in the water, to stop the engines occasionally at night and in restricted visibility by day to listen for cries for help.

■ Evidence of Distressed Craft Found

- In some case, the search may provide evidence of the distressed craft without survivors being found.
- This evidence may provide information for a recalculation of datum and revision of the search area.
- A low-lying, half-sunken loaded ship or aircraft may drift more slowly than a floating survival craft, even if a drogue is used.
- A derelict may drift at a considerable angle off the prevailing wind direction.
- When wreckage is located it usually consists of debris, possibly with an oil slick.
- Should this have come from the distressed craft, survival craft will usually be found downwind from the debris.

Q: Where will you get the information regarding search pattern.

A: In IAMSAR.

EMERGENCIES

V/L AGROUND :

A: Take the con & follow Emergency checklist procedure from International Chamber of Shipping

1) Stop Engines
2) Sound general emergency alarm - head count, look for casualty, establish communication inform all department.
3) Close watertight doors, if fitted
4) Order chief officer for damage assessment.

- Water tight integrity of hull and subsequent breaches of same.
- Obtain sounding form all tanks, bilge's, hold
- Condition of machinery space.
- Details casualties.
- Any fire risk
- Any other information regarding associate problems.

5) Maintained VHF watch.
6) Exhibit light / shapes and any appropriate sound signals
7) switch on deck lighting at night
8) Check hull for damage
9) Sound bilge's and tanks.
10) Visually inspect compartments where possible
11) Sound around the ship.
12) Determine which way deep water lies
13) Obtain information on local currents and tides, particularly details of the rise and fall of the tide.
14) Reduce draught of ship.
15) Make Ship's position available to Radio / GMDSS room
16) Broadcast Urgency / Distress massage as required.

- Inform local authorities / owner with position, extent of aground, weather, wind, sea, and swell, Condition of hull and machinery, any visible damage, and of the possibilities of re-floating. As well as

available assistance, P & I, flag state control, Agent of last and next port of call, coast guard, classification society.

- As soon as possible report MAIB as stranded.

COLLISION

- Take the con.
- Stop/manoeuvre the ship so as to minimise effects of collision. (leave one v/l embedded to other unless there is a fire risk, explosion or toxic escape from other v/l, which could endanger the safety of your v/l and crew.
- Sound general alarm.
- Mustering all crew/head count. Establish communication.
- Close water tight door.
- Inform engine room/ other department.
- Order radio officer to standby radio room for obtaining v/l's position
- Deck light on / not under command signal hoisted.
- Order engine room to start pump out from damage compartment.
- Stand by life boat ready to embarkation dk.
- Order chief officer for damage assessment.

    1. Water tight integrity of hull and subsequent breaches of same.
    2. Obtain sounding form all tanks, bilge's, hold
    3. Condition of machinery space.
    4. Details casualties.
    5. Any fire risk
    6. Any other information regarding associate problems.

- If any compartment damaged and ingress of water exist :

    1. List the v/l over to raise damage area above water line
    2. Build and position collision patch.
    3. Co-ordinate pumping out on to effected area

- Transmit URGENCY signal if appropriate
- Transmit DISTRESS signal if appropriate
- {{Investigate safe port operation, and/or beaching situation in order to save the v/l from being totally lost.
- If delaying tactics are not holding the situation transmit the distress signal and order an abandonment to save life.}}
- Calculate damage stability
- Inform owner, P & I, classification society, flag state control, Charterer, Agent of last & next port of call & coast guard.

IMMEDIATE STATUTORY DUTIES :

- Standby for render assistant provided own v/l's and crew safety,
- Exchange information between both the v/l : Name of v/l., Port of registry, Last port call, Next port of call.
- Entry into the OLB.
- Inform MAIB.

GMDSS

Q: What equipment do you have onboard for GMDSS?

A: 1. SART.
2. EPIRB.
3. VHF with DSC ch 70.
4. VHF with ch 16.
5. NAVTEX.
6. INMARSAT.
7. MF/HF.
8. NBDP.
9. Two way Radio telephone.

Q: What check would you carry out on GMDSS equipment?

A: Daily- Printer,
Paper,
Power on/off, Battery power supply,
DSC internal,
VHF, MF/HF without radiation.

Weekly- DSC external-UK 2187.5 khz
MF/HF - routine - Channel assign on ALRS Vol-1
Log-entry.
VHF- Hand Held Rx/Tx channel other than ch-16.
Two-way Radio internal

Emergency Generator.

Monthly- EPIRB- Physical test, HRU, Battery date (max cont. opp. hour-48), Lanyard, readily excessable to life boat/survival craft.
SART- Physical test in conjunction with 3cm radar, 9.4 Ghz., Battery date (96 hrs stby mode, 8 hrs Tx mode.)
Emergence battery power supply.- s. gravity, E/lite level, terminal clean.
Aerials.

Q: What is MAIB?

A: **MARINE ACCIDENT INVESTION BRANCH.**
Operates independently of MSA, investigates

1) Accident at sea and onboard ships
2) Dangerous occurrences at sea,

Aim -Determining what caused an accident in order to prevent it from happening again.
- Publishes reports on accidents with recommendations and lessons to be learned.

Duties - defined in the MS regulations 1994.
- Employs a staff of professional and support staff (Inspectors)

The Inspectors
Professional inspector are come from 3 Marine disciplines 1. Nautical. 2. Engineer. 3. Naval architecture. Others from recent seagoing or specialist knowledge. Inspectors are available to travel at short notice to wherever a ship has been involved in an accident.

Investigation:

- Administrative Inquiry: for less serious cases where enquires are made by correspondence or telephone, without need for visits

- Inspector's Investigation: for more serious case where witness are interviewed and ship is visited where that is feasible; and

- Inspector's Inquiry: called by Chief Inspector of Marine Accidents in the cases of major accident. This is a very comprehensive investigation, usually carried out by a team of MAIB inspector.

Q: Define the Accident, Major and Serious Injury, Dangerous Occurrence, and Hazardous Incident?

A: An accident is an undesired event results in personal injury, damage or loss. Accidents include:
- Loss of life or major injury to a person on board or when a person is lost from a vessel;

- The actual or presumed loss of a vessel, its abandonment or material damage to it;
- Stranding or collision;
- disablement and also material damage caused by a vessel.

A major injury means:

- any fracture, other than to the fingers or toes;
- any loss of limb or part of a limb;
- dislocation of the shoulder, hip, knee or spine;
- loss of sight;
- penetrating injury to the eye;
- any other injury leading to hypothermia or to unconsciousness, or requiring resuscitation, or requiring admittance to hospital or to an off-shore sick-bay for more then 24 hours, or if at sea requiring confinement to bed for more than 24 hours.

A serious injury means:

- any injury, other than a major injury, to a person employed or carried in a UK vessel which occurs on board or during access which results in incapacity for more than three consecutive days of the accident; or
- as a result of which the person concerned is put ashore and the vessel sails without him or her, unless the incapacity is known or advised to be of three consecutive days or less, excluding the day of the accident.

A dangerous occurrence
is an incident which might have been liable, taking into account the circumstance, to cause serious injury or to cause damage to the health of any person, and includes:

- any person falling overboard;
- any fire or explosion;
- the collapse or bursting of any pressure vessel, pipeline or valve or the accidental ignition of anything in a pipeline;
-the collapse or failure of any lifting equipment, access equipment, hatch-cover, staging or bosun's chair or any associated load bearing parts;
- the uncontrolled release or escape of any harmful substance or agent;
- any collapse of cargo, unintended movement of cargo sufficient to cause a list, or loss of cargo overboard;
- any snagging of fishing gear which results in the vessel heeling to a dangerous angle;
- the parting of tow-rope;
- any contact by a person with loose asbestos fibre except when full protective clothing is worn.

A hazardous incident
is any incident or event, not being an accident or a dangerous occurrence, by which the safety of ship or any person is imperilled, or as a result of which serious damage to any ship or structure or damage to the environment might be caused.

Q: Reporting of Accidents

A: Accidents must be reported as soon as possible, by the quickest means available. This can be direct to the MAIB by telephone, fax, telex or e-mail, or to any Maritime Safety Agency (MSA) Marine Office or by VHF to HM Coastguard.

Serious injuries and dangerous occurrences must be reported within 14 days, or within 14 days after arrival at the next port if the vessel is at sea at the time of the occurrence.

These reporting requirements apply to merchant and fishing vessels, and sport or pleasure vessels when used commercially. However, other leisure craft skippers or crews may report accidents to the MAIB if they so wish.

SALVAGE

Q: Engine break down in mid-Atlantic. TRS expected, One Ship offers assistance but not on LOF. Demands its own condition, What will you do ?

A: As the safety of my crew is prime, I will took his terms and condition under protest which will be monitored by coast radio station and make a OLB entry, This was to protest owner's interest.

Q: What is the general rule, when v/l in danger, about seeking advice instructions from owners ?

A: Always to seek the advice and instructions of the owners, but only if time allows. I should immediately call for assistance from any available source if I think it necessary for the safety of my ship, crew, passengers and cargo.

Q: When several ships of different types and size offer their services, What assistance would you accept?

A: The assistance that seems the most reasonable, taking into account the value of the assisting ships, their ability to perform the salvage services and the amount of their deviation from their intended routes.

Q: Under salvage condition, What consideration should be uppermost in your mind, in addition to any threat to life, your ship or the cargo ?

A: The necessity to avoid or reduce the risk of pollution, i.e. harm to the environment.

Q: In deciding weather to accept salvage assistance, what circumstances would you take account of ?

A:1) Safety of personnel. 2) Proximity to the shore or shoal water
3) Weather and sea conditions 4) Current and tide
5) Nature of sea bed and shore line 6) Potential for safe anchoring

7) Availability of assistance. 8) Damage already sustained by ship.
9) Risk of further damage to ship.
10) Prospect of maintaining communications.
11) Threat of pollution and
12) 12) Manpower and material requirements.

Q: If a v/l is in danger, are you, as Master of a nearby ship, under any obligation to save the v/l itself ?

A: No. Shipmasters are under a statutory obligation to save human life only, and to prevent harm to marine environment. The first priority is to decide how to save lives onboard, and then think about protecting the marine environment and finally about saving the ship if circumstances permit.

Q: What would be you considerations as Master before offering a tow ?

A: A v/l requiring a tow is not necessarily in distress. I would therefore carefully consider:

1) Weather the contract of carriage gives my vessel liberty to tow.
2) Weather I have sufficient reserve (fuel, water, provision) throughout and after tow.
3) Weather there is a possibility of missing a cancelling date under the charter party.
4) Weather the nature of my cargo permit.
5) Machinery is of adequate power and in good enough condition for towing.
6) Weather the value of v/l requesting tow, plus her cargo, is likely to be sufficient value to merit a salvage service by my ship.

Q: Having agreed in principal to giving another v/l a tow, What would be your considerations as Master?

A: 1) Has an agreed to salvage under LOF 95 terms bee made ?
2) Has a port of destination / place of safety been agreed ?
3) Have I notified by owners and charter's so that additional hull insurance can be arranged if necessary ?
4) Are proper records of all events and circumstances to date being kept.

Q: What are the difference between the old OLF and LOF 95

A: On new LOF, the claming percentage for salvage have changed from 30% to 100%.

MASTER AND CREW

Q: Two hour before sailing you found 3/E is not on board, as Master what action would you take ?

A: As Master, must ensure that the ship does not proceed to sea unless there is on board a valid Safe manning document and manning of the ship complies with it. There is no provisions for sailing short-handed.

If a 3/E is listed on the SMD, I would not sail until a replacement was found. I would sign the 3/E off is his absence and leave his gear with the agent.

Notify local proper officer, owner and make an OLB entry.

Q: What is the most serious offences under the Merchant Navy Code of Conduct? Or dismissal offence?

A: **Dismissal offence:**

There are: 1) assault

2) Wilful damage to the ship or Property on board.
3) Theft, or possession of stolen property
4) Possession of offensive weapons
5) Persistent or wilful failure to perform duty
6) Unlawful possession or distribution on drugs
7) Conduct endangering the ship or person on board
8) Combination with others to impede the progress of the voyage or the navigation of the ship
9) Disobedience of orders relating to the safety of the ship or of any person on board

10) Being asleep on duty or failing to remain on duty if this prejudiced the of the ship or any person on board
11) Incapacity through drink or drug to carry out duty to the prejudice of safety of the ship or of any person on board
12) To smoke, use a naked light or unapproved electric torch in any part of a ship carrying dangerous cargo or stores where smoking or the use of naked light or unapproved troches is prohibited
13) Intimidation, Coercion and / or interference with the work of other employees
14) Behaviour seriously detracting from the safe and/or efficient working of the ship
15) Conduct of a sexual nature, or other conduct based on sex affecting the dignity of women and men at work which is unwanted, unreasonable and offensive to the recipient
16) Behaviour seriously detracting from the social well-being of any other person on board
17) Causing or allowing unauthorised persons to be on board whilst at sea
18) Repeated commission of lesser breaches after warnings have been given.

Q: What are the lesser offences?

A: 1) Not justifying dismissal in the particular case
2) Minor act of negligence, neglect of duty, disobedience and assault
3) Unsatisfactory work performance
4) Poor time keeping
5) Stopping work before the authorised time
6) Failure to report to work without satisfactory reason
7) Absence from the place of duty or from the ship without leave
8) Offensive or disorderly behaviour. Some companies add breaches related to special trading patterns, etc.

Q: How would you deal with an alleged serious breach of the code of conduct that was referred to you?

A: I would deal with it as soon as possible , and in person. I would first convene a formal hearing in my office, with accuser and accused present. I would tell the seafarer that he may be accompanied by a friend who can advise him and speak on his behalf (like a solicitor or counsel in court), and that he (or his fiend) may call any witnesses he chooses and question them on their evidence. When ready to start, I would inform the seafarer of the alleged breach (referring to the particular paragraph and sub-paragraph of the Code of Conduct) and ask him if he admits or denies the allegation. (If he admitted it, there would be no need for any evidence to be called, except in mitigation, or for cross-examination.) I would tell the seafarer he may make any statement he wishes in answer to the alleged breach, including comments on evidence produce against him. I would hear all the evidence (against and for the seafarer) and any cross-examination of the evidence. Then, after considering the evidence, I would orally inform the seafarer whether or not I found that he had committed the alleged breach. If I did so find, I would impose a sanction with I considered reasonable in all the circumstances, taking in to account his record on the ship and any other relevant factors.

Q: What sanctions may you (as master) impose under the Code of Conduct, if you find a seafarer guilty of a breach of the Code?

A: 1) A formal (oral) warning record in the OLB
2) A written reprimand, also recorded in the OLB, or
3) Dismissal from the ship, either immediately (if in a UK or overseas port), or at the next port.

Q: In what circumstances could you arrange for the dismissal of a seafarer and his repatriation to the UK from an overseas port of call?

A: If I found (after a properly conducted hearing) that he had breached of code conduct and I decided that his continued presence on board would be detrimental to the efficient and safe running of the ship or to the maintenance of the ship or to the maintenance of harmonious personal relations on board.

Q: What precautions would you take when holding a hearing of a disciplinary case, to protect the employer's legal position ?

A: I would ensure, especially where dismissal was my chosen sanction, that the hearing was conducted exactly as laid down in the in the code of conduct, i.e. in accordance with the principles of natural justice. I would ensure that I made a formally-announced finding that the seafarer had committed a serious breach of code of conduct and that the man was given copies of all the statements made in the OLB, and that he signed acknowledging receipt of them.

Q: What would you write in the official log book concerning a disciplinary case ?

A: Full detail of alleged breach and the action taken by me in response to it.

Q: What document(s) should an accused seafarer be given

A: A copy of every OLB entry relating to his case and it has to be acknowledge receipt by signing.

Q: What action would you take if a seaman, who appeared to be drunk, complained to you about the food at 2100hrs, while you were watching a video?

A: Ensure the safety of ship, personnel and the seaman himself, if necessary. Find out when he is next on watch (at 2400h). Sober him up - until then he's potential liability to others. Discipline him he's sober, if necessary. His complain may be genuine, but I have no duties to investigate unless there are 3 or more complainants. Make OLB entry.

Q: What action would you take regarding a seaman who was drunk onboard while on duty ?

A: Ensure safety of the ship, personnel and the seaman himself. Remove him from duty and substitute another. Sober him up. Discipline him in accordance with the code of conduct, if practicable . (was he drunk enough to jeopardise safety and personnel ?) The offence may justify dismissal.

Q: What action would you take regarding a seaman who was drunk onboard while off duty ?

A: Ensure safety of the ship, personnel and the seaman himself. If no threat to the safety, take no action beyond an informal caution unless company's, charterer's or ship's rules prohibit alcohol. Perhaps give a D & A tests before he starts work again.

Q: Why should a seaman not be drunk when off duty ? Why caution the man in the above case ?

A: Every person on the muster list should be able to perform his or her duties at any time, whether in port or at sea.

Q: What entries should you make concerning a seaman left behind ?

A: 1. An entry recording any provision made on the employer's behalf to ensure that the proper officer has been informed of the seaman's leaving behind.
2 .An entry recording the date and place of leaving the seaman behind and the reason for leaving behind.

Q: What matter may seaman complain about that are specially provided for in merchant shipping legislation ?

A: Provision and water supplies.

Q: Under what conditions do seaman in a ship have a statutory right to complain to the master, and what is the master required to do about any rightful complain ?

A: If three or more seaman in a ship consider that the provisions or water supplied are not in accordance with regulation (because of bad quality, unfitness for use or deficiency in quantity), they may complain to the master. The master must investigate the complaint.

Q: Inspection for crew accommodation?

A: At least every 7 days, by master or an officer appointed by him accompanied by.

The master must cause an entry to be made in the OLB, regarding

1) The time and date of the inspection
2) The name and ranks of the inspectors and
3) Particulars of any respect in which the accommodation or any part of it was found by either inspector not to comply with the regulations.

<u>To be inspect for:</u>

1) Crew accommodation is maintained in a clean and habitable condition.
2) All equipment and installation required by the regulations is maintained in good working order.
3) All crew accommodation, except store room, is kept free from stores and other property not belonging to or provided for the use of the crew.
4) Cargo is not kept in any part of the crew accommodation and
5) Accommodation provided under the regulations is not used by passengers.

ARRIVAL AND DEPARTURE.

Q: Under what circumstances would you decide to make for a port of refuges?

A: When it becomes unsafe to continue the voyage for any reason, e.g. a dangerous shift off cargo; an unextinguishable fire; after suffering serious hull damage (e.g. from grounding, collusion, heavy weather, loss painting); a main machinery failure not repairable at sea; loss of propeller or rudder.

Q: Who would you inform that you are making for a port of refuge, and what requests would you make to these parties?

A: Owners; Charterers; agent at original destination port. I would request owners to nominate an agent for me to contact at the port of refuge, and the P&I club correspondent. Owners would contact the classification society surveyor. On contacting nominated port agent, request him to notify relevant official (port state administration, harbour authority, customs, immigration, port health, etc).

Q: Your ship is 2 hours from the pilot station. What general preparations would you make for arrival in port?

A: Pre-arrival checks (anchors cleared, test engines astern, E/S running, navigational gear all working, parallel indexing). Make pilot boarding preparations. Send pre-arrival massages. Check port entry publications. Close the bonded store. Have all customs declaration forms (if on board) and stores list, crew lists, etc. completed. Have proper courtesy ensign ready.

Q: What messages would you send before arriving at a port on a large ship?

A:

1. ETA to the agent, with a request for berth details, crew relief arrangement, etc. and giving requirements for cash, provisions, bunker, FW, etc.
2. request for boatmen/linesmen, also to agent
3. request for a pilot-sometimes made direct to a pilot station or harbour authority, or via agent (check admiralty sailing directions for appropriate method)
4. notification to Port health authority of any circumstances requiring the attention of the Port Medical Officer. (At a UK port the message must arrive 4-12 hours before the ship.) I would also show health clearance signals.
5. confirmation to port authority that all equipment is in good working order before entering port limits (usually made by VHF when near fairway)
6. if carrying dangerous goods or polluting goods, a check list for vessels carrying dangerous or polluting goods
7. I would check the charterparty for any special instructions about messages to be sent. Request for tug(s) might be in conjunction with pilot request.

BUNKERING

Q: If your vessel was on a time charter for 6 months, which party would be responsible for purchasing bunker fuel ?

A: The time Charterer.

Q: What precautions would you take where the time charterer is buying bunkers?

A: I would check that he was ordering fuel of the correct specification. The specification should have been agreed between the owners and charterers and should be listed in the C/P.

Q: What precautions would you take when ordering bunkers to protect the owners' interests as far as bunker quality was concerned?

A: In consultation with Chief Engineer, I would check the engine operation manuals, and if on time charter, the bunker clause. I would order the bunkers specifying an approval fuel standard, e.g. 'BSMA 100' rather then specifying only a type and viscosity, e.g. 'IFO 180' I would have the C/E check that bunkers presented for loading mach the ship's requirements and specification ordered. I would have the C/E make accurate tank sounding before commencing bunkering in order to verify the amount delivered. I would have the C/E make a compatibility test to confirm that bunker presented are compatible with fuel already on board and see that bunker are loaded into empty tanks if possible, and kept separate from the other bunkers until any analysis had been completed. I would also see that the vessel is, so far as possible, maintained upright and on even keel throughout the bunkering operation, and that samples of oil loaded were taken at regular intervals at the manifold.

Q: What other precautions would you take when bunkering?

A: I would that local and international regulations are complied with throughout the operation; that scupper are fitted before commencing bunkering; that drain plug in manifold and fuel tank air pipe containment save-alls are in place before commencing bunkering; that the communication are established with the supply control position and signal to be used are understood by both side; that a maximum pumping rate and pressure are agreed with the supplier; that the condition of hoses and couplings is checked before (and after) bunker; that blanks and number of required nuts and bolts, etc. are checked before bunkering; that the required hose lengths (allowing for ranging of vessel) are checked before bunkering; that valves are in the required positions before bunkering and that tank vent pipe are free from obstruction; that barge or shore tank soundings and/or meter reading are checked before (and after) bunkering to help avert any problems concerning quantity; that frequent soundings are taken during the bunkering operation; that the rate of delivery is slowed down while topping off; that ample warning is given to the supplier to reduce the delivery rate and final shutting off; that accurate sounding of tanks are taken after bunkering and compared with pre-loading soundings to determine the quantity delivered; and that the Oil Record Book, and deck and engine room log book are completed immediately bunkering with accurate details of the operation.

Q: What are the possible consequences of not having proper procedures for bunkering operation?

A: 1. Harbour pollution
2. a fine on the owners/operators
3. a fine on me as master
4. detention of my ship
5. an adverse effect on owner's deductibles and standing with their P & I club.
6. loss of ISM certification.

Q: What action would you take if a spillage occurred during bunkering?

A: I would take immediate steps to:
1. Stop the bunkering operation
2. minimize the spread of the oil in the harbour, taking all possible action to contain the spillage until shore assistance arrives, but without using any dispersants for which approval had not previously been obtain
3. stop any hot work on board or nearby vessels and quays
4. contact harbour authorities (on VHF if possible); ship's agent; P & I club correspondent; owners/managers;
5. make statutory report to MAIB and coastal state administration
6. obtain samples of the oil from which the spillage came
7. establish the facts and (before investigators arrive, if possible) write a full report of the occurrence, stating all efforts taken by the ships crew to deal with the spillage
8. attempt to establish the quantity of oil spilled. Together with my officers and crew I would work closely with the local authorities in the clean-up operation.

Q: What arrangements would you expect the Chief Engineer to make for taking bunker sample?

A: I would expect the C/E to take at least two samples during the bunkering. If the vessel carries onboard fuel test kit, the C/E should carryout a sport analysis and , if this indicate the fuel is unsuitable, a full analysis should be carried out at an approved shore laboratory before the bunker are used. In any event, one sample should be retained on board until all bunkers loaded have been burn without problem, while other should forwarded to an independent fuel analysis service. Sample of oil loaded during bunkering should be sealed, dated and signed by the Chief Engineer and supplier.

ISM.

Q: International Safety Management Code.

A: **Definition:**

ISM means the International Safety Management Code for the safe operation of Ships and Pollution Prevention.

Objective:

1) To ensure safety at sea, prevention of human injury or loss of life and avoidance of damage to the environment.
2) Provide for safe practices in ship operation and safe working environment.
3) Establish safeguards against all identified risks.

Elements:

1) Policy: company have to develop a policy for safety and environment protection policy.

2) Procedure: Company to establish procedure to ensure safe operation of ships and protection.

3) Designated person: Person ashore having direct access to the highest level of management.

4) Master Responsibility and Authority:
   - Implementing the safety and environmental protection policy of the company.
   - Motivating the crew in the observation of that policy.
   - Issuing appropriate order and instruction in a clear and simple manner.
   - Verifying specific requirements are observed and
   - Receiving the SMS and reporting its deficiencies to the shore based management.

5) Resource and Personnel:
   - Company should ensure master properly qualified and fully conversant with company's SMS.
   - Company should ensure each ship is manned with qualified, Certificated and medically fit seafarers and given proper familiarisation with their duties.

6) Shipboard operations: Company should established procedures for the preparation of plans and instructions for key shipboard operations concerning the safety of the ship and prevention of pollution.

7) Emergency preparedness: Company should established procedures to identify, describe and respond to potential emergency shipboard situations, and programmes for drills and exercises.

8) Non-Conformities & Reportings: When any work goes out of plan. Company should establish procedures for the implementation of corrective action.

9) Maintenance of the ship and equipment: Company should ensure inspection held, any Non-Conformity is reported, appropriate corrective action taken and all activities recorded.

10) Documentation's: Company should establish and maintain procedures to control all documents and data which are relevant to SMS.

11) Internal audit: Company should carryout internal audit to verify all policy implemented.

12) External audit: To verify company and ship are working as per SMS.

13) Certification: Safety Management Certificate to be given to a ship after audit.

LSA

Q: Life saving appliances for all ship.

A: 1) 3 two-way VHF radio telephone.
2) Radar Transponder-1.
3) 12 rocket parachute flare.
4) On board communication (Fixed or portable) between emergency control station, muster and embarkation station, and alarm system and public address system on passenger ship.
5) Muster List-Operating instructions.
6) Life buoys:

Length of the ship in meters	Minimum no. of life buoys
Under 100	8
100 and under 150	10
150 and under 200	12
200 and over	14

- at least 2 with buoyant life line
- at least ½ with self-igniting lights
- at least 2 with self-activating smoke signals

7) Life jacket
   - For adult-100% + 5% extra
   - For Children-10% of the number of passenger on board
   - Life Jacket for persons on watch and remotely located survival craft.
   - Life Jacket shall be fitted with light.

8) Immersion Suit and thermal protective aids:
   - At least three-immersion suit, and thermal protective aids for person onboard not provided with immersion suit for each life boat. But it is not required if
     - has totally enclose life boats on each side.
     - constantly engage on a voyage in warm climates.

9) Survival craft.
   - Totally enclose life boat both side 100%.
   - Life raft aggregated 100% when easily transferable from one side to another or 100% each side.
   - Horizontal distance if more than 100m from nearest survival craft then another life raft to be place fwd or aft.

10) Rescue boat: one.
11) Training manual.
12) Line throwing appliances: 4 nos.

FFA

Q: Fire protection regulation

A: **For Class 7 vessels**

- Fire Main:
  Vessel to be fitted with a fire main, water service pipes and hydrants with no other connection other then for washing down.

- Appliances:
  Sufficient appliances to ensure at least two jets of water to any point from separate hydrants.

- Hoses:
  One hoses for every 30m of ship's length (minimum 5). Total length of at least 60% ship's length, Plus one spare hose. (Engine Room extra)

- Hydrant:
  Sufficient to produce two jets of water at any point. Each machinery / boiler space to have at least 2 hydrant, one each side, plus one in the shaft tunnel.

- Fire Pumps:

Two fire pumps + one other pumps (general service, ballast or bilge's pump) each capable of producing two jets of water from separate hydrants. If all pumps are in same compartment (usually E. R.) an independently driven emergency fire pumps is required out side that compartment.

- Portable fire extinguishers:

Sufficient extinguisher so that at least one is readily available in any part of the accommodation or service space. Not less then 5 (3 if under 1000t) , spare charges for 50% of each type unless not readily recharged in which case an additional extinguisher of the same type must be provided.

- Fixed Smothering System:

Ships 2000t or over to be provided with fixed gas smothering system for every cargo space. An exemption may be granted if ship only carries bulk cargoes of low fire hazard and the v/l is fitted with steel hatches and all openings to that compartment can be sealed. Ro/Ro cargo space not capable of being sealed to be protected by a fixed water spraying system instead.

- Boiler room:

A fixed smothering system-pressure water, gas or foam. In each boiler space a large foam extinguisher (min.135 litres) or CO2 equivalent (min. 45 kg). Plus one portable extinguishers plus 0.3m³ sand and a scoop.

- Engine room-diesel

A fixed smothering system-pressure water, gas or foam, and a 45 litre foam extinguisher or a 16 kg CO2 extinguisher, plus a portable foam applicator unit. Sufficient portable extinguishers (min 2) so that at least one is not more than 10m walking distance from any point.

- Engine room-steam

Sufficient 45 litre foam or 16 kg CO2 extinguisher to reach any part or a fixed system - water spraying or gas smothering. Sufficient portable extinguishers (min 2) so that at least one is not more then 10m walking distance from any point. Where such space are periodically unmanned, a fixed system - water spraying or gas smothering.

- Unmanned E.R. (UMS):

Automatic fire detection and alarm system

- Fireman's Outfits:

Over 4000t: 4. 2500t-4000t:3 under 2500t:2
One outfit to be of the air hose type, remainder self contained type.

- Ship/Shore Connection.

For class 7 (T)

In addition to the above:

- Inert Gas system:

Required if tanker over 20,000t and carrying volatile oil; also required if engaged in crude Oil washing.

- Fixed deck foam System:

To provide 50mm foam on deck in no than 15mins. (150mm in machinery spaces / boiler rooms)

- Pump room:

Fixed fire extinguishing system operable from outside compartment.

- Fireman's Outfits:

At least 4. One air hose type, remainder self contained.

For class 1

In addition to class 7 requirements:

- fire detection

Fire patrol system plus manual fire alarm in passenger/crew spaces. Fire detection and alarm system for inaccessible spaces.

- Fire pumps

At least 3 if over 4000t.

- Fire hoses

One for each hydrant.

- Fire Main

Permanently pressurised or readily accessible remote control for pumps.

- Public address System

For all accommodation, public and service space. Special crew alarm system (may from part of general alarm system).

- Portable Extinguishers

On each deck: 2 portable extinguishers within floodable zone below the bulkhead deck. Above that, One portable extinguisher each. One portable extinguisher and asbestos blanket per galley (two of each if galley area more then 45m²). One portable extinguisher per control room (radio room, navigating space, central fire recording space, emergency generator space). In spaces carrying motor vehicles: two extinguishers suitable for oil fires for each 40m of deck space, at least one each side & at least one each access point. In addition, two foam applicators for use in these spaces.

- Fireman's Outfits:

Two fireman's outfits plus two extra outfits for each 80 metres of length of passenger / service space. One to be of air hose type, remainder self contained.

General

- Explosives:

Fire / smoke detection system. No steam smothering.

- Hoses:

Max. length 18m unless breadth of ship exceeds 27m in which case max. length 27m.

- Nozzles:

All nozzles to be dual purpose type.

- Portable fire extinguishers:

liquid : between 9 and 13.2 litters., Dry powder: min 4.5 kg., CO2: min 3 kg. Max. weight 25.6 kg., Not more then 50% of extinguishers of dry powder.

- Fixed CO2 Flooding:

Quantity : 30% of largest cargo compartment (45 % if Ro-Ro deck) and 40% Engine room, Min. Rate of flooding (E.R.) 85% of total volume in two minutes (if Ro-Ro deck must provide two thirds of CO2 within 10 minuets.

- Means of stopping machinery:

To be provide with means of stopping fans, machinery, pumps, etc. from outside of space. Also means of closing skylight, doorway, vents, and other openings from outside the space.

- Fireman's outfit

Outfit to widely separated, and to consist of :

- B.A. Sets
- Portable battery operated safety lamp (3 hrs duration).
- Fireman's axe
- Protective clothing
- Boots and gloves of non conducting material (e.g. rubber).
- Rigid helmet

- Helicopter facilities

Adjacent to landing area:

- Dry powder extinguisher 45 kg
- Foam application system
- CO2 extinguisher 16 kg

- Ro-Ro Cargo Spaces:

Mechanical ventilation system (at least 6 changes / hours). At least 2 portable extinguishers for every 40m length of deck spaces (1 at each access point). Fixed water spraying system (water curtains). Plus 3 water fog application units.

- General Arrangement Plans:

Displayed in public place for guidance of Master and officers. A duplicate set to be stored in a prominently marked watertight enclosure outside the deck house for the assistance of shore fire fighting personnel.

Q: What is requirements for CO2 that you must have to have on board for cargo hold and Machinery space separately?

A: For cargo hold- 30 % vol. of largest cargo hold if carried. 45 % vol. if cargo hold carry vehicles and vehicles are fitted with F. O. tanks and tanks are full of F. O.

For machinery space-40 % vol. of Machinery spaces excluding Engine casing. 35 % vol. of machinery spaces including Engine casing.

Q: Squat?

A: Squat is an increase in draught caused by a vessel travelling through the water at a significant speed with a limited under keel clearance.

Whilst it can occur in relating deep water, it is more pronounced when the depth of the water is less than twice the draft in other words, the under keel clearance is less than the v/l's draught.

There is also likely to be a change in trim since the LCB is likely to change with change of draught, thereby creating a trimming moment.

Factors increasing squat

1) High speed (squat α speed²)
2) High propeller speed
3) Deep draught
4) Shallow depth of water
5) High block co-efficient
6) Broad beam
7) Narrow channel
8) Large trim

Sign that v/l is experiencing shallow water effect

1) Speed decrease
2) R.P.M. decrease
3) vibration may occur
4) Steering may affected v/l becomes sluggish to manoeuvre.
5) Ship made waves increase in amplitude.
6) Ship wake changes colour / become muddy.

- Reduce speed if squat is suspected.

Q: Interaction - Action over taking?

A:

- Establish Communication between Vessels.
- Agreed overtaking procedure. Lead vessel to slow down to reduce interactive forces. Overtaking vessel to speed up so as to reduce the period the vessels are in close proximity to a minimum.
- Select wide and straight section of the channel.
- Select deeper stretch of channel in order to reduce squat and interactive forces.
- Ensure no other traffic in the vicinity.
- Ensure experienced and competent helmsman on wheel who is aware of sudden swings possible due to interaction. Both steering motors on.
- Warn Engine room.
- Ensure maximum distance between vessels whilst overtaking manoeuvre is taking place.

SAFETY OFFICIAL

SAFETY OFFICER :

On sea-going ship on which more than five workers are employed the company required to appoint a safety officer. The master must record the appointment of a safety officer - this should be in the official log book.

Although not prohibited by regulations the appointment of master as the safety officer is not generally advisable. Appointment as safety officer should be avoided to whom the master has delegated the task of giving medical treatment. This is because one of the duties of the safety officer is to investigate incidents, and he would not be able to give proper attention to this function while providing medical treatment for casualties.

DUTIES OF SAFETY OFFICER :

*0 Safety officer will carry statutory responsibilities for health and safety as per code of safe working practices and as per company's policy.

*1 The safety officer's role should be a positive one, seeking to initiate or develop safety measures before an incident occurs rather afterwards.

*2 To improve safety consciousness among the crew.
*3 The safety officer has a duty to investigate notifiable accidents or dangerous occurrences affecting persons on board ship or during access, as well as potential hazards to health and safety and any reasonable complaints made by any personnel.
*4 The regulation require safety officer to carry out health and safety inspections of each accessible part of the ship at least once every three months, or more frequently if there have been substantial changes in the condition of work.
*5 The safety officer has a duty to stop any work which he reasonably believes may cause a serious accident and immediately to inform master except when emergency action to safeguard life or the ship is being taken.
*6 To make representations and recommendations to the master and employer about deficiencies relating to health and safety
*7 To keep a record of all accidents and dangerous occurrences.

SAFETY REPRESENTATIVES :

On every ship on which more than five workers are employed , the company must make arrangements for the election of safety representatives. The regulation specify that no safety representative may have less than 2 years consecutive sea service since attaining the age of 18

The number of safety rep. Who should be elected will vary to the size of a crew. The following ratios are recommended

6 - 15 crew 1 elected by off. and ratings together
16 + crew 1 elected by the off. and 1 by ratings
over 30 1 elected by the off and 3 by the ratings (i.e. 1 from each from deck, eng. and catering departments, general purpose ratings being included in the deck department)

The master must record the election or appointment of every safety representative in writing - this should be either in the official log book or in the minutes of safety committee meeting.

Safety reps should :

- put forward their views and recommendations in a firm but reasonable and helpful manner
- be sure of the fact
- be aware of the legal position
- be conscious of what is reasonably practicable

SAFETY COMMITTEE :

Once safety rep. have been elected, the company must appoint a safety committee. The committee must be chaired by master.

It is desirable that there should be a safety committee on every ship more than five workers, although the statutory requirement only exists on those ships where safety rep. are elected.

The master must record the appointment of a safety committee in writing - this should be in the OLB or minutes of the committee meetings.

It is preferable to appointment as secretary someone other than a safety official, as officials need to concentrate on the discussion rather than on recording it.

Safety committee have a meeting generally on every 4-6 weeks.

PURPOSES :

1. make the ship a batter working place

2. finding of the risk assessment and measures for protection in place
3. any other factors affecting the health and safety of those working on ship
4. details of fire fighting, first aid and other emergency procedures.

DUTIES OF SAFETY COMMITTEE :

- to use its best endeavours to ensure the COSWP is complied with
- to improve the standard of safety consciousness among the crew
- to make representations/recommendations on the crew's behalf on health and safety matters
- to inspect SO's record
- to ensure observance and take appropriate action concerning any occupational health and safety matters.

OIL RECORD BOOK (ORB)

Every non tanker of 400 GRT and above , and every tanker of 150 GRT and above must have ORB part I (Machinery space Operation). All tankers of 150 GRT and above must have ORB part II (Cargo/Ballast operation)

The ORB must be preserved for 3 years after last entry has been made. The ORB must be completed on each occasion, on tanks to tank basis if appropriate, Entries must be fully recorded without delay and each completed entries must be sign by the officer in charge of the operations concerned. Each completed page must be sign by the Master.

Entries include- any movement of oil in to ship, within ship and out of ship.

Entries in ORB- Part I - Machinery space Operation- All Ship:

- Ballasting or cleaning of fuel oil tanks
- Discharging of dirty Ballast or clean water from fuel oil tanks
- Collection and disposal of oil residue (sludge)
- Non-automatic discharge over board or disposal otherwise of bilge water which has accumulate in machinery space.

- Automatic discharge over board or disposal otherwise of bilge water which has accumulate in machinery space.
- Condition of oil discharge monitoring and control system.
- Accidental or other exceptional discharge.
- Bunkering fuel or bulk in lubricating oil.
- Additional operational procedure or general remarks.

Entries in ORB- Part II- Cargo/Ballast Operation-Tankers:

- Loading of oil cargo
- unloading of oil cargo
- Internal transfer of oil during the voyage
- Crude oil washing (COW tankers only)
- Cleaning of cargo tanks
- Ballasting of cargo tanks.
- Discharging Dirty ballast.
- Discharging of Clean ballast contained in the Cargo tanks
- Ballasting of dedicated clean ballast tank. (CBT tankers only)
- Discharging of ballast from clean ballast tank. (CBT tankers only)
- Discharge of water from slop tanks in to sea.
- Disposal of residual and oily mixtures no otherwise required
- Condition of oil discharge monitoring and control system.
- Accidental or other exceptional discharge.
- Additional operational procedure or general remarks.

For vessel engaged in specific trade

- Loading of ballast water.
- Re-allocation of ballast water within the ship
- Ballast water discharged to reception facility.

REGULATIONS GOVERNING DISCHARGE OF OIL.

Machinery space:

- The ship not within a special area.
- The ship is proceeding enroute
- The oil content of the effluent without dilution does no exceed 15 ppm.
- The ship has in operational:
  400 to 10,000GRT - an oil filtering equipment.
  Above 10,000 GRT - an oil filtering equipment and with arrangement for alarm and automatic stopping any discharge of oily mixture when the oil content of effluent exceed 15ppm.

Tankers:

- The tankers is proceeding on a voyage
- The tanker is not within a special area.
- The tanker is more than 50 miles from nearest land
- The instantaneous rate of discharge of oil content is not more then 30 litres per nautical mile.

- The total quantity of discharge is not greater then 1/30,000 of the total quantity of the particular cargo of which the residue formed a part, or in case of existing tankers (before 1980), the total quantity of discharge is not greater then 1/15,000 of the total quantity of the particular cargo of which the residue formed a part
- The tanker has in operation an oil discharge monitoring and control system and slop tank arrangement.

(Clean ballast and processed bilge water (Max 15 ppm) can be discharged within a special area)
Certificate:

International Oil pollution prevention Certificate (IOPP).

Required by non-tankers of 400 GRT or more and tankers of 150 GRT or more
Validity 5 years. Can be extended 5 months.
Issued by MCA (flag state admin.) or Classification society. Surveys may be carried out by classification society on behalf of MCA. Initial survey must be done by MCA.

Surveys required:

- Initial
- Annual
- Intermediate
- Periodic/Renewal.

Must be accompanied by "Record of construction and equipment".

UKOPP:
As above for UK ship on domestic voyages between ports and terminals in the UK.

Oil pollution Insurance Certificate (OPIC)

Issued by MCA.
Valid for 1 year and cannot be extended.
Required by ships carrying more then 2000 tonnes of persistent oil in bulk as cargo.
No surveys required (only proof of insurance cover).

SHIPBOARD OIL POLLUTION EMERGENCY PLAN (SOPEP):

Every non-tanker of 400 GRT and above and every tanker of 150 GRT and above must have a SOPEP in the form a manual.

SOPEP is the summarise flow of chart or checklist to guide the master through the various actions and decisions required in responding to an incident. It should assist the ships crew when dealing with an accidental discharge of oil into the sea. Its primary purpose is to set in motion the necessary actions to stop or minimise the discharge and to reduce its effects on the marine environment.
SOPEP is required by regulation 26 of annex 1 of International regulation for prevention of pollution from ship, 1973. Plan must be approved in accordance with this regulation.

The guidelines are comprised of three primary section:

1. Introduction.
2. Mandatory provision.

3. Non Mandatory Provision.

1. Introduction:
Provide general over view of the subject matter and introduce the reader to the basic concept of the guidelines. The plan are expected to be develop by them.

2. Mandatory provision:
To ensure that regulation 26 of annex 1 are met.

3. Non mandatory provision:
Provide other information of the plan. Not required by the regulation. May be required by the local port visited by the ship. It provide additional assistant to the Master when responding in an emergency situation. Also provides on guideline on updating and exercising of the plan.

- Plan must be:
    1. Realistic, practical and easy to use.
    2. Understood by ship personnel and shore personnel.
    3. Evaluated, reviewed updated regularly.

- Mandatory provision:
    1. Procedure to be followed by the master or other person having the charge of the v/l to report an oil pollution incident.
    2. List of authorities person to be contacted in the event of an oil pollution incident.
    3. A details description of action to be taken immediately by persons onboard to reduce or control the discharge of oil following the incident.
    4. Procedure and point of contact on the ship for co-ordinating ship board activities with national and local authorities in combating the pollution.

- Coastal state report:

convention require that the nearest coastal state should be notified of actual or probable discharge. This required to ensure that coastal states are informed without delay of any incident giving rising of pollution, or threat of pollution of marine environment, as well as of assistance and salvage measures, so that appropriate action may be taken.

- Actual discharge:
    1. A discharge of oil due to damage to the ship or its equipment or for purpose of securing the safety of a ship or salving life at sea.

    Or

    2. Discharge during operation of the quantity or instantaneous rate permitted under the present convention.

- Probable discharge

Plan should give the master, guidance to evaluate a situation which, not involving actual discharge, would qualify as a probable discharge and thus report.

Report should be made in the following factors:

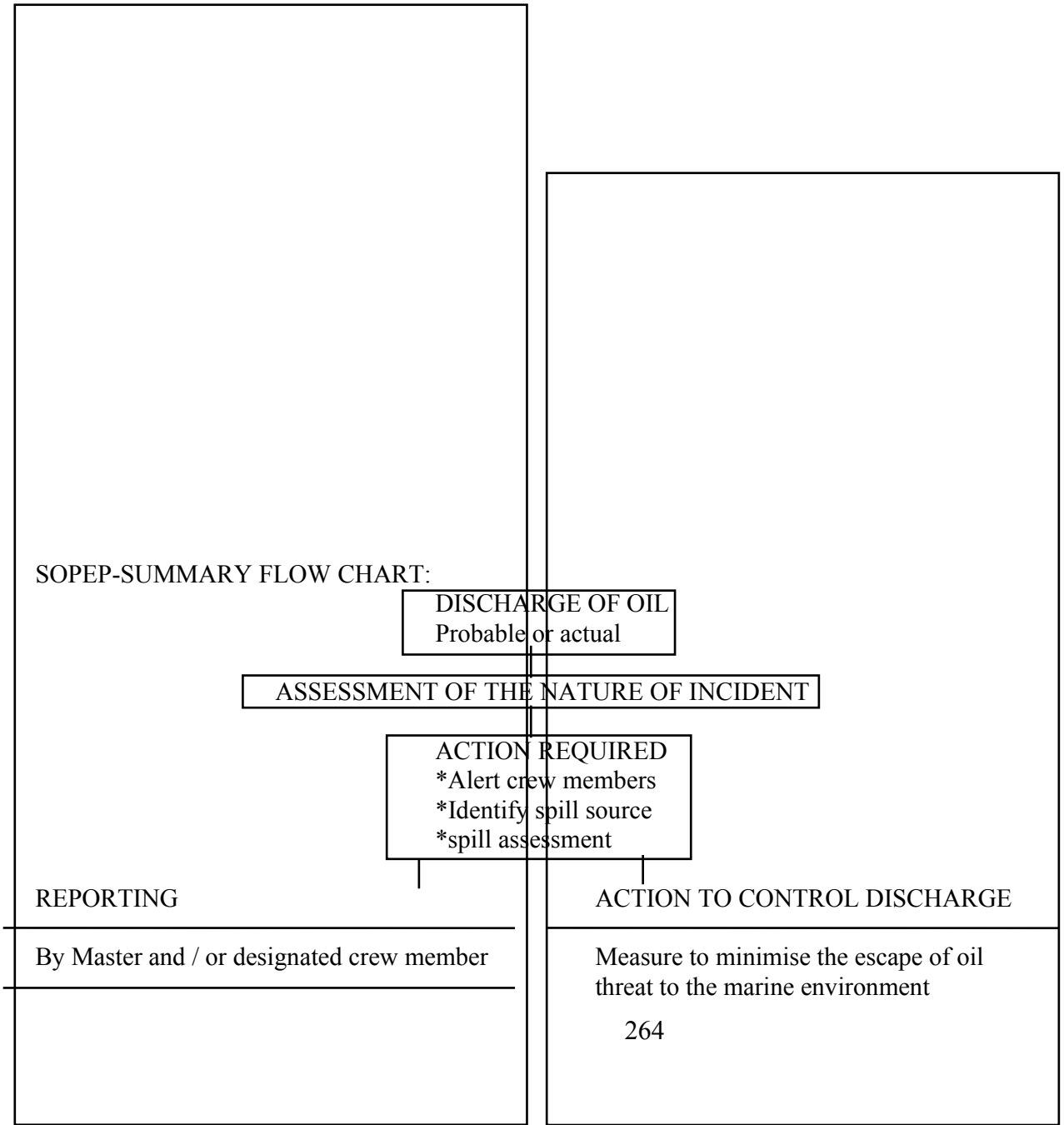
1. Nature of damage, failure or breakdown of ship, machinery equipment.
2. Ship location and proximity of land or other navigational hazards.

3. Weather, tide, current and sea state.
4. Traffic density.

- List of person to be contact:
  1. Coastal state control.
  2. Port state control.
  3. Ship interest contacts.

- Guideline to steps to control discharge:
  1. Operational spells
  2. Pipe line leakage.
  3. Hull leakage.
  4. Tank overflow.

SOPEP-SUMMARY FLOW CHART:



WHEN TO REPORT
All probable and actual spills

HOW TO REPORT
*By quickest means to coastal radio station
*Designated ship movement reporting station or
*Rescue Co-ordination (at sea)
*By quickest available means to local
*Setting aground
*Initiate towage
*Assess safe Haven
*Nearest coastal State
*Harbour and terminal operators (in port)
*Shipowner's manager/P & I insurer
*Head charterer; cargo owner
*Refer to contact lists

WHAT TO REPORT
*Initial report
*Follow-up reports
*Characteristics of oil spilled
*Cargo/ballast/bunker dispositions
*Weather and sea conditions
*Slick movement
*Assistance required
-salvage
-Lightening capacity
-Mechanical equipment
-External strike team
-Chemical dispersant / degreasant

NAVIGATIONAL MEASURES

*Alter course/position and / or speed
*Change of list and/or trim
*Anchoring
*Damage stability & stress considerations
*Ballasting / deballasting requirements
*Weather/tide/swell forecasting
*Slick monitoring
*Record of events and Communications taken

SEAMANSHIP MEASURES

*Safety assessment and precaution
*Advice on priority countermeasures/ preventative measures

WHO TO CONTACT

authorities

*Internal cargo transfer operations
*Emergency ship to ship transfer of cargo and / or bunker
*Set up shipboard response for:
-leak sealing
-Fire fighting
-Handling of shipboard response equipment (if avail)
-etc.

STEPS TO INITIATE EXTERNAL RESPONSE

* Refer to coastal Port State listings for local assistance
* Refer to ship interest contact list
* External clean-up resources required

Q: GARBAGE MANAGEMENT PLAN.

Every ship of 400GRT or more, and every ship certified to carry 15 persons or more shall carry a GMP. It should be written in working language of crew and must be in accordance with IMO guidelines. Each GMP will be individual to a particular ship.

It must include written procedure for:

- Designated person in charge of carrying out the plan
- Procedure for collecting garbage
- Procedure for separating garbage
- Procedure for processing garbage
- Procedure for disposing garbage

GARBAGE RECORD BOOK

Every ship of 400GRT or above, every ship certified to carry 15 persons or more engaged in voyage to port or offshore terminals under jurisdiction of other parties to the convention must maintain a GRB.

Entries can be made both in the official language of the flag state administration and English or French. Each entries shall be signed by the officer authorising the operation. Each completed page signed by the Master. It must be preserved for 2 years after the date of last entry.

Master shall obtain receipt from the operator or the port reception facilities, or from the master of the ship receiving the garbage. The receipts or certificates must be kept onboard the ship with GRB for 2 years.

Columns in the GRB include:

- Date / time
- Position of the ship
- Estimated amount discharge into sea
- Estimated amount discharge to reception facilities
- Estimated amount incinerated
- Certification/Signature.

For the purpose of the GRB, garbage is grouped into categories, e.g.

1. Plastics
2. Floating dunnage, lining or packing material
3. Ground down paper products, rags. Metal, bottles, crockery, etc.
4. Unground paper products, rags, metal, bottles, crockery, etc.
5. Food waste
6. Incinerated ash.

PLACARDS (GARBAGE)

Every ship of 12m or more in length overall shall display placards which notify the crew and passengers of the disposal requirements. These should be official language of the flag state administration.

GARBAGE DISPOPASL REGULATIONS

Outside special area

- No plastic may be disposed off anywhere
- Dunnage, lining and packing materials which will float may be disposed off 25 nautical miles or more from the nearest land
- Unground or uncomminuted food waste and all other unground or uncomminuted garbage including paper products, rags, glass, metal, bottles, crockery and similar refuse may be disposed off 12 nautical miles or more from the nearest land.
- Ground or comminuted food waste and all other ground or comminuted garbage including paper products, rags, metal, bottles, crockery and similar refuse may be disposed off 3 nautical miles or more from the nearest land.

Inside special areas:

- No garbage other than food waste may be disposed off
- food waste may be disposed off, without grinding or comminution, only where disposed is as far as practicable, and no case less than 12 nautical miles from the nearest land
- In wider Caribbean Region, food waste comminuted or ground may be disposed off 3 nautical miles or more from the nearest land.

Within 500m of fixed or floating Platforms:

- The disposed into the sea of any garbage from a ship which is a fixed or floating platform engaged in exploration, exploration and associated offshore processing of seabed mineral resource, or from any ships alongside or within 500m of such a platform, is prohibited provided that food waste which have been comminuted or ground may be disposed off into sea from such platform or ship if the platform in the question is more then 12 nautical miles from the nearest land.

(comminuted means able to pass through 25mm opening of a screen.)

COMPASS

Q: Why do you correct a compass?

A: As because the compass is most reliable equipment, which need not any power. In case of gyro failure compass can be used to steer the vessel for reach the next port.

Q: Order of placing correctors?

A: The correct order of placing the correctors is as follows.

1. **Flinder's Bar**

The Flinder's Bar acts a bit like a sphere forward of the compass bowl. It also affects heeling error, and can be magnetised with the fore and aft and the athwartships magnets. The heeling error magnets often induce poles in the top

of the flinder's bar, causing coefficient Permanent B. It is important that the Flinder's Bar is positioned before the spheres, and all the permanent magnets.

2. **Spheres**
The spheres cause (and help to correct) heeling error and are affected by the permanent magnets. It is important that the spheres are positioned before the permanent corrector magnets are finally placed.

All soft iron correctors should be in position before final adjustment of the permanent corrector magnets.

3. **Heeling error magnets.**
The heeling error magnet causes Coefficient Permanent B by inducing the Flinder's Bar, so it is important that the heeling error magnet is positioned before the horizontal fore and aft corrector magnets.

4 & 5. **The fore and aft magnets and the athwartship magnets are done last** and can in any order. It is probably best to correct the larger of the two coefficients first which steadies the card and makes the other correction easier to do. Coefficient B is usually the larger so the fore and aft magnet is usually positioned before the athwartship corrector magnet.

Q: When will you adjust compass?
A: Magnetic compasses should be adjusted when:

a) they are first installed;
b) they become unreliable;
c) the ship undergoes structural repairs or alterations that could affect its permanent and induced magnetism.
d) electrical or magnetic equipment close to the compass is added, removed or altered; or
e) a period of two years has elapsed since the last adjustment and a record of compass deviations has not been maintained, or the recorded deviations are excessive or when the compass shows physical defects.

Q: Ship laid up for what will you check before a swing?
A: Before swing the v/l I will check:
1. The vessel must be upright and all derrick, cranes, boats, etc. should be in their seagoing position.
2. Test the compass for friction by deflecting it slightly with a magnet and see that it returns to its original position, without sticking. This is best done by taking the bowl ashore.
3. Check the lubber line for fore and aft accuracy
4. Check the accuracy of the azimuth mirror
5. All movable gear near the compass must be in the seagoing position. No loose metal should be near the compass. If spare corrector magnets are being used, they must be placed as far away from the compass as is reasonably possible.
6. No ship within the 3 cables
7. Soft iron correctors should be tested for retained magnetism by rotating the spheres and end for ending the top piece of flinders bar. Residual magnetism may be removed by annealing (heating to 700° and cooling slowly).

Q: What happened to compass once it is corrected?
A: It becomes more reliable.

Q: You have join a ship, where you will get information regarding compass and correctors?
A: Deviation card.

Q: Why wooden pieces under flinders bar?
A: To keep the top of the flinders bar above the level of the compass magnet.

Q: What is VFI? How to use it?
A:

Q: What would you expect the compass adjuster to check?
A:

Q: When flinder's bar up set?
A:

Q: How will you checked flinder's bar and kelvins ball become a semi permanent magnets?
A:

Q: What is the normal position of kelvin's balls?
A: In the centre of the track, equidistant from the compass bowl on either side.

Q: What is directive force?
A:

Q: When to lower and rise the heeling error bucket?
A:

Q: What is ship multiplier?
A: Difference between directional force at ship with spheres and directional force ashore is called ships multiplier (λ 2).

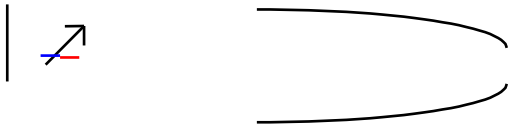
Q: Your Company is going to take over a new ship, there are lot of electronic equipment to be fitted in the bridge, how you make sure this equipment are correctly positioned?
A: Check the compass safe distance on each equipment, place as far away but not less than the quoted safe distance by maker's.

Q: How these equipment are going to influence the compass?
A: By creating a magnetic field.

Q: Which Certificate covers compass?
A: Safety Equipment Certificate. (Makers name, Serial no. etc.)

Q: How do you find magnetic heading after taking bearing from 8 heading?
A: Take the bearing from 8 different heading (N, NE, E, SE, S, SW, W, NW) add them together then divided 8.

Q: How do you put corrector for adjusting coeff. B and C



A: For Coefficient +B, Corrector red to the Fwd.
For Coefficient -B, Corrector blue to the Fwd.
For Coefficient +C, Corrector red to the starboard.
For Coefficient -C, Corrector blue to the starboard.

Q.1 : What ship certificate would you expect to find on:

a) **a 1590 GRT mini-bulker?**
b) **a 900 GRT oil-rig supply vessel carrying bulk brine?**
c) **a 15000 DWT chemical tanker?**
d) **a 200000 DWT crude oil tanker built in 1980?**
c) a large cruise liner?

A: Common :
COR, SCC, SEC, SRC, IOPPC, ILLC, ITC, DOC, SMC, SMD.

a) Same as common
b) International pollution prevention cert. for the carriage of noxious liquid substance in bulk
c) COF
d) OPIC
e) COR, PSSC, IOPPC, ILLC, ITC, DOC, SMC, SMD

Q.2 : a) In what circumstances must you send a navigating warning?
b) Who must you to address to?
c) By what means must you transmit it?

A: a) 1. Dangerous Ice
2. Dangerous derelict or other direct danger to navigation.
3. Tropical storm.
4. Subfreezing air temperature plus gale force winds causing severe ice accretion.
5. Wind > force 10 for which have no warning.

b) To ships in the vicinity and nearest CRS.

c) By every means of ship communication system.

Q.3: What is the different between an IMO-adopted an unadopted Traffic Separation Scheme?

A: IMO-approved schemes are adopted. They come into force 6 months after adoption. Rules for navigation in these schemes are as per COLREG rule 10. Unapproved schemes may lie totally in national waters and are unadopted. Rules for navigation in these schemes may differ from rule 10.

Q.4: a) Where do you find a list of all TSS, both adopted and unadopted?
b)How can you ensure that this list is up-to-date?
c)In what other publications is information published about TSS?

A:

a) Annual Notice NO. 17 in the annual summery of Notice to Mariners. Unadopted scheme are marked in the list within asterisk.

b) By correcting it from Weekly notice to Mariners

c) Rule 10; Mariner's Handbook; Ship' routing; Routing chart (e.g. 5500); Annual Summery of Notice to Mariners; Pilot Books; Weekly Notice to Mariners.

Q.5: After abandoning your ship during a major fire, and having been rescued by another ship, what action you would take?

A: I would request the rescuing ship's master to cancel the May day and send a navigational warning (e.g. if my ship was still burning and NUC). I would make a tally of survivors and report to the coastguard. I would report to owners and MAIB a.s.a.p. (through the coastguard if necessary.) I would request owners to notify the agent at the original port of destination, as well as charterers and receivers. I would inform the P & I club's correspondent at the port where the rescuing ship takes the survivors. I would prepare reports for owners and MAIB. (The P & I club and charterers may also want copies.)

Q.6: What action would you take if, on joining a ship that was not due for its Safety Equipment survey for another six months, you found that some aspect of the lifesaving or fire fighting appliance were not in good order?

A: Either makes good the defects before sailing or applies to MCA for a general inspection and get MCA's written approval to sail. Unless defects are serious enough to warrant detention, MCA will probably issue a letter of compliance.

Q.7: When you must steering gear be tested?

A: The Master must, within 12 hours before departure of the ship, cause the steering gear to be checked and tested so as to ensure that it is working satisfactorily.

In the case of ship regularly making more then one voyage a week to or from the same port a check and test of the steering gear need only be made once in that week unless a part of the steering gear or its control system has been eliminated or changed since the last test.

Emergency steering gear must be tested at least every 3 months.

Q.8: While on a 1-year Time Charter, running between the Persian Gulf and Japan, your Safety Equipment Certificate becomes due for renewal in one month's time. What action would you take?

A: 1. Inform owner to arrange surveyor.
2. Keep everything presentable to the surveyor.
3. Inform agent.

Q.9:

a) What purpose of an OPIC certificate?
b) When it is to be produced by a master?
c) How is an OPIC certificate obtained?

A: a) To certify that there is in force in respect of the ship a policy of insurance or other financial security satisfying the requirements of Article VII of the international Convention on Civil liability for Oil Pollution Damage 1969 (the CLC).

b) On arrival at and departure from any port or terminal, to Customs (in UK) or any state or harbour official requesting it.

c) By application of the owners to MCA London Regional Marine Office (Orpington, Kent), enclosing documentary proof that an insurance policy exists. Proof is normally shown by a blue certificate issued by the owners P&I club.

Q.10: What OLB entry must be made on the change of Master?

A: 1. The off-going Master should make an entry (Entry no. 4) in the narrative section to the effect that he has delivered to me (in coming master) all documents relating to the ship and the crew, and both he and I would sign this entry.

2. I would add my name and certificate number to the list on the front cover.

Q.11: Who would you inform after:

a) **spilling bunkers in a foreign port?**
b) sustaining collision damage at sea in way of a bunker fuel tank?

A: a) Coastguard ; Agent ; owner ; P & I club ; MAIB ; Port authority.
b) Coastguard : Owner ; P & I club ; MAIB ; Classification society ; Charterer.

Q.12: What are the contents of an International Tonnage Certificate?

A: Ship's particulars; Length; breadth and Moulded depth; Gross tonnage and net tonnage.

Q.13: What survey or inspections are required by Load line legislation?

A: 1. Initial
2. Annual
3. Intermediate
4. periodic

Q.14: What items come into the scope of the load line periodic inspection?

A: 1. Load line mark
2. Ship's structures and fitting for water tight integrity (hatch way, side opening, vents, air pipe, freeing ports)
3. Crew protection.

Q.15: What is a classification Society?
A: An international Classification society has been defined as an independent, non-profit distributing organisation which develops and updates adequate publish rules, regulations and standards for the safe design, construction and periodical maintenance of ship which are capable of trading internationally, and implements these on a world wide basis using its own exclusive staff.

Q.16: What is the purpose of ship classification?
A: It is a requirements of hull and machinery insurance, P & I clubs, ships financiers and cargo insurers. It also useful in sale and purchase

Q.17: What are you legal obligations on receiving a May Day signal from a nearby ship?
A: Acknowledge received of message and proceed with all speed for assistance, and if possible inform parties and SMC.

Q.18: a) When are you released from obligation?
b) What OLB entries must be made concerning distress signal?
A: a) 1. On learning that my vessel is not requisitioned and or more ship have been requisitioned and are complying with the requisition.
2. Being informed by the persons in distress or by the search and rescue service or by the master of another ship which has reached such persons that assistance is no longer necessary.
b)

Q.19: What SOLAS certificate would you expect to find on your next ship?
A: 1. PSSC.
2. SCC.
3. SEC.
4. SRC.

Q.20: What action would you take regarding a seaman who was drunk:
a) **On duty?**
b) Off duty?
A: a) Ensure the safety of the ship, personnel and the seaman himself. Remove him from the duty and substitute another. Sober him up. Discipline him in accordance with the MN Code Conduct, if applicable.(was he drunk enough to jeopardise safety of ship and personnel?) The offence may justify dismissal.
b) Ensure safety of the ship, personnel and seaman himself. If no threat to safety, take no action beyond an informal caution unless company's, charterer's or ship's rules prohibit alcohol. Perhaps give a D & A test before he starts work again.

Q.21: a) Under what circumstances would you note of protest?
b) **How would you note of protest?**
c) What is meant by 'extending Protest?
A: a) After every case of General Average; after wind and/or sea conditions have been encountered which may have damaged cargo; after wind and/or sea conditions have been encountered which caused failure to make a cancelling date; after cargo is shipped in a condition likely to deteriorate during the forthcoming voyage (also, Bs/L

should be appropriately claused after consultation of with the shipper and P & I correspondent); after the ship has been damaged from any cause; after a serious breach of the C/P by the charterer or his agent (e.g. undue delay, refusal to load, cargo not a sort allowed by the C/P, refusal to pay demurrage, refusal to accept Bs/L after signing because of clausing by master, sending vessel to an unsafe port, etc.); after the consignee fails to discharge or take delivery of the cargo or fails to pay freight.

b) Go to notary public, or other appropriate person with one or more witnesses from the crew who have knowledge of the facts. Take Official log book, deck log and all other relevant information surrounding the event being protested. Make sworn statement before notary, who entries it register of protests. Obtain at least 3 certified copies of protest (owners, adjuster and ship's file). Pay fee (master' disbursement) and obtain receipt.

c) * Since it is often impossible to ascertain the full extent of loss or damage at the time of noting of protest, an extended protest should be made when the relevant facts have come to light, which may be, for example, when a surveyor's report has been received. It therefore necessary at the time making original protest to 'reserved the right to extend the protest at the time and place convenient'.

* The extended protest document will always be required by an average adjuster when prepare a general average statement.

* Although it is good practice to always extended protest, in the UK it is not legally necessary in order to safeguard owners' interest.

Q.22: Under what circumstances would you write a letter of protest?

A: When cargo is being loaded too fast or too slow; when stevedores are damaging ship or mishandling ship's equipment; when wash from harbour craft is causing problems for ship; when cargo specification is 'wrong'. When there is discrepancy between ship's and shore cargo figures; when berth or fendering arrangements are inadequate; when longshoremen/dockers are misusing ship's equipment and ignoring duty officers' advice; when passing vessels cause ranging, wash damage, etc. whilst loading / discharging; in any other sitution where the master wishes to formally record his dissatisfaction with arrangement over which the other party has some control.

Q23: What are the offence for which a UK master could be fine up to £ 50,000 on summary conviction?

A:
1. Concealing British Nationality.
2. Causing a ship to appear to British
3. Failing to render assistance to other vessel following a collision.
4. Ship dangerously unsafe in UK port
5. Disobeying "Section 137" government directions following a shipping a shipping casualty.
6. Entering or leaving UK port or terminal without a valid OPIC
7. Leaving UK port in contravention of a Detention Order
8. Carrying passing in excess of the number of permitted by the passenger certificate
9. Proceeding against the traffic flow in a traffic separation scheme.

Q.24: What is the difference between summery conviction and conviction on indictment?

A: Summary of convection is a convection by magistrates in England or Wales, or a sheriff in Scotland, following a trial in which summary procedure is used. There is no jury, and the judge(s) decide questions of fact and law; their sentencing power are limited. It is used mainly for minor offences. Convection on indictment is for more serious offence. The convection is by a jury (of 12 in England or Wales, or 15 in Scotland) who decide questions of fact, while the judge decides question of law only. Fines may be unlimited but prison terms are limited.

Q.25: What reports would make if you lost a container-load of chemical in drums overside in bad weather ?

A: Navigational warning

Q.26: What is the procedure for reporting to custom on arrival in a UK port from aboard?

A: 1. Form c.13 to submit - Master's declaration-at least 2 copies
2. c.142 - crew declaration-2 copies
3. submit a cargo declaration, either on the c.13 or by a cargo manifest, IMO form or computer disk (with custom approval)
4. attach form PAS 15(arr) passenger return if any passengers on board
5. have several copies of the current crew list ready.

Q.27: When are light dues paid, and on what basis are they calculated?
A: for outward clearance and on the basis of net tonnage.

Q.28 : Before offering to tow a disable ship, what factors would you consider ?
A: A vessel requiring a tow is not necessarily in distress. I would therefore carefully consider
1. whether the contract of carriage (as contained in c/p or b/l) gives me liberty to tow
2. whether I have sufficient bunkers and/or fresh water on board for the tow, and whether sufficient reserves can be maintained, throughout and after the tow
3. whether there is a possibility of missing a cancelling date under the c/p
4. whether the nature of my cargo permits a lengthening of the voyage (which is especially relevant aboard a refer)
5. whether my v/l's machinery is of adequate power and in good enough condition for towing
6. whether the value of the v/l requesting the tow, plus her cargo, is likely to be of sufficient value to merit a salvage service by my ship

Q.29: a) In what circumstances might an Interim Certificate of Class be issued?
b) **What are the contents of an Interim Certificate of Class?**
A: a) When a Classification society surveyor can confirm to his society's committed that repairs or surveys have been carried out to his satisfaction, and that he consider the ship to be in a fit and efficient condition to continue her voyage.

b) A summery of class and statutory surveys held or work carried out, with status (e.g. complete); the date of completion of the survey or work (for the class record); a list of any items credited for the hull and/or machinery special survey; the survey's recommendation to his society for continuance of class; any condition of class imposed; any condition of class deleted; surveyor's signature, port and date.

Q.30: What action would you take if a consignee failed to produce an original bill of lading at the discharge port?
A: Where the party claming to be the rightful receiver request delivery of his goods but can not produce an original bill of lading (perhaps because of a delay in the mail, or because of a theft of documents from his office) I would instruct the agent to inform the receiver so that no cargo can be discharge until either; 1) an original bill of lading can be presented; or 2) an acceptable letter of indemnity (LOI) is given by the receiver.

Q.31: What must a shipper make available before you load dangerous goods:
a) **in bulk liquid form?**
b) **in package form?**
A: A dangerous goods Declaration or a marine pollutants declaration as appropriate. A combined declaration is allowed. The declaration can be made on a dangerous goods/Marine Pollutants note.

Q.32: a) What are difference between dangerous goods and marine pollutant?

b) **Where would you find a list of all recognised 'marine pollutants'?**

A: b) In the IMDG code. They are indicate by the words 'Marine Pollutant' and a symbol of a triangle containing a fish, with an overlaid cross.

Q:.33: a) There is no section in the ORB specifically for recording bunkering operation. where would you record these?

b) **Where must Master's signature appear in the ORB?**

c) **For how long must an ORB be kept on board?**

A: a) Part-1, Section-H. concern additional operations procedures and general remarks.

b) At the end of each page.

c) 3 years from last entry made.

Q.34: a) who can demand to see your Official Log Book?

b) How would you correct an erroneous entry in the OLB?

A a) To the RSS; an MCA Superintend ; a proper officer; an MCA Surveyor; or a custom officer. In practice I would show it also to any foreign state or harbour official who demanded to see it, because local law may require this.

b) With a further entry. I would leave the incorrect entry as it is and make a new entry referring to the mistake, e.g. " In previous entry , for smith read Jones"

BUOYS and ROR.

Q: Your vessels Heading south and you see a south cardinal buoy on your right a head what is your action?

A:
1. Stop Engine.
2. Take her all way off.
3. Echo sounder on
4. Check the position of buoy on chart.
5. Check your position.
6. Make a full appraisal of the situation.
7. Decide the best course of action.

Q: How a new danger marked?

A: One or more cardinal or lateral buoy. If the danger is gravid one of the buoy will be duplicated. One of those will have rackon with mores "D" with the signal length 1 (one) NM (at least) on radar PPI. Light on the buoys must be quick or very quick.

Q: If you see a white light on night time what it could be?

A:
1. Astern light of a vessel.
2. Life raft light.
3. Vessel less then 7 meter long and whose maximum speed should not exceed more then 7 kts.
4. Vessel less then 50 meter long at anchor.
5. Vessel under ores.

Q: Where is special mark buoy used?

A:
1. Channel within the channel.
2. Recreation zone.
3. Ocean data accusation system.
4. Firing area.
5. Traffic separation scheme.
6. Spoil ground.
7. Cable and pipe line area.

Q: What is the other name of a safe water buoy ?

A:
1. Mid channel buoy.
2. Fairway buoy.
3. Landfall buoy.

Q: Fog bank ahead-Action?

A: **General:**
1. Inform engine room and SBE.
2. Reduce speed to safe speed.
3. Check navigation light.
4. Post extra lookout.
5. Start fog signal.
6. Start radar plotting.
7. Man on the wheel.

Operational:
1. Close water tight door.
2. Order silence on Deck.
3. Open bridge wings door.

Navigational:
1. Check the position of last visual object.
2. Increase the fog signal frequency in near coastal water.
3. If shallow water put echo-sounder on.

Q: On the fog you just switch on the Radar, you found a target on the PPI just 3 miles right ahead, action?

A: 1. Stop Engine
2. Take her all way off.
3. Start radar plotting.
4. Complete radar plotting.
5. Find out best course of action.

Do not alter course before competing radar plotting as because this is a scanty radar information.

Dry docking.

Q: What is Dry dock procedure?

A: *Before Docking*

- Make a repair list.
- Contact with dry dock authorities
  - agreed draught and trim. (upright with small trim)
  - supply ships plan, including shell expansion plan showing position of appendages, inlet, discharge, echo sounders, projecting logs, bilge keels, propellers, etc., Cargo plan if any cargo on board, Any available plans from previous dry dock which might be useful.
  - confirm whether the dock is graving or floating dock, whether side shores or bilge block will be used.

- Confirm the facilities are supplied - toilets, fire main, telephone etc.
- Rig fenders as necessary.

- Calculate stability condition (particularly for critical instant). Minimise free surface and secure moveable weights.

  P= (COT X MCTC) / LCF, {P = Reduction of TMD X TPC}
  Virtual loss of GM = (P X KM) / W
  COT= (W X D) / MCTC.

- If possible empty fore and aft peak tanks (unsupported weights increase hogging stress)
- Lower derricks and cranes and ensure hatches closed.

After Docking

- Secure two means of access/escape (e.g. Gangway port forward and starboard aft)
- Takes sounding of all spaces and record result.
- Establish shore connection for telephone, fire line, domestic water, electric power. Secure earth return line.
- Clarify responsibilities between ship and shore (e.g. Watchman, fire patrols)
- Arrange sanitation/toilets/waste disposal. Close/plug scuppers, overboard discharge, etc.
- Safety store (chief mate office) any bottom plug removed.

Before Flooding Dock

- Take sounding of all spaces and compare with soundings on entry (if any difference, re-work stability condition for critical instant).
- Check all plugs back in place.
- Ensure all staging removed. Disconnect all utilities. Remove gangways.

Q: What is critical instant?
A: As the water is pumped out the vessel's trim will reduce until the ship lands fore and aft on the blocks. The instant before this happens is known as the CRITICAL INSTANT.

Q: What is critical period?
A: The interval of time between the vessel touching the blocks aft and landing fore and aft is known as the CRITICAL PERIOD since the vessel is losing stability throughout this period.

Q: What precaution you would take while Docking with Cargo?

A: 1. Leave some water in the dock so that the vessel is still displacing water, thereby reducing the upthrust from the blocks.
2. Increase the number of lines of blocks supporting the vessel so as to spread the load. (N.B. Blocks should always be laid in line with longitudinal bottom giders).

Q: What is Declivity?
A: The declivity of the drydock is the slop of the bottom of the dock towards the entrance (this assist in the drainage of the dock).