PREPARATION FOR SINGLE CARGO LOADING: PRODUCT TANKER LOADING OPERATION

STUDY MATERIAL

A ship's loading operation is a carefully planned activity where the cargoes are transferred from the shore terminal to the vessel's cargo tanks. When approaching a port to load or discharge cargo, the following important checks should be made by the ship in time to allow any necessary work to be done:

1. On tanks in which cargo is to be transferred, in-tank instrumentation (level gauges, level alarms and thermometers and etc) should be tested for operation and accuracy, and remote system controls tested where appropriate.

2. Hatches, lids and openings to cargo tanks that are not required to be open for a specific reason should be firmly closed.

3. Cargo pipelines and crossover valves should be checked, and all drains closed and secured.

4. All ship's cargo and bunker pipelines not in use should be securely blanked and fully bolted at the manifold.

5. Where loading or discharging is to be via a cargo pump-room, the pump-room ventilation system should be checked to ensure readiness for operation throughout the cargo operations.

6. Cargo area deck lighting should be checked and confirmed as being in full working order, with special attention given to the area of the ship-to-shore cargo connection and hose handling equipment.

Before any cargo transfer starts, the responsible officer should be satisfied that the applicable precautions are being observed. The use of safety checklists, appropriately adapted for the specific ship, is strongly recommended. The following important checks should be made by the ship at this stage:

1. Information should be sought on any forecast of adverse weather conditions which may require operations to be stopped or transfer rates reduced.

2. Certain cargoes require the vapour that is displaced by incoming cargo to be returned to the shore facility. The responsible officer should ensure that the ship and the shore vapour system are compatible and that the system will operate in compliance with local and terminal regulations.

3. The characteristics of the product must be known, usually in the form of a cargo information form or datasheet indicating, among other things, health hazards, specific gravity, temperature, vapour pressure, reactivity with other materials or cargoes, heat sensitivity, risk of exothermic self-

reaction, toxicity and general safe handling practices. It is desirable that initial response to emergencies is clearly shown.

4. If a cargo liable to self-reaction is to be loaded, correct arrangements should be made for conditions and limitations in the inhibitor certificate to be met for the duration of the voyage.

5. Normally tanks to be loaded are pre-inspected for cleanliness by an independent surveyor. This can vary from a superficial visual inspection from the deck to a very detailed inspection inside the cargo tank in which bulkheads are wall-washed and thoroughly checked. The responsible officer should satisfy himself that the tanks to be so inspected are well-ventilated and safe to enter, and are marked as being safe to enter. Tank entry procedures should be complied with. When a tank is entered for inspection the surveyor should be accompanied by the responsible officer or a person delegated by him.

6. Tanks passed for loading should be tightly secured with all cargo openings closed.

7. All sighting ports and ullage plugs should be closed and secured unless expected to be used during the handling of the cargo about to be loaded. If openings are required to be open for venting purposes, each opening should be protected by a flame screen designed for that opening and kept clean.

8. When not in use, sea suction and overboard discharge valves connected to cargo and ballast systems must be securely closed and lashed, and may be sealed by shore authorities. In-line blanks should be inserted where these are provided. When lashing is not practicable, valves should be suitably marked to indicate clearly that they are to remain closed.

9. Before cargo handling is started, all deck scuppers and any open drains onto the jetty must be effectively plugged to prevent spilt cargo from escaping into the water around the tanker or onto the terminal. Accumulations of rainwater should be drained periodically and scupper plugs replaced immediately afterwards. Contaminated water should be transferred to a slop tank or other suitable receptacle.

10. Cargo manifolds should be ready for connection to shore hoses, but with blank flanges removed only on those lines to be used, and only on the connecting side of the ship.

11. Where loading is via a cargo pump-room, the pump-room ventilation system should be working throughout the operation, and all drains and non-essential valves in the pump-room must be closed and secured.

12. Accommodation doors and portholes overlooking the cargo area should be shut. If stern loading is to be undertaken, it may be necessary to provide special advice to the crew.

13. The cargo venting system should be appropriate for cargo operation.

14. Intakes for central air conditioning and mechanical ventilation systems should be checked for correct setting.

15. Means should be provided for the prompt removal of any spillage on deck.

16. Fire fighting equipment should be inspected, and ready for immediate use.

17. Correct personal protective clothing and breathing apparatus, appropriate to the cargo, should be immediately available and should be worn as necessary.

18. Just prior to commencing cargo transfer, the responsible officer should check that the cargo pipeline system is set correctly, that correct valves are open and that pipeline valves not being used (including drop valves) are closed.

When all the valves are lined up and the loading operation starts, the Officer of Watch (OOW) inside the CCR (Cargo Control Room) and the watchmen on deck must do their parts to ensure that the operation stays safe.

The OOW is responsible for loading operations. During initial loading, the rate of flow must be slow as per the agreed rate. This is for line displacement and to avoid shocks in the lines. After an agreed time, he starts to increase the rate to the maximum in agreement with the terminal staff. The OOW conduct periodic radio checks between the CCR and the shore terminal staff. When the OOW switches tanks, he should open first the valves for the next tank before closing the current one. This is to avoid pressure shocks on the line. On his instruction, the deck watchkeeper shall visually check the PV valves. The OOW must follow the loading plan and record the hourly rate and other figures. He must call the Chief Mate and the Master for any diversion to the loading plan or changes in the ship/ shore safety checklist.

The most critical part of any loading operation is the topping-off process. The OOW must request the shore terminal to lower the rate. At the same time, he must inform the deck crew that they are entering this stage.

In the meanwhile, the deck watchkeeper tasks manifold and foot samples. The deck crew must perform safety rounds and check for leakages on the deck, especially in the manifold area. They must, as well, tender the mooring lines and maintain the ship’s position on the manifold.

The deck watchkeeper maintains a proper gangway watch and reports any abnormalities to the OOW. He ensures that visitors switch off their handheld electronic devices, escorts them to the accommodation and makes sure to pass on the guided walkways.

The deck watchkeeper checks the deck and ship's side for any traces of oil, keeps all the doors and portholes in the accommodation closed during the whole loading operation, and is alert for any sound and smell abnormalities. He immediately tells that the flow rate is changing by its sounds, and abnormal or inconsistent flow rates are audible. He checks the discharged ballast if it's free from oil and keeps manual gauging during the topping-off of cargo tanks.

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