

# Lampiran 9

SAFETY MANAGEMENT SYSTEM (Procedure)  
Procedure No. : S-0503TG  
SHIPBOARD CARGO HANDLING PROCEDURE (GAS TANKER)  
Revision: 01

Approved by: : Managing Director  
Prepared & Issued by : Designated Person  
Issue Date : 17<sup>th</sup> July 2014  
Previous Issued Date: : 8<sup>th</sup> July 2013

## 6.0 OPERATIONS AT A MARINE TERMINAL

### 6.1 General

#### 6.1.1 Pre Arrival Checks and Procedures

Prior to arrival at a loading or discharging berth, safety and cargo equipment should be checked including a test of the deck spray system. Where possible and certainly before arrival at a discharge port, the cargo pipelines should be pressure tested, compressors confirmed fully operational and pumps tested. This testing should take place as early as practicable in the voyage to ensure that if faults are detected, there is sufficient time to effect repairs. At some terminals, the Master may have to confirm all systems are operational or report any known defects. The Master shall fully co-operate with reasonable requests for applicable information. Also refer to section 8.6.

#### 6.1.2 Berthing Requirements

Prior to arrival, the Master shall request from the terminal or local agent information, (if not already on board), regarding operational criteria while alongside the berth.

#### 6.1.3 Pre-Operation Checks And Procedures

Prior to any cargo operation the Chief Officer shall ensure that the ship has been fully prepared. A considerable amount of preparation work can be carried out prior to the ship's arrival at the terminal. The delay time at the terminal due to ship related delays is to be kept to a minimum.

### 6.2 Cargo Loading Procedures

#### 6.2.1 Pre-loading

Prior to commencement of loading the following conditions must be in force:

- All fire fighting equipment to be checked and in immediate readiness.
- Gas detection system to be checked and proven fully operational.
- Fire pump running and pressurize on main deck.
- A loading plan drawn up and approved by the Master, and circulated to other heads of department, and cargo operational personnel. The Chief Officer shall inform the Chief Engineer as to the expected cargo plant utilization during the loading, so that the Chief Engineer can ensure sufficient electrical power is available.
- Cargo tanks fully cooled down and pressure less than 60% of vapour relief valve setting.
- The accommodation vent fans to be set to recirculation.
- Void spaces inerted and pressurized.
- Main engines must be fully operational and remain so throughout the duration of loading.
- All unconnected manifolds to be shut, with blanks securely fitted.

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- Remote operated dry powder monitor, if fitted, to be directed towards manifolds in use, and all manually controlled valves open.
- Smoking regulations broadcast to all personnel and designated smoking areas indicated.
- Communications established and tested with Loading Master.
- Prior to arrival at load port, the Master is to ensure that the emergency shut down and water spray systems have been tested and found in working order.
- Should the ship be loading Ammonia, the offshore lifeboat will be lowered to the embarkation deck and made ready for lowering. Prior to arrival at the load port, all crew should be exercised at abandoning the ship under gas atmosphere conditions, including the use of escape breathing apparatus.

### 6.2.2 Liaison With Shore

Prior to any loading operations taking place, the Master must ensure that the following has been discussed and agreed with the shore loading representative:

- Shore personnel have been briefed and cargo loading plan agreed.
- Safety and emergency provisions discussed.
- Quantities and grades to be loaded agreed.
- Quality of grades to be loaded are as per Charterers' loading instructions, and within ship's cargo carrying specifications.
- Cargo tanks shall not be loaded in excess of 98% volume.
- Manifold designation clearly indicated.
- Method of line purging agreed.
- Loading rates specified, and periods of slow loading, and notice required for reducing rates and final completion of cargo finalized.
- Use of vapour return confirmed and established if vapour is to be directed to shore tanks or flare. If vapour is to be flared, determine whether this is to be charged against ship.
- Designated loading manifolds fitted with filters.
- Determine whether early departure procedure is to be used, and if this in accordance with Charterers' / Manager's instructions.
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The Company ship/shore safety checklist S-0503-SSSCL must be properly completed by C/O and terminal representative.

### 6.2.3 Loading Arm Connection / Disconnection

Whilst shore personnel are connecting the loading arms, the Master is to ensure that:

- A competent officer, and at least one AB is in attendance within the manifold area.
- Communications established between the officer in attendance at the manifold, and the Cargo Control Room.
- Cargo tanks shall not be loaded in excess of 98% volume.
- Manifold designation clearly indicated.
- Method of line purging agreed.
- Loading rates specified, and periods of slow loading, and notice required for reducing rates and final completion of cargo finalized.

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### 6.2.4 Operating

Prior to commencement of cargo transfer, the maximum permissible movement of the ship on the berth within the operating envelope of the hard arm or hoses should be clearly established.

Modern hard arms are normally equipped with pre-alarms and emergency alarms indicating the limits of apex and slewing angles. Such alarms may be connected into emergency shutdown systems.

If no alarms are fitted, precautionary measures should be agreed by ship and terminal to give early warning before a critical situation is reached.

For the integrity of cargo hoses and hard arms, it is imperative that mooring lines are kept properly tended whilst the ship is alongside.

### 6.2.5 Sampling and Cargo Measurement

Prior to loading and discharge, samples of cargo tank atmosphere or cargo vapour and liquid should normally be taken.

Following loading, before discharging, and before and after any cargo transfer operation board, the quantity of cargo must be measured and calculated.

Samples of vapour or liquid will normally be drawn by shore cargo surveyor or terminal representative. The shore cargo surveyor may represent only the shipper / receiver of the cargo or may on occasions jointly represent the shipper / receiver and the owner of the ship. When a surveyor boards the ship, it should be established whom he represents.

The Officer is responsible for the surveyor's safety while on deck. The surveyor is required to observe all safety procedures and precautions while on board.

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### 6.2.5.1 Liquid Level Instrumentation – Float Gauges

The float gauge is widely used on all gas carries. It consists of a float attached by a type to an indicating device which can be arranged for local and remote readout. Alternatively guide wires may be fitted. Float gauges have gate valves for isolation so that the float can be serviced in a safe atmosphere.

The float must be lifted from the liquid level when not in use; if left down, liquid sloshing, while at sea, will damage the tape-tensioning device. Float gauges cannot normally register a liquid level of less than ten centimetres from the tank bottom.

### 6.2.5.2 Liquid Level Instrumentation – Slip tubes

The operation of slip tubes constitute a restricted type of gauging device because a small amount of cargo vapour or liquid is released to atmosphere during level measurement, these released gases can have harmful effects on personnel working nearby.

Slip tubes are generally used only in cases of emergency.

It must not be used when toxic cargoes are carried and in the case of flammable cargoes, only if permitted by the terminal and the charter. The use of slip tubes is limited to back-up of the closed devices and to Type 'C' tanks only.

Special precaution must be taken when using the slip tubes, personnel must wear proper protective clothing, and direct the spray away from him.

## 6.3 Loading Cargo

Initially the cargo loading rate will be restricted to ensure complete cool down of the pipeline system, and to allow a thorough inspection of the system for leaks and to ensure the cargo is entering designated tanks only. Should more than one grade be loading concurrently, the commencement of loading of the second grade should be delayed until the above mentioned inspections have been carried out, and the integrity of the cargo segregation proved.

The tank pressures shall be maintained below 85% of the vapour relief valve settings, by utilizing all available reliquefaction units, the vapour return line to ashore (if vapour being returned to the shore tanks), and if necessary reducing loading rates or suspending loading. Whilst alongside the berth the cargo condenser incondensable gases auto vents shall remain closed.

Due regard shall be paid to the ship's stability, and to reduce free surface effect the cargo tank leveling valves shall be kept closed, and the liquid level, port and starboard, will be as far as possible be kept equal.

The Officer of the Watch shall maintain a cargo watch within the cargo control room, however, he should also make frequent visits to the deck and moorings.

The external cargo alarm siren shall be in operation whilst the ship is alongside, and until the bridge is manned and cargo alarm panel is activated.

### 6.3.1 Recording

At hourly intervals, a time log which must contain the following shall be maintained:

- Liquid levels in cargo tanks

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- Volumes in tanks
- Loading rates
- Tank pressure
- Tank temperatures, top, bottom & centre
- Loading temperature measured at manifold
- Ship's trim
- All relevant times that will be required for compiling Owners or Charterers abstracts.
- All requests from ship to shore to vary loading rates, with reasons for such requests
- Opening and closing of shore vapour return line
- Notice given to shore prior to completing loading
- Operation of reliquefaction plant
- Control and emergency shut down pneumatic or hydraulic pressures.

