

# SHIP TO SHIP TRANSFER

## Port of Karlshamn



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# 1 INTRODUCTION

This Ship to Ship Transfer (STS) Operations regulation of Port of Karlshamn is aimed at providing advice for Masters, Safety & Transfer Marine Superintendents (STMS) and others, such as STS service providers and transfer organisers, who may be involved in the planning and execution of STS operations in the harbour area of Port of Karlshamn.

Particular attention is given to the effective planning of operations and aspects that include risk assessment, ship compatibility, SIMOPS (Simultaneous Operations), the effective cargo operation, quality assurance and general port safety.

The process flow chart indicates how the STS transfer operation should be carried out, see appendix 1.

Masters of vessels and Safety & Transfer Marine Superintendents are to be guided by the latest version of STS Transfer Guide published by CDI/ICS/OCIMF/SIGTTO, and ISGOTT Edition 6. References to certain parts in above mentioned publications will be found in this document.

## 1.1 Control of operation

All STS transfer operation must be conducted co-ordination and advisory control of one individual who will either be one of the masters concerned or the Safety & Transfer Marine Superintendent (STMS).

A STMS should be present on board the throughout the operation, supervise the STS transfer operation in close cooperation with the terminal representative, vessels and the Port Authority. In order to execute the supervision local language skill is preferable.

It is not the intention of these operation regulations that the STMS in any way relieves the ship's Master or the terminal representative (Loading master) of any of his authority, duties or responsibility.

Prior to the commencement of an STS Transfer operation, the masters of each vessel, the STMS and the terminal Loading master, should discuss each key process of the operation. The purpose of this discussion is to ensure that the person in charge of each party involved clearly understand how the operation will be conducted and agree the content of the STS transfer plan.

Responsibility lies with each person in charge, of each party involved in the operation, to communicate the content of the STS transfer plan as well as safety instructions within its own organization.

## 1.2 Role of Safety & Transfer Marine Superintendent

The STMS should ensure, through the provision of professional advice and guidance to masters and terminal loading master, the co-ordination and safe completion of the STS operation.

The STMS should:

- Review the location-specific risk assessment.
- Review the STS Transfer plan and associated risk assessments.
- Verify that agreed STS operating procedures are followed and that the operation is conducted in compliance with all applicable regulatory requirements such as general port regulation, bye-laws for the Port of Karlshamn and Swedish regulations related to a vessel cargo handling operation in port.
- Verify that the terminal operator has granted the current ships are suitable for a STS transfer operation alongside the jetty of the terminal.
- Confirm that all required reports and notifications are made to the port authority.
- Confirm that all relevant checklists are completed.
- Confirm that a mooring plan are completed, agreed on and submitted to the Port Authority and if necessary, make sure a mooring plan simulation is executed prior the operation.
- Oversee the correct placement of primary and secondary fenders.
- Sights and reviews mooring equipment.
- Conduct a pre-operations discussion with the responsible persons of involved vessels and terminal including support vessel, mooring men, pilot and tugs, as appropriate.
- Confirm that personnel, terminal personnel and crew involved in each part of the operation are properly briefed and understand their responsibilities.
- Discuss current and forecasted environmental conditions and the need for their continuous monitoring throughout the operation, as well as keep the port authority posted.
- Review and verify that any site and terminal-specific risk mitigations are in place.
- Supervise vessel approach and manoeuvring alongside.
- Oversee the safe connection of transfer hoses/arms and any associated emergency release systems (ERS).
- Verify that any emergency shutdown system (ESD) is properly connected and tested.
- Ensure that the contingency plan is activated in the event of an emergency.
- Supervise the unmooring and the separation of vessels.
- Oversee the STS transfer throughout the whole operation.

## 2 CONDITIONS AND REQUIREMENTS

### 2.1 Ship compatibility

The terminal shall ensure that the ships to be used in combination with the terminal facility are compatible in design and equipment, to execute an STS transfer operation.

A compatibility assessment should be undertaken to confirm the suitability of the vessels for the planned STS transfer operation.

The information relating to ship particulars and terminal facility should be passed to all parties involved as well as the Port Authority at the earliest opportunity. For details see Ship to Ship Transfer Guide chapter 2.1.

The vessel berthing another vessel alongside the terminal jetty must be equipped with bow thruster and the maximum length over all (LOA) is 150 meters. Exception may be decided by the Port Authority.

### 2.2 Notifications to and approval from Port Authority

The Port Authority requires arrival notifications, according to the port regulations, including an STS Transfer note. The STS transfer organizer must get a Port Authority approval prior the commencement of the STS transfer operation.

### 2.3 Transfer area

STS transfer operation will take place at Oxhaga Jetty in Port of Karlshamn.

When a vessel berthing another vessel alongside the terminal jetty the Kølön jetty should be empty.

### 2.4 Environmental conditions

Information that will determine operational management should include, but limited to:

- Visibility.
- Wind speed and direction.
- Wave height.
- Weather forecast.
- Cold weather and ice condition.

The STS transfer operation shall be stopped when the sustained wind speed within the harbour exceeds 20 m/s.

Berthing a vessel alongside another vessel alongside the terminal jetty, or unberthing, is prohibited when the sustained wind speed within the harbour exceeds 12 m/s. Exception may be decided by the Port Authority, in collaboration with the pilot area manager of Karlshamn.

When visibility reduces to less than 1 nautical mile, berthing a vessel alongside another vessel alongside the terminal jetty should not be undertaken.

Movement of vessels in double banking position are strictly prohibited at any time.

## 2.5 Tugboat assistance

The tugboat requirements of Port of Karlshamn must be followed. Additional requirements may be required due to the vessels operating and manoeuvring equipment as well as current conditions.

# 3 SAFETY

For all Ship to Ship Transfer operations each, Master remains at all times responsible for the safety of his own ship, Loadingmaster of the terminal, and should not permit safety to be compromised by the actions of others. Each party involved should ensure that the Port regulations are followed and in addition that international safety standards are maintained. In this regard, procedures and practises contained in relevant accepted industry guidance should be adhered to including, as appropriate:

- ISGOTT, International Safety Guidelines for Oil Tankers and Terminals, edition No. 6.
- Ship to Ship Transfer Guide
- Tanker Safety Guide, Chemicals and Gas
- LGHP, Liquefied Gas Handling Principles
- MEG 4, Mooring Equipment Guidelines

## 3.1 Risk assessment

Risk assessment should be undertaken each planned STS Transfer operation in Port of Karlshamn, The risk assessment should be documented and consider impact and likelihood relating to identified hazards. For details see Ship to Ship Transfer Guide chapter 3.2.

## 3.2 PPE AND HAZARDOUS PROPERTIES OF THE PRODUCT

The appropriate personal protective equipment (PPE) for the products being handles should be worn by crew members and all other personnel involved.

Safety Data Sheet of the products must be available for all parties.

## 3.3 Checklists

Checklists are an important risk management tool aimed at ensuring that operations are conducted in a safe manner.

The checklist 6 and 6a in the publication Ship to Ship transfer shall be used as well as the Ship Shore Safety Check list published in ISGOTT, edition no. 6.

## 3.4 Safety during cargo transfer

The basic safety requirements for a transfer operation is similar to those for a normal port cargo operation. For details see Ship to Ship Transfer Guide chapter 3.10 and ISGOTT.

## 3.5 SIMOPS

In the event that one of the vessels involved in an STS transfer operation is carrying out simultaneous operations, SIMOPS, the other vessel as well as the Port Authority shall be informed and actions to be taken in the event of an emergency.

## 4 COMMUNICATION

Maintaining good communications between the ships involved is essential for successful ship to ship (STS) transfer operations. Methods of communication, including back-up systems and emergency communication procedures, should be clearly defined and tested before operations commence.

### 4.1 Language

A common language for communication should be agreed before operations commence to ensure that all vessels can adequately communicate to maintain a safe standard of operation throughout. Reference should be made to Standard Marine Communication Phrases as well as Marine terminal phrases.

### 4.2 Pre arrival information

The terminal representative should provide pre-arrival information to nominated ships as well as advance STS instructions to the ships concerned. For details see Ship to Ship Transfer Guide chapter 4.3.

### 4.3 Communication procedures

As the ships come into the port area, contact should be established on the appropriate very high frequency channel (VHF) at the earliest opportunity, thereafter switching to a mutually agreed working channel. Approach, mooring and unmooring should not be attempted until proper effective communication has been confirmed between the two ships and the terminal. Prior to commencing the approach, both vessels should confirm that all pre-arrival and pre-berthing checklists have been satisfactorily completed. Ship's officers responsible for mooring stations should be provided with portable radios.

During Approach, mooring and unmooring, the VHF working channel is 8.

During cargo operations, essential personnel should have a reliable, common means of communication at all times, including an agreed back-up system. It is recommended that spare radios and batteries are available.

## 5 OPERATIONAL PREPARATIONS

Prior to commencement of an STS operation in Port of Karlshamn an STS Transfer plan shall be developed to ensure that all parties involved, including the STS service provider, are in alignment with regard to how the operation is to be conducted.

### 5.1 STS transfer plan

In all cases the person in overall advisory control, Safety & Transfer Marine Superintendent or terminal transfer organiser shall establish agreement and consensus between all parties.

The STS transfer plan should include a compilation of information from various sources. For details see Ship to Ship Transfer Guide chapter 5.2 and 5.3.

## 6 MOORING

Manoeuvring, mooring and unmooring operations should take into account any local regulations and the output from risk assessments.

Permission of the harbour authorities and the terminal should be obtained prior to commencing manoeuvres to berth alongside another vessel. The Safety & Transfer Marine Superintendent should be aware of the estimated time of arrival (ETA) of the vessels and should be notified when manoeuvres are about to commence. No manoeuvring when other movements are conducted in the port basin.

The manoeuvring vessel should advise the Master of the moored ship of the intended approach and the approach should not be commenced until the procedure has been jointly agreed. Within Port of Karlshamn it is a requirement to take a pilot on board and use of tugs.

### 6.1 One ship alongside a terminal

Prior a double banking at Oxhaga terminal, it is recommended that a formal engineering study and risk assessment is undertaken and a formal procedure and safety plan is produced prior to conducting an STS Transfer operation.

Before double banking operation at Oxhaga terminal is agreed, consideration and agreement should be reached by all parties concerned on issues that may include the following:

- Safe arrival and departure procedures.
- Integrity of the berth, including fender panels and mooring fittings, with regard to the potential loads involved.
- Personnel access, including emergency escape provisions for personnel on all involved ships.
- Management of operational safety.
- Roles and responsibilities of involved parties.
- Contingency planning, fire-fighting and emergency unberthing.

The Master of the ship moored to the terminal should be aware of the total displacement of his ship and vessels berthing alongside. The mooring arrangements should be adequate for the anticipated loads.

Consideration should be given to the availability and need for line handling support by external mooring men. The ship alongside the terminal may provide crew to receive and secure the line but this should not detract from the safety of any ongoing cargo operations.

### 6.2 Mooring plan

The mooring plan adopted for a particular STS transfer operation will depend upon the size of each ship and the difference between their sizes, the expected difference in freeboards and displacement, the terminal facility, weather conditions and the efficiency of mooring line leads available.

The Oxhaga terminal should have a standard mooring plan, suitable for the particular jetty.

It is important to ensure moorings allow for ship movement and freeboard changes to avoid over-stressing the lines throughout the operation. These should not be so long that they allow unacceptable movement between the ships. Mooring lines leading in the same direction should be of similar size and material.

The maximum anticipated freeboard difference should be taken into account when planning the mooring layout to ensure that the vertical angle of each mooring line stays as small as practicable throughout the operation.

Mooring analysis may be conducted, for details see Ship to Ship Transfer Guide chapter 6.6.1.1.

### 6.3 Double banking operation

The mooring configuration should be discussed and agreed in advance between the mother ship and vessels expected alongside so that crews have adequate notice to prepare the moorings and to ensure that there is no confusion as to when the mooring ropes will be sent out, and from which location.

STS transfer operations will often involve mooring alongside vessels with a higher freeboard and it is recommended that all lines are led through closed fairleads to avoid the possibility of lines jumping out of the lead.

All mooring lines should be passed through fairleads and be secured to bitts, bollards or cleats with an adequate safe working load (SWL).

Bow and stern thrusters, when fitted, should be used to full advantage. Consideration should be given to the effects that the use of the thrusters may have on the mother ship and any other vessels alongside.

There is a risk of steel to steel contact during manoeuvres associated with vessel separation and so the operation requires careful planning and execution.

### 6.4 Mooring operation

Mooring operations should be managed to ensure prompt and efficient mooring line handling. Rope messengers should be made ready between fairleads and deck winches. Moorings should be arranged and rigged to allow safe, effective line tending when the ships are secured together.

Suitable rope messengers should be made ready on both ships and, in addition, rope stoppers should be rigged in way of relevant mooring bitts. Where possible, heaving lines and rope messengers should be made of buoyant materials. A minimum of four messengers should be provided and ready for immediate use.

Lines should only be led through closed fairleads suitable for STS operations.

Mooring lines should be deployed in accordance with the mooring plan. When prevailing weather conditions or weather forecasts require it, additional lines should be deployed. It is recommended that no more than two mooring lines are placed through each chock and secured on a set of bitts.

The order of passing mooring lines during mooring, and of releasing lines during unmooring, should be agreed. When quick release mooring arrangements are used, their role and use should be discussed to ensure proper understanding.

At any time, spare lines should be readily available to supplement moorings if necessary or in the event of a line failure.

During the transfer operation, freeboard differences should be kept to a minimum.

Nylon tails of 11 metres in length are recommended to improve the elasticity of the mooring arrangement.

## 7 PROCEDURE ALONGSIDE

### 7.1 Pre-transfer procedure

When the two ships are securely moored at the terminal, and before cargo transfer commences, good communications should be established between the personnel responsible for cargo operations on each ship, the terminal and the pre-transfer checks should be satisfactorily completed.

In addition, attention should be given to the joint completion of the STS pre-transfer safety checklist as well as Ship Shore Safety Checklist, ISGOTT edition 6.

### 7.2 Responsibility for cargo operations

Cargo transfer operations should be jointly agreed and take into account any limitations imposed by involved vessels, the terminal and the transfer equipment.

The person in charge of the cargo operations for each ship and the terminal should be positively identified and this information exchanged with the ships and terminal.

The Safety & Transfer Marine Superintendent should be present in board throughout the operation and responsible to ensure the transfer operation is conducted according to the requirements of the Port Authority.

### 7.3 Planning for cargo operations

The cargo transfer operation should be planned and agreed in writing between the terminal and the two ships. For details see Ship to Ship Transfer Guide chapter 7.3 – 7.5.

### 7.4 Bunkering and storing

It is not permitted that bunkering takes place at the same time as STS cargo operations. A separate risk assessment should be produced if concurrent bunkering is required.

Bunkering and storing activities should only be undertaken after and before any cargo transfer if there are sufficient personnel available.

## 8 Unmooring

Prior to unmooring the checklists should be completed by each party involved.

The bridge teams, officers on mooring stations on both vessels, pilot tugboat need to understand the sequence in which lines will be released, and the method of releasing.

There is a risk of steel to steel contact during manoeuvres associated with vessel separation and so the operation requires careful planning and execution.

### 8.1 Unmooring from double banking position

The harbour authorities and the terminal should be notified prior to commencing unmooring operations. Unmooring operations should be conducted in accordance with procedures agreed by both Masters and particular attention should be given to prevailing weather conditions.

If unmooring takes place during hours of darkness, consideration should be given to reducing background lighting so as to be fully aware of other vessels and the proximity of navigational hazards, while ensuring that all working areas are adequately and safely lit.

The services of a pilot and tug support is required by local regulation and Port Authority.

Bow and stern thrusters, when fitted, should be used to full advantage. Consideration should be given to the effects that the use of the thrusters may have on the mother ship and any other vessels alongside.

The mother ship may provide crew to release the lines. However, this should not detract from the safety of any ongoing cargo operations. Consideration should be given to the availability and need for line handling support by external mooring men, to board with the pilot.

Should the spring lines be used for springing off, consideration should be given to the added force likely to be placed on the mother ship's moorings. Secondary fenders should be ready for positioning to prevent contact between the hulls.

## 9 EQUIPMENT

### 9.1 Fenders

It is advisable to determine the forces that will be generated between berthing ships to provide information relevant to the selection of fenders process.

The fenders used should be suitable in terms of energy absorption and result in sufficient stand-off distance such that the compressed diameter of the fenders is always sufficient to ensure that there can be no contact between ships' structures through rolling during the period alongside. This is of particular importance when transfers are being made between vessels that have relatively high freeboards, such as gas carriers.

Fenders should be subject to regular inspection for damage or deterioration. The pressure within pneumatic fenders should be regularly checked and the attached safety valves should be maintained in accordance with manufacturer's recommendations. A record of inspection and testing should be available.

Minimum fender requirements by Port of Karlshamn:

- Three primary fenders.
- Length 4 meters.
- Diameter of 2,5 meters.

Primary fenders should be in place and secured prior to manoeuvring. Secondary fenders to protect the bow, stern and accommodation should be available for the crew to position as required to prevent contact of the vessels.

For details see Ship to Ship Transfer Guide chapter 9.1.

### 9.2 Cargo transfer hoses

Hoses used in STS operations should be specially designed and constructed for the product being handled and the purpose for which they are being used. They should be checked at time of issue as being suitable for the intended use.

Care should be taken when handling and supporting hose strings to avoid any kinking or over-stressing that may cause damage or reduce service life.

To prevent damage when handling or supporting hoses, due account should be taken of the hose's minimum bending radius (MBR).

Testing of hoses should be in accordance with the requirements of the standard to which the hose was manufactured and manufacturer's recommendations. Periodic tests, undertaken at intervals not exceeding 12 months, shall include hydrostatic pressure tests, including an assessment of temporary and permanent elongation, and electrical continuity tests.

Regarding other important hose issues such as hose length, handling, pressure and flow, connection and marking etc. see Ship to Ship Transfer Guide chapter 9.2.

### 9.3 Personnel transfers in port

For STS transfer operations conducted alongside Oxhaga jetty, there will be needs to establish a safe means of access between involved vessels personnel on the outer vessel may need to traverse the vessel alongside to access the terminal. In all cases, a formal risk assessment should be utilised to identify the safest means of personnel transfer.

## 10 EMERGENCIES

### 10.1 Contingency plan and emergency response procedure

Ship to ship transfer operations may be carried out safely through adherence to proper procedures and the use of suitable equipment. However, the risk of accident and the potential scale of the consequences require that organisers, terminal and vessel operators develop contingency plans for dealing with emergencies.

For STS transfer operations, a risk assessment should be carried out. The risk assessments should be used to identify and document any potential emergency scenarios that are not already covered by the ships' and terminal's emergency response plans.

Risk mitigation and contingency plans should be drawn up to cover all possible emergencies and provide for a comprehensive response.

Consideration should be given to:

- Procedures for raising the alarm.
- Cessation of operations during emergencies.
- Notification procedures.
- Emergency stations and preparations to initiate emergency procedures.
- Deployment of mooring gangs to stations.
- Emergency disconnection of cargo transfer equipment.
- Preparation of engines for manoeuvring.
- Unmooring.

The STS Transfer plan, agreed by all involved vessels, should include the contingency plans for the operation. The information should include an emergency contact list that should be posted on board all vessels and the terminal.

In an emergency, Masters and terminal representative should assess the situation and act accordingly and in consultation with the Safety & Transfer Marine Superintendent.

Emergency duties should be assigned to personnel. An appropriate drill should be held.

Information on emergency systems and procedures associated with liquefied petroleum gas (LPG) and liquefied natural gas (LNG) transfers.

For details see Ship to Ship Transfer Guide chapter 10.

### 10.2 Emergency signal

An emergency on either ship should be indicated immediately by sounding the ship's internal alarm signal and by sounding five or more short blasts on the ship's whistle to warn the other ship and the terminal.

An emergency at the terminal should be indicated immediately by sounding the terminal's internal alarm signal.

The emergency signals should be communicated to all parties involved.

All personnel should then proceed as indicated by the contingency plan. It is emphasised that both ships and the terminal should be in an advanced state of readiness at all times in order to be in a position to deal with emergencies.



## 11.2 Checklists reference

Checklists are available as clickable PDF files as follow:

- STS Pre-Transfer Checklist, Karlshamn
- STS During transfer Checklist, Karlshamn
- ISGOTT Ship Shore Safety Checklist Pre-arrival part 1-2, Karlshamn
- ISGOTT Ship Shore Safety Checklist part 3-9, Karlshamn

Find out more from the Port Authority of Port of Karlshamn.