**THE ANCHORAGE**

**Safe anchoring - planning and operational guidance for cargo ships**

Anchoring is a critical shipboard operation. There are a number of reasons why a vessel may wish to anchor, for example:

1. The berth or cargo is not available.

2. An amendment to the passage plan.

3. The pilot is not available / boarding delayed.

4. Machinery breakdown.

5. Awaiting good weather / adverse weather.

6. Voyage orders not available.

Anchoring operations are planning consists of information, instructions, and actions that contribute to a procedure for maneuvering the vessel to the designated anchor position and successfully anchoring in a safe, seamanlike manner taking the prevailing weather conditions and sea state into consideration. Improper anchoring has a consequence. The ship may get into colliding with other vessels, or she may run aground and cause damage to property and environment. It is, therefore, for the best interest of all concerned anchoring should be done safely. Proper planning and teamwork are the basis for a safe anchoring operation. The Master should brief the personnel involved with the planned anchoring operation and update the engine room accordingly.

Typical persons attending the briefing include:

− Chief Officer;

− Navigating Officer;

− Bosun.

Maintaining a safe operation All checks, inspections, and calculations as per the Arrival Checklist must be completed in a timely fashion to avoid interfering with a smooth, planned approach. A suitable risk management system must comply. Keep the engine room fully advised of the vessel's progress, especially when entering: shallow water, high-risk areas, restricted or confined waters.

As far as circumstances permit, maintain excellent communication with the Port Authority and Vessel Traffic Services (VTS). Request any information regarding shipping movements that could affect the vessel's safe progress to the anchor position. The vessel will now proceed to the designated anchor position and anchor as per planned method.

Clearing the anchor(s) for arrival

− ensure power is on to forward windlass

− ensure the break is applied and windlass is in gear

− remove the guillotine bar or bow stopper and anchor lashings release the brake

− lower anchor(s) clear of the hawse pipe

− report to the bridge "Anchor(s) clear of hawse pipe and ready for letting go"

− await further instructions from the bridge.

Always be alert to any changing circumstances e.g., excessive vibration or unusual noise of machinery. Once the planned length of the chain is in the water, the guillotine bar should be dropped and secured, and the chain allowed to bear against the guillotine bar. The guillotine bar is designed to take the weight of the anchor cable.

The Windlass should be out of gear, and the brake applied. Throughout anchor period the appropriate anchor signals are to be used (ball, lights, bell, and gong).

During an anchoring operation the following factors should be considered:

− general safety procedures and precautions including PPE;

− identify a safe anchorage with good holding ground;

− identify a safe anchorage that lies within the Territorial;

− Waters of the Port State Authority;

− local weather and forecasts;

− good seamanship;

− the direction of the current or tidal stream;

− sufficient depth of water;

− anchor to be used;

− amount of cable to use / payout;

− anticipated final manoeuvring prior to letting go or walking back;

− method of letting go or walking back;

− communications;

− escape / abort route should circumstances dictate.

Preparing and lowering the anchor: When the anchor party has been briefed, the Officer in charge will first establish communication with the Bridge before proceeding forward.

Before arrival at or off the port, both anchors are to be cleared ready for use. Anchors should only be cleared when the water depth will allow recovery of the anchor and cable if they are accidentally let go. An anchor marking buoy is to be available and ready for use.

Visual Inspection: before clearing the anchors, a visual inspection, as far as possible, should be conducted of the anchoring system.

The visual inspection may include:

− confirming power to the windlass;

− windlass brake assembly;

− clutch / gear mechanism including securing pins;

− general appearance of visible components such as D Shackle, Crown Shackle, Swivel, Kenter link and short chain;

− ensure “D” and crown shackle pins in place and tight.

Under the direct supervision of the Officer in charge, the procedure for preparing and lowering the anchors can be completed. Particular care must be taken when the weight of the cable is secured by the windlass brake only. The anchor party must be alert to any changing circumstances. Arriving at the anchoring position: Before anchoring, the direction and speed of the current or tidal stream and wind must be confirmed. Attempts should not, whenever possible, be made to anchor across the current, tidal stream or wind. When all the way has been taken off the vessel, the vessel's head should be close to the direction of the tidal flow or wind, and the bow should not be swinging excessively.

**Planning for Anchoring**

Master Should identify a suitable anchoring position before entering the anchorage area. Conduct a planned approach including speed reduction and orienting the ship's head before anchoring.

A decision on the method of anchoring and the number of shackles to use depends upon the depth of water, expected weather, and holding ground. A simple rule in determining length of cable to use:

Length of cable = [(Depth of water in meters \* 2) + 90 ] / 27.5

Strong wind, strong current, harder sea bottom etc. then the length of cable = [(Depth of water in meters \* 3) + 140 ] / 27.5

**Preparation for Anchoring**

The Chief Officer (or another experienced officer in lieu) must supervise letting go or weighing the anchors and should only assign experienced crew members to anchor work.

Prior to anchoring, the Chief Officer should be aware of:

1. Approximate anchoring position

2. Method of approach

3. Which anchor to use

4. Depth of water

5. Method of Anchoring

6. Final amount of Cables

**Procedure of the Introduction to anchoring**

1. At the Forecastle: Check brakes are on and clear the voyage securing devices. (Anchor Lashings, Bow Compressed Bar etc.)

2. Start Hydraulic(Source of) Power of Windlasses

3. Check Anchor Shape / Light

4. Check Communication with the Bridge

5. Check Lighting on Forecastle including torch , at night time

6. Ensure all personnel are wearing Safety Helmets, Safety Shoes and Goggles.

**Before Letting Go Anchor**

The Chief Officer should confirm that there is no craft or any obstacle under the bow and inform to the Bridge. The Master should ensure that the vessel's GPS speed at the time of anchoring is near-zero or indicates a slight sternway. The speed should be verified by visual transits and Radar ranges of Landmarks if available or other fixed conspicuous targets. Whereby means of communication between Bridge and the Anchoring party is Portable radio, the identification of the ship should be clear to avoid misinterpretation of instructions from other users of such equipment in the vicinity.

**Routine Anchoring Operation**

There are 2 methods for Anchoring according to depth of the water:

**Method 1** (Preferable for Container Ships / Depths up to 50m )

1. Walk out the anchor to Half a shackle above the sea bottom

2. Hold the cable on the brake and take the windlass out of gear

3. Stop the vessel over ground

4. Drop the anchor

5. Control the speed of cable flow by the brake , while not allowing pile-up

6. Bring anchor cable direction forward and confirmed anchor holds its position.

***Disadvantages:*** If the brake fails, or there is too much speed over the ground, the cable will run out to the bitter end with consequent damage. The brake lining could also be damaged due to this Dynamic load (the Static load on brakes to restrain movement of an anchored vessel is much less).

**Method 2** (Suggested for Tankers / Depths over 50m )

1. Stop the vessel over ground

2. Walk out the anchor under power until the complete length of required cable is paid out, and the anchor holds its position on the seabed.

3. Bring anchor cable direction forward and confirmed anchor holds its position.

***Disadvantages:*** A vessel must be completely stopped to avoid significant damage to Windlass.

**Emergency Anchoring**

Anchors should be ready for letting go on arrival and departure port, when in anchoring depths. At least, any wire lashings are to be removed, and the anchors held on the brake. In critical situations, to arrest the movement of the vessel, after stopping/reversing the main engine, it is preferable to let go both anchors simultaneously instead of one.

**Anchor retrieval**

For weighing in the anchors, to reduce the load on the Windlass, and keep the cable near vertical, as required, short movements to be given on the main engine (and Bow Thruster used, where is applicable). The stay and direction of the cable and the residual shackles are continuously reported to the Bridge. Anchor Wash to be run to clean the chain and the anchor. When the anchor is fully hove, the brake is to be applied, and the Windlass is taken out of gear. The bow stopper is to be put when it is deemed safe to do so.

**Note:**

**If it does not engage properly on the chain, then it is to be lowered across the chain as far as possible and lashed down in this position in such a manner, that if the cable does slip, the bar will fall into place across the chain**