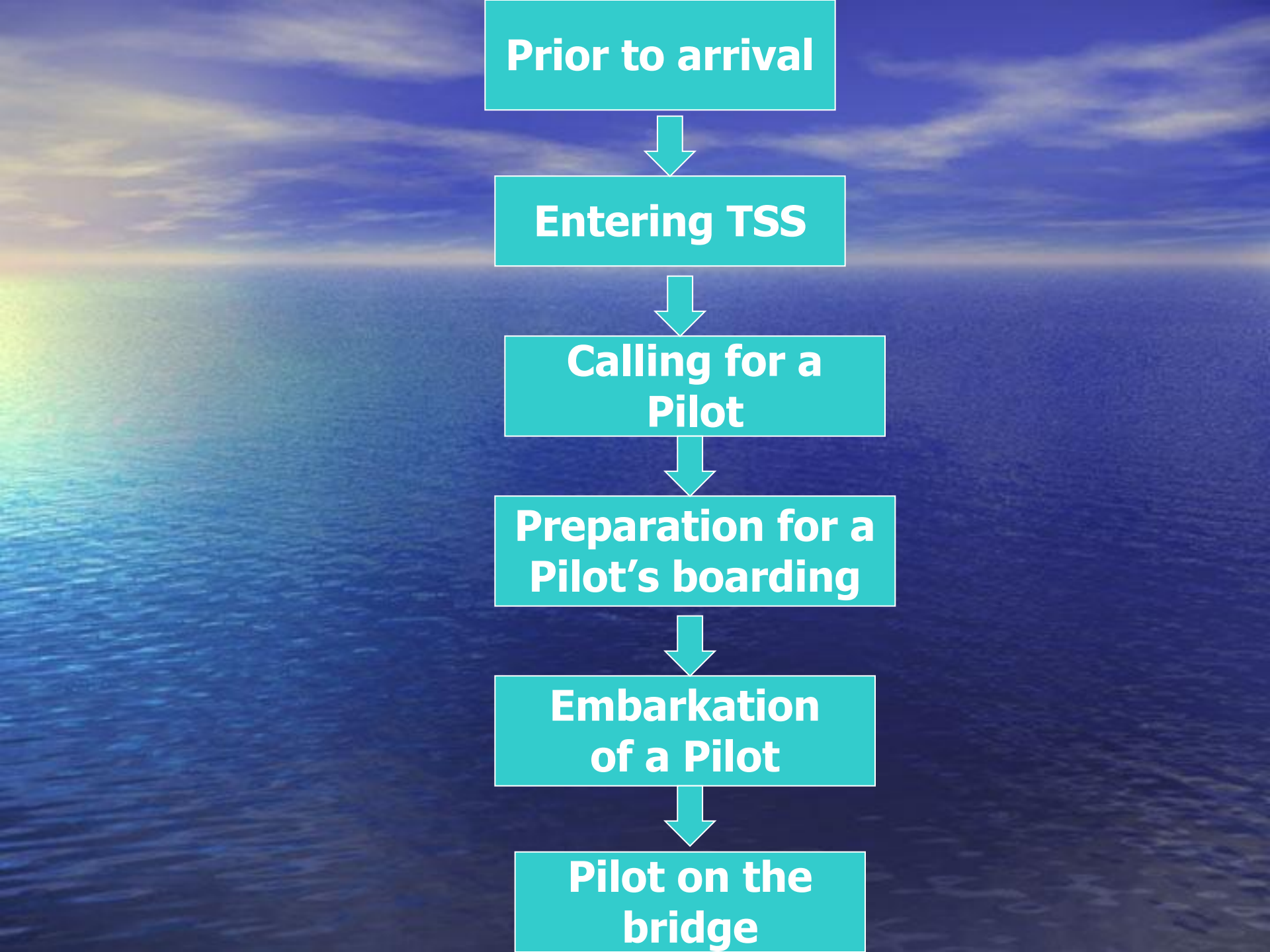
Arrival at the port. Pilotage.


Prior to arrival
Entering TSS
Calling for a Pilot
Preparation for a Pilot's boarding
Embarkation of a Pilot
Pilot on the bridge

Prior to arrival

Documents

Equipment to check and to be prepared

Consult

Pre-arrival exchange of information

B3 Preparation for arrival in port

- ☐ In preparing the passage for arrival in port, has a pre-pilotage information exchange taken place? (see annexes A1 and A2)
- ☐ Has the passage plan been updated following receipt of the Shore to Ship Pilot/Master Exchange form and all latest navigational warnings?
- ☐ Has the ETA been sent with all relevant information required by local regulations (e.g. details of dangerous/hazardous goods carried)?
- ☐ Is it necessary to rearrange cargo/ballast?

Has the following equipment been prepared and checked?

- ☐ course and engine movement recorders
- ☐ clock synchronisation
- ☐ communications with the engine control room and mooring stations
- ☐ signalling equipment, including flags/lights
- ☐ deck lighting
- ☐ mooring winches and lines including heaving lines
- ☐ pressure on fire main
- ☐ anchors cleared away
- ☐ stabilisers and log tubes housed, if fitted

- ☐ Has the steering gear been tested, and has manual steering been engaged in sufficient time for the helmsman to become accustomed before manoeuvring commences?
- ☐ Have the engines been tested and prepared for manoeuvring?
- ☐ Has the Pilot Card (see annex A3) been completed and are the pilot embarkation arrangements (see annex A5) in hand?
- ☐ Have VHF channels for the various services (e.g. VTS, pilot, tugs, berthing instructions) been noted and a radio check carried out?
- ☐ Has the port been made fully aware of any special berthing requirements that the ship may have?

Before entering port limits it is usually necessary to consult:

- the passage plan and any associated notebook;
- any special instructions from Owners/time Charterers;
- any information about the port
- port approaches charts and harbour charts
- relevant sailing directions ('pilot books')
- *Guide to Port Entry*
- *Admiralty List of Lights*
- tide tables and tidal streams atlases
- *Admiralty List of Radio Signals*

Documents for boarding officials

- pilot card;
- check list for vessels carrying dangerous or polluting goods;
- master's (customs) declaration;
- crew (customs) declaration;
- cargo declaration or manifest
- (in some countries) stores declaration; bunker declaration;
- cargo documents, e.g. Bs/L, W/Bs, DGH;
- up-to-date crew list (several copies) on the official form;
- all statutory and class certificates (preferably in clean plastic pockets in a binder);
- check list for pilot and harbour master;
- customs clearance from last port;
- Maritime declaration of Health

Equipment to be prepared and checked:

- - course and engine movement recorders;
- - clock synchronization;
- - communications with the engine control room and mooring stations;
- - signalling equipment, including flags / lights;
- - deck lighting;
- - mooring winches and lines including heaving lines;
- - pressure on fire main;
- - anchors cleared away;
- - stabilizers and log tubes housed, if fitted.

Pre-pilotage information exchange

- Ship sends the Ship to Shore Master/Pilot Exchange form
- ETA with all relevant information required by local regulations
- Update the passage plan following the receipt of the Shore to Ship Pilot / Master Exchange form and all latest navigational warnings.

SHIP TO SHORE Master/Pilot Exchange

SHIP IDENTITY

Name | Call sign | Flag

Ship's agent | Year built | IMO No

Cargo type | Ship type | Last port

ADDITIONAL COMMUNICATION INFORMATION

Fax | Telex | Other

PILOT BOARDING

Date/ETA (UTC/LT) | Freeboard

Boarding station (if there is more than one)

SHIP PARTICULARS

Draught fwd | Draught aft | Draught amidships (salt water)

Air draught | Length | Beam

Displacement | Dwt | Gross | Net

ANCHORS

Port anchor | Stbd anchor (length of cable available)

MANOEUVRING DETAILS AT CURRENT CONDITION

Full speed | Half speed

Slow speed | Min. steering speed

Propeller direction of turn left/right | Controllable pitch yes/no

Number of propellers | Number of fwd thrusters | Number of aft thrusters

MAIN ENGINE DETAILS

Type of engine motor/turbine/other

Max. number of engine starts | Time from full ahead to full astern

EQUIPMENT DEFECTS RELEVANT TO SAFE NAVIGATION

SHORE TO SHIP Pilot/Master Exchange

SHIP REQUESTING PILOTAGE DETAILS

Ship Name | Call sign

ORIGINATING AUTHORITY

Contact name | VHF channel

Other means of contact

PILOT BOARDING INSTRUCTIONS

Date/arrival time at pilot boarding station (UTC/LT)

Position pilot will board

Embarkation side port/starboard/TBA | Approach course and speed

Requested boarding arrangement

BERTH & TUG DETAILS

Intended berth and berthing prospects

Side alongside port/starboard | Estimated transit time to berth

Tug rendezvous position | Number of tugs

Tug arrangement | Total bollard pull

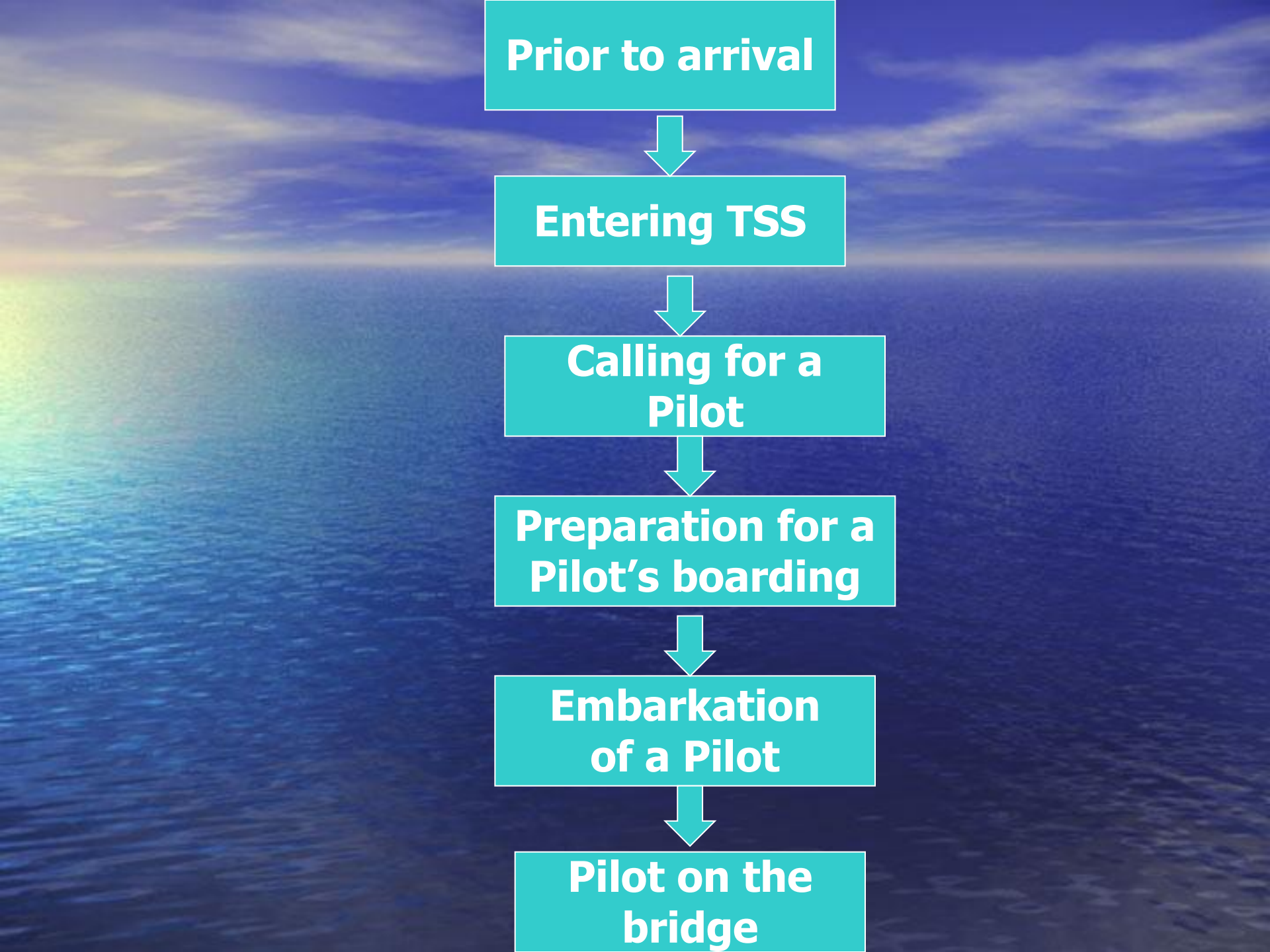
LOCAL WEATHER AND SEA CONDITIONS at the pilot boarding station on arrival

Tidal information (heights/times)

Expected currents

Forecast weather

DETAILS OF THE PASSAGE PLAN including abort points/emergency plans


Prior to arrival
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Pilot on the bridge

ENTERING A TSS

Contact the TOS to :

- get the clearance
- receive traffic
- navigational and meteo information/warnings.

MV Friendship: N. Traffic Organization Service. (3 times) This is MV Friendship (3 times) ABPO (3 times) On VHF channel 16. Over.

NTOS: MV Friendship. This is N T O S. Change to Channel 14. Over.

MV Friendship: N T S This is MV Friendship. Changing to channel 14. Over.

NTOS: MV Friendship. This is NTOS. How do you read? Over.

MV Friendship: NTOS. This is MV Friendship. I read you four. Question. Is it permitted to enter Traffic Lane? Over.

NTOS: MV Friendship. This is NTOS. Answer. Positive. You are permitted to enter Traffic Lane at time: 14.00UTC, position _____. Information. Traffic clearance granted. Over.

MV Friendship: NTOS. This is MV Friendship. Received. Positive. I will enter Traffic Lane at time: 14.00 UTC, position ____. Information Received. Traffic clearance granted. Over.

NTOS: MV Friendship. This is NTOS. Readback is correct. Navigational information. Warning. A vessel is aground, position: near SN-2 buoy. Visibility is reduced by fog.

Advice 1. Proceed with caution.

Advice 2. Keep clear of the vessel aground. Over.

MV Friendship: NTOS. Information Received. Vessel aground, position: near SN-2 buoy. Visibility is reduced by fog. Advice 1. Positive. I will proceed with caution. Advice 2. Positive. I will keep clear of the vessel aground.

Over.

NTOS: MV Friendship. This is NTOS. Readback is correct. Instruction. Report at next way point _____at time 14.30 UTC. Over.

MV Friendship: NTOS. This is MV Friendship. Instruction Received. I will report at next way point _____ at time 14.30 UTC.

Over.

NTOS: MV Friendship. This is NTOS. Readback is correct. Stand by on channel one four. Out.

Message Markers

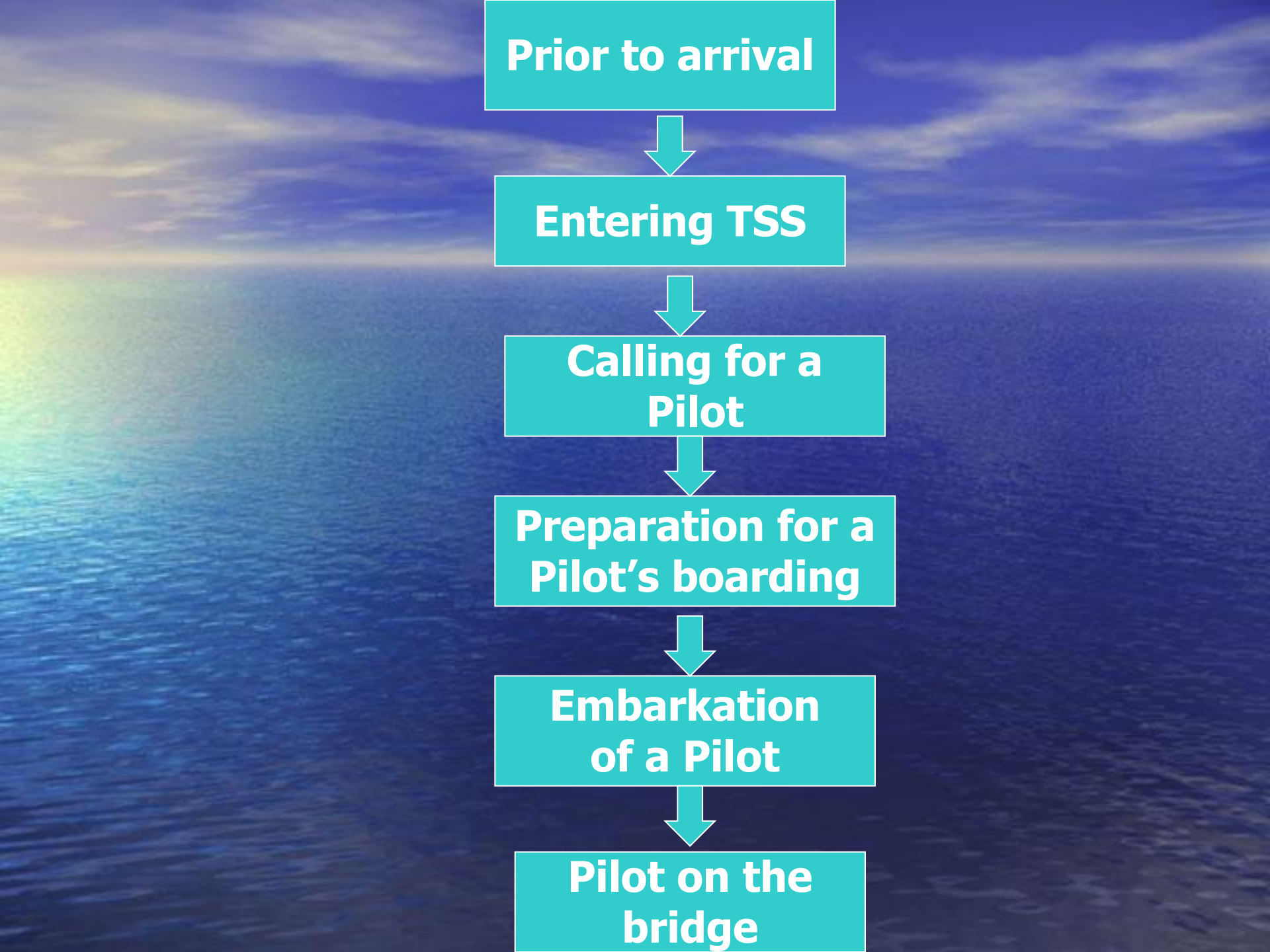
Message Markers	Responding message markers
Instruction	Instruction Received
Advice	Advice Received
Warning	Warning Received
Information	Information Received
Request	Request Received
Intention	Intention Received
Question	Answer

Message Markers

- **"Yes, ..."/"Positive ....."** + the appropriate phrase in full. When the answer is affirmative
- **"No, ..."/"Negative,....."** + the appropriate phrase in full. When the answer is negative

Message Markers

- **"Stand by"** + the time interval within which the information will be available. When the information requested is not immediately available
- **"No information"** When the information requested cannot be obtained
- When an Instruction, an Advice or Request is given, if in the affirmative: **"I will / can ...." +** the instruction, advice or request respond, in full
- **"I will not / cannot ...."** + the instruction, advice or request respond, in full if in the negative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VTS
Vessel Traffic Management

-provision or simple information messages
- extensive management of traffic within a port or waterway.

TM
traffic management

means of TM :
-Colregs
- (TSS)

'passive' control
-written rules and regulations
-entering clearance into the VTS
Pilots have no basic objections

'active' control
'ad hoc TM decisions' pilots do object unless specific procedures are followed

Pilots - main users of a VTS

The task of pilots is

to provide advice to a vessel

whether on board a vessel or ashore

Calling for a Pilot

Contact Pilot Station

Informing ETA

Confirming ETA

Signals to be displayed for a pilot

In the Daytime

At night

Preparation for a Pilot's boarding

THE USE OF ETA AND ETD IN PILOTAGE

- Proper ETAs and ETDs are essential for the operation of a pilotage service

- Human resources and technical means have to be planned quite a long time in advance (VTS, tugboats, linesmen, etc.)

CALLING FOR A PILOT

- If pilotage is compulsory

- According to the "Guide to Port Entry" requirements

- 72/48/24 hours prior to arrival

Signals to be displayed for a pilot

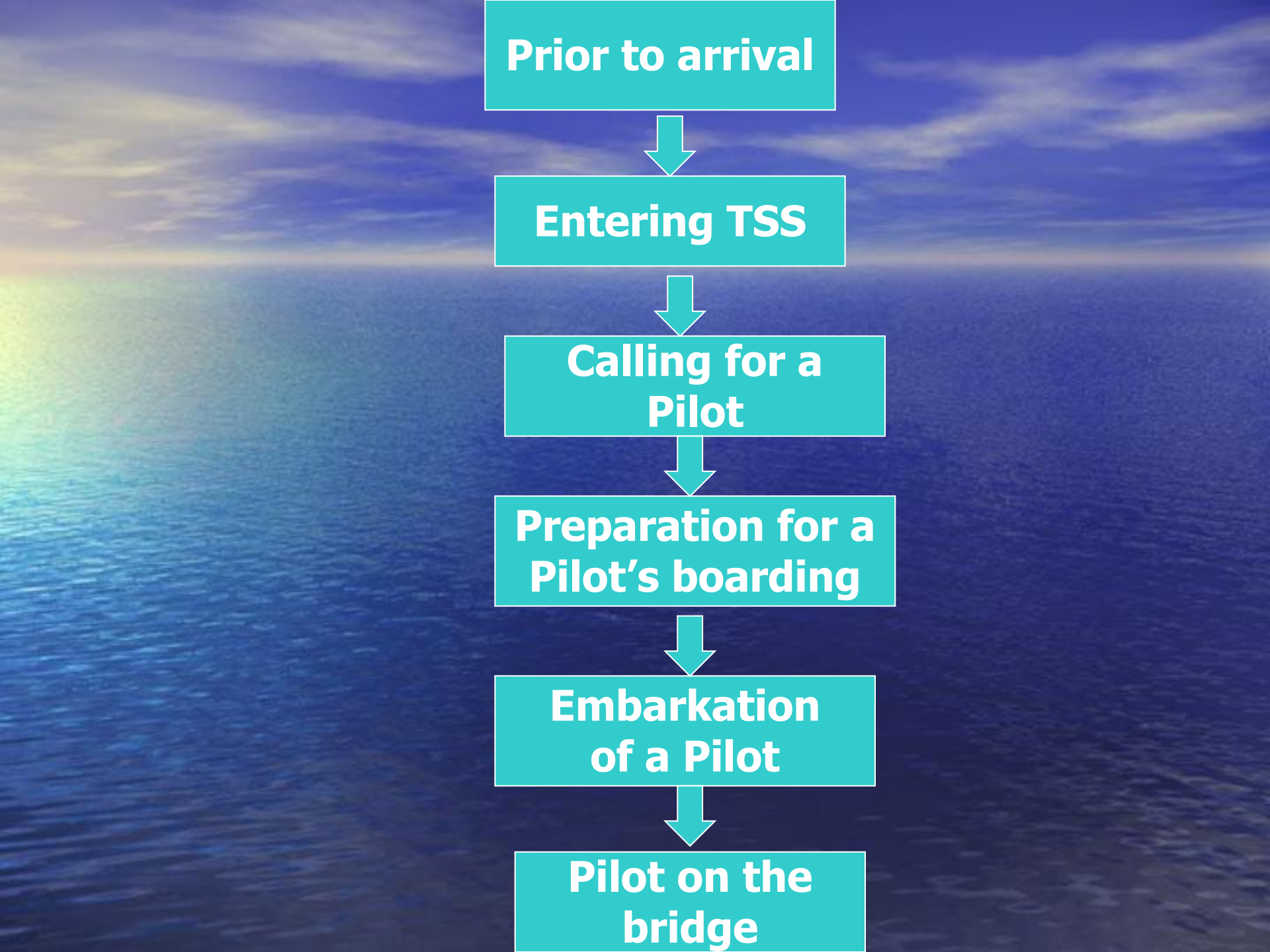
In the Daytime:

- The International Code Signal "G"

"I require a pilot"

At night:

- The pyrotechnic blue light every 15 minutes.
- A bright white light, flashed or shown at short or frequent intervals above the bulwarks for about a minute at time.
- Signal "G" by flashing.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- discharge, n – выпуск, спуск
- provision, n – условие
- access, n – доступ, проход, подход
- comply with, v – подчиняться (правилам)
- stiffness, n – жесткость, твердость, крепость
- durability, n – длительность, прочность, стойкость
- stanchion, n – стойка
- bulwark-stanchion, n – стойка фальшборта
- guard-stanchion,n – леерная стойка
- fall – лопарь (талей), ходовой конец (лопаря), фал
- bulwark, n – фальшборт
- slope, n – склон, наклон, скат
- attach, v – присоединять
- guard ring, – мерное кольцо
- guard rail, – поручень, наружный привальный брус
- adjacent, adj – примыкающий

Preparation for a Pilot's boarding

Annex A 5 Part A of ICS Bridge Procedures Guide

a pilot ladder

1 metre above water

bulwark ladder

loop

Handhold stanchions

equally spaced (about ladder steps)

man ropes

keep ready for use

lifebuoy

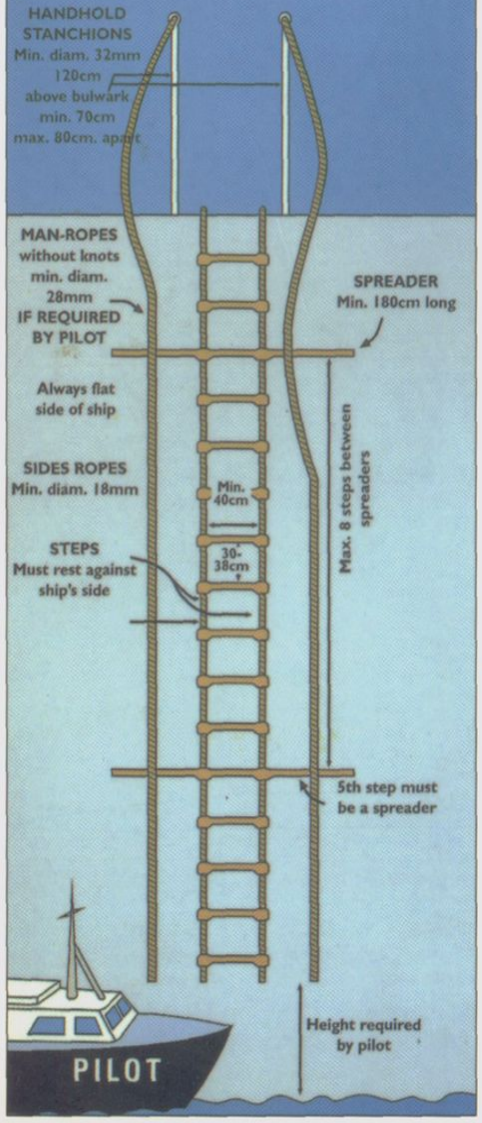
self-igniting light

safety line

proper illumination

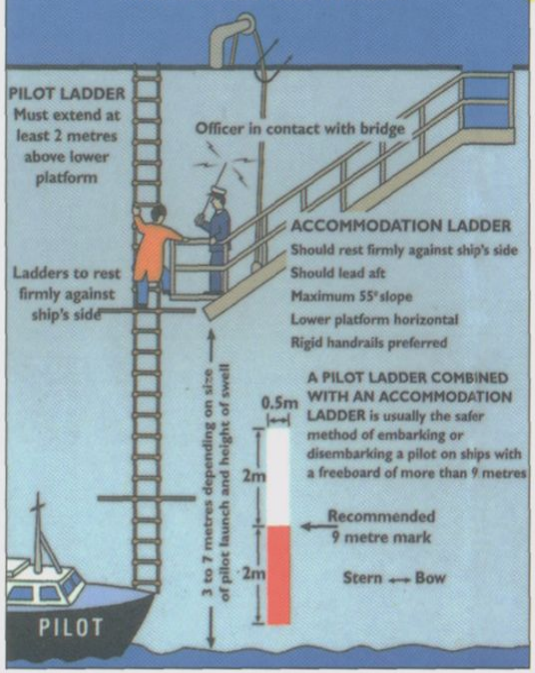
torch

RIGGING FOR FREEBOARDS OF 9 METRES OR LESS

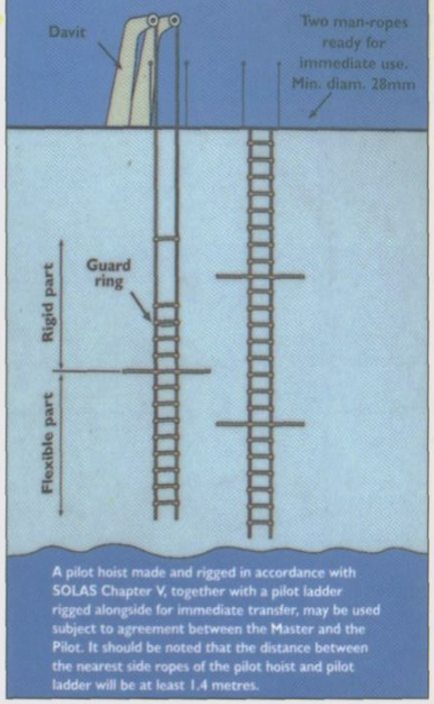


SHIPS WITH HIGH FREEBOARD (MORE THAN 9M)

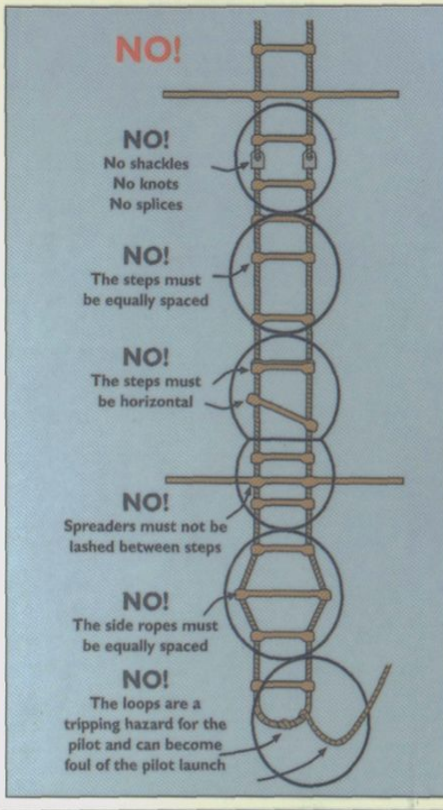
When no side door available

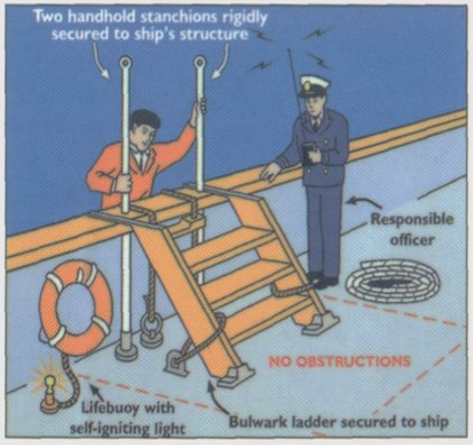


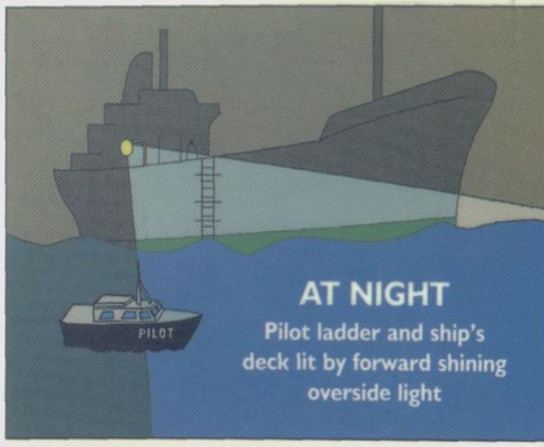
MECHANICAL PILOT HOIST



A pilot hoist made and rigged in accordance with SOLAS Chapter V, together with a pilot ladder rigged alongside for immediate transfer, may be used subject to agreement between the Master and the Pilot. It should be noted that the distance between the nearest side ropes of the pilot hoist and pilot ladder will be at least 1.4 metres.







Pilot ladders

- positioned and secured clear of any discharges from the ship
- each step rests firmly against the ship's side
- The steps should be of equivalent strength, stiffness and durability
- secured horizontally
- equally spaced not less than 300mm or more than 380mm apart
- If more than five steps ---- spreader steps not less than 1.80m long

Ropes

- The side ropes should consist of two ropes not less than 18mm in diameter on each side
- Two man-ropes not less than 28mm in diameter properly secured to the ship should be kept at hand ready for use

Accommodation ladders used in conjunction with pilot ladders

- the lower end of the ladder should rest firmly against the ship's side
- The length of the accommodation ladder should be sufficient to ensure that its angle of slope does not exceed 55°.
- The lower platform should be in a horizontal position
- The ladder and platforms should be equipped on both sides with stanchions and rigid handrails
- The pilot ladder should be rigged immediately adjacent to the lower platform of the accommodation ladder
- the upper end should extend at least 2m above the lower platform.

Mechanical pilot hoists

- Should be of a type approved by the Administration
- Should be designed to operate as a moving ladder
- Two separate wire falls should be used
- The rigid ladder part should be not less than 2.50m in length
- Below the rigid part a section of flexible ladder comprising eight steps should be provided

Associated equipment

- A lifebuoy equipped with a self-igniting light
- A heaving line should be kept at hand ready for use.
- Lighting should be provided so that both the pilot ladder over side and the position where the pilot embarks or disembarks are adequately lit.

B4 Pilotage

- [ ] Immediately on arrival on the bridge, has the pilot been informed of the ship's heading, speed, engine setting and draught?

- [ ] Has the pilot been informed of the location of lifesaving appliances provided on board for his use?

Have details of the proposed passage plan been discussed with the pilot and agreed with the master, *including*

- [ ] radio communications and reporting requirements
- [ ] bridge watch and crew stand-by arrangements
- [ ] deployment and use of tugs
- [ ] berthing/anchoring arrangements
- [ ] expected traffic during transit
- [ ] pilot change-over arrangements, if any
- [ ] fender requirements

- [ ] Has a completed Pilot Card (see annex A3) been handed to the pilot and has the pilot been referred to the Wheelhouse Poster? (see annex A4)

- [ ] Have the responsibilities within the bridge team for the pilotage been defined and are they clearly understood?

- [ ] Has the language to be used on the bridge between the ship, the pilot and the shore been agreed?

- [ ] Are the progress of the ship and the execution of orders being monitored by the master and officer of the watch?

- [ ] Are the engine room and ship's crew being regularly briefed on the progress of the ship during the pilotage?

- [ ] Are the correct lights, flags and shapes being displayed?

Other checks:

PILOT CARD

SHIP'S PARTICULARS

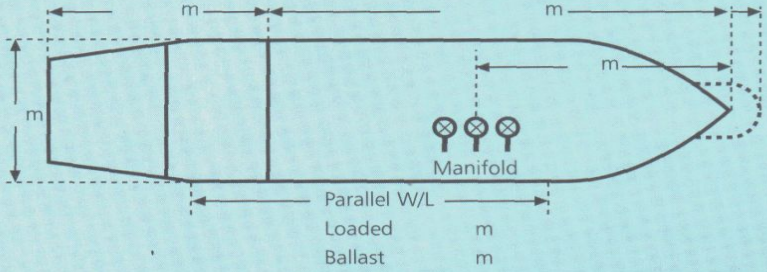
Name _____ Call sign _____

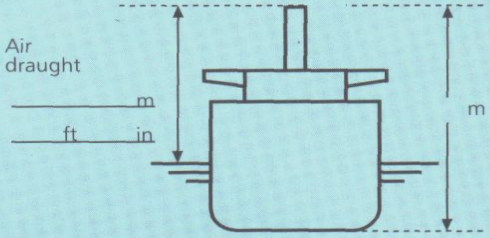
Displacement _____ (tonnes) Deadweight _____ (tonnes) Year built _____

Length OA _____ (m) Breadth _____ (m) Bulbous bow: yes/no

Draught fwd _____ (m) Draught aft _____ (m) Draught amidships _____ (m)

Port anchor _____ (shackles) Stbd anchor _____ (shackles) (1 shackle=27.4 m/15 fathoms)





ENGINE

Type of engine _____ Maximum power _____ (kW) _____ (HP)

	rpm/pitch	loaded speed	ballast speed
Full ahead		(kts)	(kts)
Half ahead		(kts)	(kts)
Slow ahead		(kts)	(kts)
Dead slow ahead		(kts)	(kts)
Dead slow astern			
Slow astern			
Half astern			

STEERING

Rudders _____ (number) _____ (type) _____ ° (maximum angle)

Time hard-over to hard-over _____ (sec) Rudder angle for neutral effect _____ °

Propellers _____ (number) Direction of turn left/right Controllable pitch yes/no

Thrusters _____ (number) Bow power _____ (kW/HP) Stern power _____ (kW/HP)

Steering idiosyncrasies _____

EQUIPMENT CHECKED AND READY FOR USE

Anchors		Cleared away	yes/no
Whistle			
Flags			
X-Band radar		ARPA	yes/no
S-Band radar		ARPA	yes/no
Speed log		Water/Ground	single axis/dual axis
Echo sounder			
Electronic position-fixing		Type	
Compass system		Gyro compass error	°
Steering gear		Number of power units in use	
Rudder/RPM/ROT indicators		Engine telegraphs	
VHF			
Mooring winches and lines			

EQUIPMENT OPERATIONAL DEFECTS

WHEELHOUSE POSTER

Ship's name..... Call sign.....Gross tonnage.....Net tonnage.....

Max displacement.....tonnes, and Deadweight.....tonnes, and Block coefficient.....at summer full load draught

Draught at which the manoeuvring data were obtained

Loaded	Ballast
Trial/Estimated	Trial/Estimated
___m forward	___m forward
___m aft	___m aft

STEERING PARTICULARS

Type of rudder(s) _____

Maximum rudder angle _____°

Time hard-over to hard-over

with one power unit _____s

with two power units _____s

Minimum speed to maintain course propeller stopped _____knots

Rudder angle for neutral effect _____°

ANCHOR CHAIN

	No. of shackles	Max. rate of heaving (min/shackle)
Port		
Starboard		
Stern		

(1 shackle = _____m/_____fathoms)

PROPULSION PARTICULARS

Type of engine _____, ___kW (___HP). Type of propeller _____

Engine order	Rpm/pitch setting	Speed (knots) Loaded	Speed (knots) Ballast
Full sea speed			
Full ahead			
Half ahead			
Slow ahead			
Dead slow ahead			
Dead slow astern		Critical revolutions ___rpm Minimum rpm ___ ___knots	
Slow astern		Time limit astern ___rpm Time limit at min. rev.___rpm	
Half astern		Emergency full ahead to full astern ___s Stop to full astern ___s	
Full astern		Astern power ___% ahead Max. no. of consecutive starts ___	

THRUSTER EFFECT at trial conditions

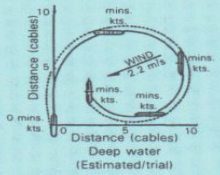
Thruster	kW (HP)	Time delay for full thrust	Turning rate at zero speed	Time delay to reverse full thrust	Not effective above speed
Bow		s	°/min	min s	knots
Stern		s	°/min	min s	knots
Combined		s	°/min	min s	knots

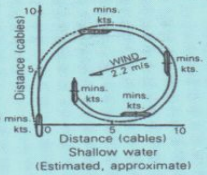
DRAUGHT INCREASE (LOADED)

Estimated Squat Effect			Heel Effect	
Under keel clearance	Ship's speed (knots)	Max. bow squat estimated (m)	Heel angle (degree)	Draught increase (m)
m			2	
			4	
			8	
m			12	
			16	

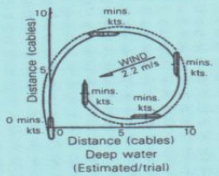
TURNING CIRCLES AT MAX. RUDDER ANGLE

LOADED Water depth/draught ratio = 1.2



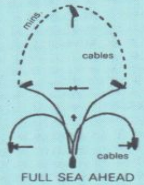


BALLAST



1 cable = 0.1 nautical mile

EMERGENCY MANOEUVRES

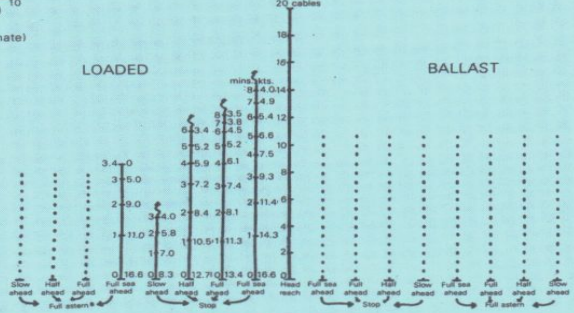


FULL SEA AHEAD

Comparison of turning (max. rudder) and full astern stopping ability (rudder amidships)

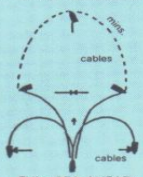
TRACK REACH

LOADED BALLAST



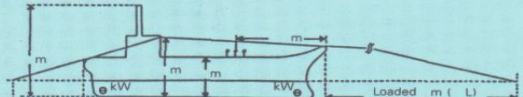
STOPPING CHARACTERISTICS

EMERGENCY MANOEUVRES



FULL SEA AHEAD

Comparison of turning (max. rudder) and full astern stopping ability (rudder amidship)



MAN OVERBOARD RESCUE MANOEUVRE

SEQUENCE OF ACTIONS TO BE TAKEN

- TO CAST A LIFEBUOY
- TO GIVE THE HELM ORDER

Use of Tugs in Pilotage Operations

Types of Tugs

Use and Effectiveness

Methods of tug assistance

Types of tugs depend on:

- the sort of port
- the future developments
- the geographical environmental conditions
- the type of ships calling at the port
- the services required in and around the port

Types of tugs

- single-screw tugs -less manoeuverability
- twin-screw tugs - better manoeuvrable
- tractor-type tugs – with propellers under the fore end of the tug
- tugs with Z-pellers aft - have better manoeuvrability, suitable for towing on a line and for the push-pull method

Methods of tug assistance

- towing on the hook, bitt or winch;
- pushing;
- push-pull;
- towing alongside.

HYDROGRAPHIC SURVEYING IN PORT AREAS

- confined, adj – ограниченный, тесный, узкий, заключенный
- stem, v – удерживать судно на курсе против течения или ветра
- bathymetric, adj – батиметрический, глубинный
- bathymetry, n – батиметрия, измерение глубин
- scope, n – диапазон, область действия, протяженность
- siltation, n – засорение илом
- dissemination, n – распространение, рассеивание, разбрасывание
- sheer, n – кривизна, изгиб, рыскание, резкое отклонение от курса
- imply, v – заключать в себе, значить, подразумевать, намекать
- assimilate, v – уподоблять, приравнивать, сравнивать
- sheet, n – шкот, широкая полоса, обширная поверхность воды
- thrust, v – толкать, пробивать, протискиваться, взрываться
- derive, v – происходить, производить, получать, извлекать
- fluid, adj – жидкий, текучий
- distinctive, adj – отличительный, характерный

HYDROGRAPHIC SURVEYING IN PORT AREAS

The main objective:

**to keep pilots informed
of the latest changes in depths and
other hydrographic matters**

The frequency of surveys depend on

- the size of the port,
- the pattern of traffic
- stability of the sea bed within the area

Surveys to be carried out:

Essential information

- Bathymetry
- The height of tide
- The set of currents
- The position and scope of buoys
- The topography of jetties and other berths

To be concerned but not directly

- wreck investigation
- dredging
- accident investigation
- environmental matters such as siltation and pollution

UNDERKEEL CLEARANCE

- swell, n – зыбь, накат ветровых волн, волнение
- squat, n/v – увеличение осадки кормой на ходу, садиться кормой на ходу
- yawing, n – рыскание, рыскливость
- heaving, n – вертикальная качка
- swaying, n –поперечно-горизонтальная качка, поперечное рыскание, боковой снос
- surging, n – продольно-горизонтальная качка, продольное рыскание, продольный снос
- trim, n, v – дифферент, дифферентовка, удифферентовывать
- longitudinal, adj – продольный, продольное сечение
- (centre of) buoyancy – плавучесть, сила плавучести, архимедова сила
- equal, v – равняться, быть равным (*мат*)
- heel, n –пятка киля, (статический) крен, угол крена
- crest, n – гребень (волны)
- trough, n – впадина

UNDERKEEL CLEARANCE

Reduction Factors

Sheltered-Water Effects

Non-Sheltered-Water Effects

the ship under way does not respond to the sea or swell

Squat

change of density

Heel due to windage

Heel when turning

Sheltered-Water Effects

- **Change of density** is associated with bodily sinkage and a change of trim when the ship moves from salt to fresh water
- **Squat** is associated with shallow water, involving bodily sinkage and change of trim
- **Heel** when turning is proportional to speed2 and inversely proportional to the radius of turn. Associated with fast container ships and ferries.
- **Heel due to windage** –ships with high windage area and small righting moment may be expected to heel over like sailing ships in a strong wind.

Non-Sheltered-Water Effects

- the effects of the rotations and translations of the ship's null point in response to the sea, are observed in severe weather in waves of length about the ship' length in the larger ships or spending some time 'cruising' on smaller boats.

ANCHORING

Documents

- Anchoring Plan
- Anchor Watch Check List

Equipment to be ready and checked

- Anchors
- Chains

At anchor

- Lights and shapes
- Anchor watch

Documents to be prepared and worked with

- Anchoring and Anchor Watch Check List contains recommendation for preparing anchoring plan and actions and responsibilities of the OOW while at anchor
- Anchoring Plan contains information on:
- A. RPE-OP MAINTENANCE
- B. PRE-OP PLAN - ENVIRONMENT
- C. PRE-OP PLAN – TRAINING
- D. THE APROACH TO THE ANCHORAGE
- E. THE ANCHORING OPERATION – AIDE MEMOIRE

Anchoring checklist

A. RPE-OP MAINTENANCE	Yes	No
1. Has the windlass been tested within the last 30 days? *If NO, then extra care needs to be taken.* 2. Has maintenance been done as per the maker's instruction book? *If there are NO instructions, do the following:*)Ensure the brake lining is 7mm or more.)Ensure the brake drum is smooth, with no build up of rust or resin.)Ensure ALL bearings and joints are FULL of grease, with no grit or rust in.)Ensure that hydraulic oil is at the correct level (if applicable). •Ensure hydraulic are clean, with no metal particles in. •Ensure the brake lead crew and nut are clean and greased. 3. Have the owners' managers' instructions been read? 4.These instructions should be in accordance with the maker's instructions. Are they? 5. Are the brake adjustments in the middle of the range? *If NO, then operation is near the edge of permissible limits.*		

B. PRE-OP PLAN - ENVIRONMENT

1. Is the depth less than 82 metres absolute maximum/
   Unless your ship is specially equipped, this is the class limit.
2. Is the depth less than the owners stipulated depth for using the brake?
   If more than owners stipulated depth then walk back, using the brake also.
   Never walk back without using the brake also
   If no instructions, regard 60 metres as the limit for brake only
3. Is the nearest grounding line more than 1 mile away?
   Allowing for the tide go down
4. Is the weather/tide NOT onshore? or drag will result in grounding.
   If the weather is onshore and anchorage close, do not anchor.
5. Is the sea bed suitable? *Not rock or coral, e.g. Tokyo Bay.*
6. Is there enough room to turn $180^0/360^0$?
7. Is the wind less. than 28 knots?
   Is the current less than 3 knots?

These are Classification Society limits. You may trade wind for current: i.e. 1 knot current = 9 knots wind.

8. Is the sea sufficiently calm? *Excess motion of the hull.*

C. PRE-OP PLAN – TRAINING

1. Have the foc'stle crew had training and are they certificated through the company's training scheme? *Windlass = primary lifting gear.* 2. Has a pre-op briefing been held so that they understand that: a) There should be 2 men on the controls, particularly the brake. b) One man to apply grease to gears when heaving. c) The orders that will come from the bridge. d) The cable will be walked back when at 2 knots to just above the bottom = the DIRECT method by 'U'-turn, OR		
When stopped to just touch the bottom = the TENTATIVE method. e) The cable will be veered in one go. *On the beam, 90^0 to the fore and aft line, Because forces on the windlass are 20 times less this way, Approximately 3.5 times for inertia and 6 times for added scope.* f) The stopper will be put on and securing pin engaged whilst the cable is still up and down. Because this is the windlass makers and class requirement.		

D. THE APROACH TO THE ANCHORAGE

1. Are there any other ships at anchor to indicate tide/wind?	❑	❑
2. Is there a suitable anchoring space, not in the fairway?	❑	❑
3. Is there a clear, safe passage to the space?	❑	❑
4. Is the space clear of the fairway? (e.g. Sheldt, Ulsan are not good)	❑	❑
5. If the anchorage is empty with a strong current, do you know the direction of the current? (e.g. Withnell Bay, West Australia)	❑	❑
6. Is the chosen space accessible for bunker barges/launches/etc?	❑	❑

E. THE ANCHORING OPERATION – AIDE MEMOIRE

1. Choose a suitable speed of approach for the traffic/sea room.
2. If 'U' turn, approach at 180^0 to the final heading.

The 'U' turn method

3(u) 'U' turn – start the turn when the bow is abreast of the planned bow final position, full rudder. Speed is not important.

4(u) Once the turn is started, stop engine.

5(u) When speed is 2 knots, start to walk the anchor out to above the sea bed. Use the anchor on the inside of the turn.

6(u) When the ship has canted 135^0 she will be virtually stopped. Adjust the angle to the weather to suit the strength of the tide and wind.

7(u) With the bow moving slowly sideways, let go/walk back with the brake to 3.5 to 4 times the depth, 5 times if possible.

8(u) Put the stopper on and engage securing pin with the cable up and down. Do not attempt to bring the ship up on the motor – doing so is against the maker's and class limits.

9(u) Ensure the ship is brought up with the cable abeam before allowing the cable to draw ahead

The 'tentative' method

3(t) Approach the anchorage slowly, angling to the weather 20 - 90^0 **4(t)** Start walk back at 2 knots, to avoid the anchor banging on the hull. Use the anchor on the weather side, not the lee side. **5(t)** When the ship is stopped, walk back the anchor to just touch the sea bed. The foc'stle crew observe the lead, informing the bridge when leading out on the beam and clear of the hull.		
6(t) When the cable is leading in the desired direction, let go/walk back to the required scope – 3.5 to 4 times the depth, 5 times if possible. **7(t)** Put the stopper on and engage the securing pin with the cable up and down. Do not attempt to bring the ship up on the brake or the motor – doing so is against the maker's and class limits. **8(t)** Ensure the ship is brought up with the cable abeam before allowing the cable to draw ahead, for inertia and scope reasons, the same as for the 'U' turn. In both cases, when the depth is shallow and the bottom is soft, practice letting go the anchor from the hawse pipe. In an emergency you will have to.		

B8 Anchoring and anchor watch

- ***Has an anchoring plan been prepared taking into account***

- |____| speed reduction in ample time
- |____| direction/strength of wind and current
- |____| tidal stream when manoeuvring at low speeds
- |____| need for adequate sea room particularly to seaward
- |____| depth of water, type of seabed and the scope of anchor cable required
- |____| Have the engine room and anchor party been informed of the time of 'stand-by' for anchoring?
- |____| Are the anchors, lights/shapes and sound signalling apparatus ready for use?
- [____| Has the anchor position of the ship been reported to the port authority?

B8 Anchoring and anchor watch

While at anchor, the OOW should

- determine and plot the ship's position on the appropriate chart as soon as practicable
- when circumstances permit, check at sufficiently frequent intervals whether the ship is remaining securely at anchor by taking bearings of fixed navigation marks or readily identifiable shore objects
- ensure that proper look-out is maintained
- ensure that inspection rounds of the ship are made periodically
- observe meteorological and tidal conditions and the state of the sea
- notify the master and undertake all necessary measures if the ship drags anchor
- ensure that the state of readiness of the main engines and other machinery is in accordance with the master's instructions
- if visibility deteriorates, notify the master
- ensure that the ship exhibits the appropriate lights and shapes and that appropriate sound signals are made in accordance with all applicable regulations
- take measures to protect the environment from pollution by the ship and comply with applicable pollution regulations

Anchoring

- Anchoring to a single anchor
- Amount of cable to use
- Duties at anchor
- Dragging anchor
- Weighing anchor
- Anchoring near a danger
- Anchoring on a shoal
- Chosing a Position in which to Anchor
- Anchor Watch

Anchors and chains

- Anchor fluke chock- якорная подушка
- Bitter- шлаг троса, обнесенный на кнехт
- Bitts- кнехт, битсы
- Chock – подклинивать, заделывать чаками
- Embed – вставлять, врезать
- Fluke – лапа якоря
- Shank- веретено(якоря)
- Slot- паз, щель. канавка
- Snug- гнездо (в цепном барабане)
- Spile-плазовая рейка с карандашом
- Stud- распорка(звена, цепи)
- Tensile strength-предел прочности на разрыв
- Tripping palm- прилив для разворота лап якоря

Anchors and chains

- stocked anchor
- stockless anchor

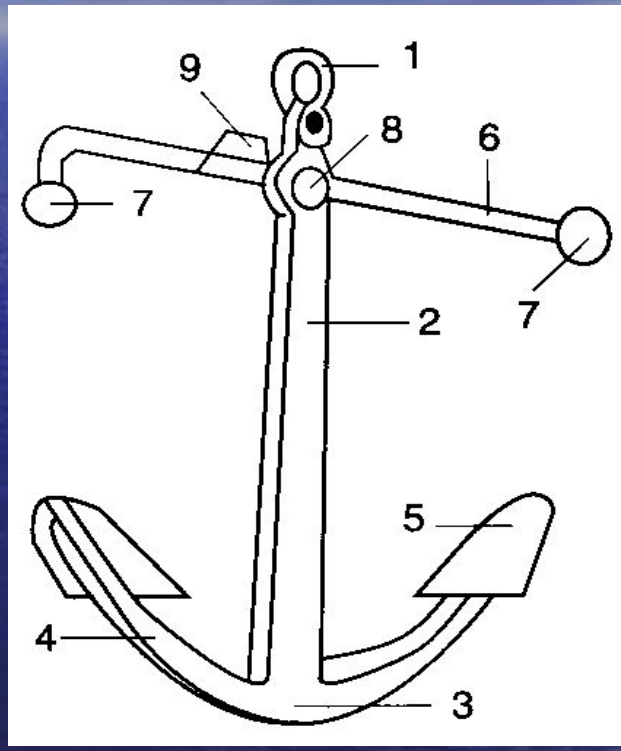
- Sea going vessels are usually *equipped* with *stockless anchors:* two *bower anchors, a* stern anchor for manoeuvring the ship when she is *"dredging anchor',* and a spare anchor.

- shackles

- stud-links
- open links

Anchors and chains

- The stocked anchor consists of a *puddening* (**1**), a *shank* (**2**), a *crown* (**3**), *arms* (**4**), *flukes* (**5**), a stock (**6**), *anchor nuts* (**7**), *breastpiece* (**8**)
  a *forelock* (**9**).

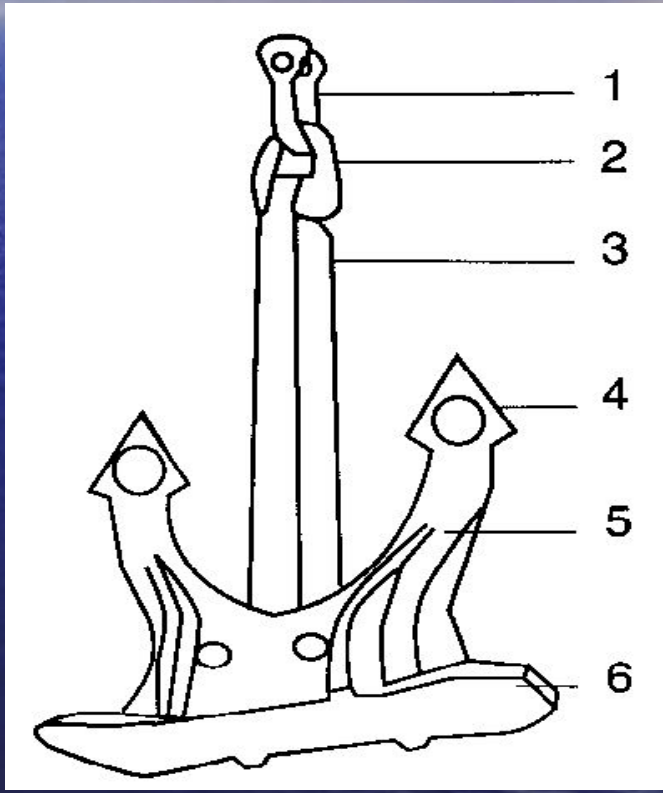


The disadvantages of a stocked anchor:

- it cannot be stored in the vessel's *hawse* because of the stock;
- one of its flukes will always point upwards, which makes this anchor very *vulnerable* to being *fouled*.

Anchors and chains

- The stockless anchor consists of an anchor *shackle* (**1**), *a puddening* (**2**), a *shank* (**3**), *flukes* (**4**), arms (**5**), and shoulders (**6**).

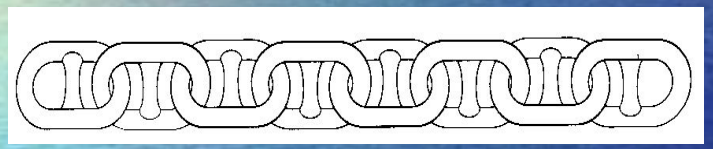


- can be stored in the vessel's hawse.
- both flukes will bite the seabed.

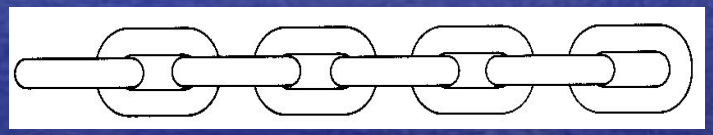
Anchor chains

Made up of lengths of 15 fathoms each "shackles"

- Stud-link chain



- Open-link chain



- for strength and prevent the cable from turning (kinking).

The joint between two lengths of 15 fathoms is also called a **shackle.**

ANCHORING

- When the vessel is *approaching* the *anchorage* or her *designated berth* the *anchor gear* must be checked and prepared:
- *windlass* and *hinging parts* - *grease,*
- *handbrakes* - test,
- hawse pipe-closing plates - remove

AMOUNT OF CABLE TO USE

- Scope of cable - the length of cable laid out, measured from the hawse pipe to the anchor, divided by the distance measured vertically from the hawse pipe to the sea-bed

The scope used depends upon

- -The nature of the holding ground. Stiff clay, rock, shells, and stones - poor holding ground.
- Sand or shingle - good holding ground
- - The amount of swinging-room available for the ship
- - The degree of exposure to bad weather at the anchorage.
- - The strength of the wind or stream.
- - The duration of stay at anchor.
- - The type of anchor and cable.

The minimum scope of mild steel cable to use according to depth of water is roughly:

- Below 20m — 6 to 8
- 20m to 40m — 4 to 6
- Over 40m — Less than 4

ANCHORING TO A SINGLE ANCHOR

In water of over 20 m

In a tideway

In a wind

In calm weather

In waters up to 20 m deep

In very deep anchoring depths, 100 m and over

In calm weather

- -the anchorage is approached at slow speed
- -the anchor is let go while the ship has either headway or sternway
- -the cable is laid out
- -engines are used to relieve stresses in the cable just before the vessel brings-to.
- -the engines are kept going dead slow astern as the anchor is let go.
- -Engines are stopped almost immediately
- - the vessel drifts astern laying out her cable.
- - Just before the required scope is out, the engines are *touched* ahead.

In waters up to 20 m deep

- -the anchor and cable should be let go on the run
- -with the weight of the anchor off the cable, it sometimes happens that when the brake is released the cable will not render itself.
- - By surging the cable initially, the anchor has a chance to embed itself before the cable tightens.
- There is little risk of a stockless anchor being fouled in this way.

In water of over 20 m

- -the anchor should first be walked back to within say 4 or 5 m from the sea-bed,
- and let go from there.

This ensures:

- the anchor will not damage itself falling a considerable distance on to a hard bottom,
- the cable will not *take charge* and run out so rapidly that it becomes extremely difficult to hold it on the brake.

In very deep anchoring depths, 100 m and over

- - the entire operation of anchoring should be done under power.
- - the gypsy should not be taken out of gear at all, because the heavy weight of cable
- between sea-bed and hawse pipe will undoubtedly take charge.

In a wind

It is better to approach the anchorage heading upwind. The ship is more easily controlled and will make little leeway.

If the wind cannot be brought ahead

- the ship can let go the anchor in the usual way
- use her engines to relieve stresses on the cable
- swing head to wind as she brings-to.
- the weather anchor is used to avoid nipping the cable round the stem.

If the vessel is heading dead into the wind's eye

- -she should have her head cast off one way or the other before letting go the weather anchor.
- -The cast should not be excessive, because the ship will rapidly seek to lie across the wind and develop a sharp swing to leeward.
- -Correcting helm and bold use of engines should be used if the cast develops into a swing.

In a tideway

- -the vessel should stem the tide and again anchor with headway or sternway
- Her helm will be of use even while making no way over the ground due to the tidal stream running past her.
- If the tidal stream cannot be stemmed the cable should be rapidly laid out slackly *across* the axis of the stream

Vessel at anchor

According to Rule 30 of ColRegs

- (i) in the fore part an all round white light or one black ball;
- (ii) at or near the stern and at a lower level than the light prescribed in sub-paragraph (i), an all-round white light.

DUTIES AT ANCHOR

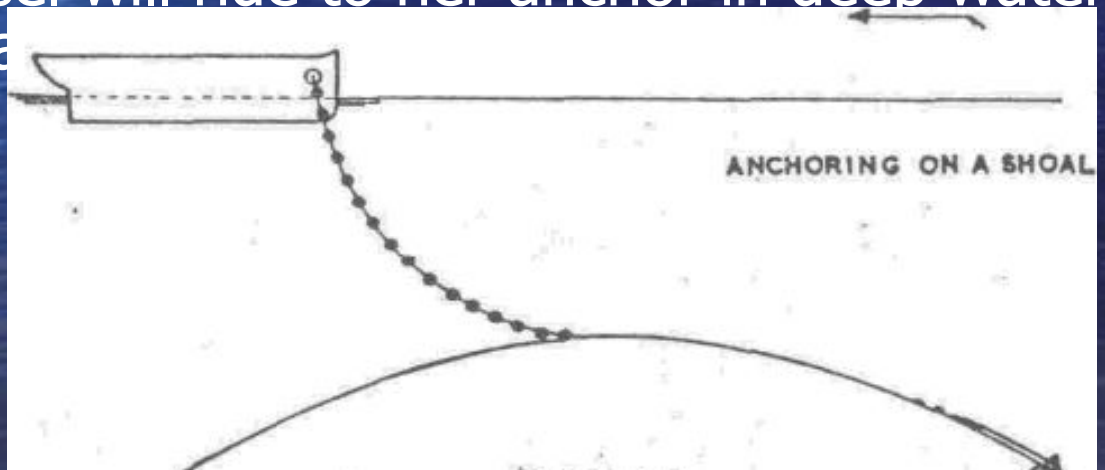
- - Cross-bearings are usually taken as the anchor is let go
- -Anchor watches should be set
- - bearings frequently checked.
- -A rough circle of swing can be drawn on the chart.
- -Beam transit-bearings, use of the echo sounder, and radar will all help to detect dragging.
- -In a tideway the vessel may be steered by her rudder.
- -The shore signal-station should be watched at all times
- -The officer of the watch should at all times have a rough idea of how his cable is lying to warn other vessels which try to anchor across it.

ANCHORING NEAR A DANGER

- when anchoring near a danger, the offshore anchor should be used.

ANCHORING ON A SHOAL

- head into the wind
- cross the shoal
- take soundings. Decide in which depth the anchor is to be let go.
- The anchor is walked back to this depth
- the vessel moves astern across the shoal.
- As soon as the cable grows ahead - cable is veered and laid out across the shoal
- the vessel will ride to her anchor in deep water beyond the shoa

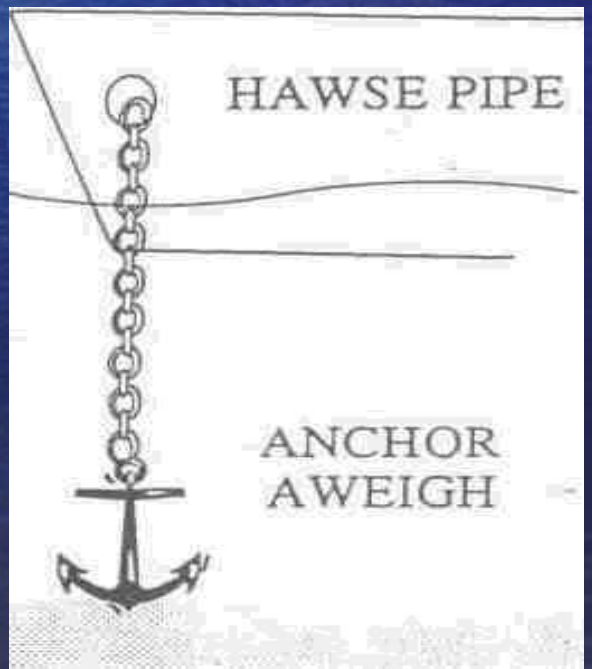


DRAGGING ANCHOR

- (1) Let go the second anchor underfoot at the centre of yaw. If the first anchor starts to drag the second will bite and its cable will render itself.
- (2) Let go the second anchor at the extremity of yaw and veer both cables so that the ship rides comparatively quietly to her two anchors.
- (3) Steam up to the first anchor, sheer away, and let go the second anchor.

Supporting vocabulary

- **Anchor** – Heavy iron implement used to hold the ship to a particular place in shallow water.
- **Aweigh** – Said of an anchor when it is broken out of the ground and the anchor chain is leading/hanging straight up-and-down.



Supporting vocabulary

- **Bollard** - Strong single post for taking mooring lines
- **Capstan** - Vertical barrel used for hauling mooring ropes
- **Chain Locker** - Space in the bow above the fore peak, used to house the anchor cable
- **Devils claw** - A two pronged hook. Used for securing the anchor cable while the vessel is at sea
- **Gypsy** - A sheave with interior lugs into which a chain will fit
- **Hawse pipe** - Tube through which the anchor cable goes to the anchor
- **Labour** - That side of the wind is blowing away from
- **Leeward** - Away from the wind
- **Panama lead** - Fairlead with a closed top. Used in the