Contents

SHIP TO SHIP (STS) OPERATIONS PLAN

1. INTRODUCTION

The main purpose of the STS Operations Plan is to provide guidance to the Masters and officers directly involved in ship-to-ship transfer operations with respect to the steps, procedures, safety and good operating practices for the planning and conduct of a safe transfer operation without risk to the personnel, environment and property.

The Master shall ensure that the STS procedures are followed by all personnel involved in the operation.

2. STS Transfer Operation Process

Ship-to-ship transfer operations are operations where cargo is transferred between seagoing ships moored alongside each other at sea. Such operations can take place when one ship is at anchor, or both are underway at very low speed. In general, the operation includes the approach manoeuvre, berthing, mooring, transfer of cargo, unmooring, unberthing and departure manoeuvre.

In general, the STS transfer operation process can be divided into six (6) phases as outlined in the following table:

Phase	Description
I. Pre-arrival Planning	STS management, ship information exchange, ship compatibility, cargo handling compatibility, transfer area, transfer area & coastal State requirements, notification, quality verification of STS provider, STS equipment, safety management and contingency planning
II. Arrival Preparation	Joint plan of operation, control of operation, establish communications, review and agree operational procedures, operational safety issues and emergencies, navigational signals, assign watch keeping responsibilities
III Approach and Mooring	Manoeuvring alongside, manoeuvre control, manoeuvring with one ship at anchor, mooring arrangement, preparation and considerations, weather considerations. For the manoeuvre operations a contingency plan should be in place to deal with any emergency
IV. Cargo Transfer	Pre-transfer procedure, responsibility of cargo operations, cargo transfer, and operations after completion of cargo transfer
V. Unmooring and Unberthing	Review unmooring plan, unmooring procedures while one ship is at anchor, unmooring after underway transfer, and unberthing procedure
VI. Reporting	Reporting to the coastal State authority and company, record keeping of STS operations

2.1. Risk Assessment

Risk assessments are an important part of the pre-STS planning process and as minimum, should
consider the following for Risk Assessment on STS operation:

- Ship compatibility, including mooring arrangements.
- Suitability of the location for the particular operation
- Properties of the cargo to be transferred
- Training, experience and qualifications of personnel
- Suitable preparation of ships for the proposed operations and sufficient control during operations.
- Adequacy of navigational process.
- Adequate number of personnel assigned to control and perform the transfer operation
- Adequacy of communications between ships and/or responsible persons
- Implications of differences in freeboard or the listing of ships when transferring cargo
- Equipment including fenders
- Anticipate environmental conditions
- Emergency planning and procedures

2.2. Location of the STS operation

A risk assessment on location should be undertaken when considering the suitability of an STS transfer location which should consider Safety, Environmental concerns, operational efficiency, legal, regulatory and local requirements.

The STS transfer area should be specially selected for safe operation, in coordination with the appropriate coastal State authorities. During the pre-arrival planning phase, the STS Organizer should consider the following in selecting the area for STS transfer:

- Notify and obtain appropriate approval from the Coastal authority as applicable
- The traffic density in the selected transfer area
- The need for sufficient sea-room and water depth required for manoeuvring during approach, mooring and unmooring
- Availability of safe anchorage with good holding ground
- Forecast weather conditions and availability of weather reports in the selected transfer area
- Emergency Response Preparedness, distance from shore logistic support and availability of emergency response capability
- Proximity to environmentally sensitive areas

- Locations of underwater pipelines, cables, artificial reefs or historic sites
- Potential security threats
- The shelter provided from the weather, particularly from the sea and swell
- Tidal and current conditions
- Safe distance from offshore installations
- Availability of a designated lightering area
- The need for sufficient sea-room to be available to allow for safe passing distance from traffic navigating the area, anchorages and fixed navigational hazards when cargo transfer operations are conducted whilst both ships are underway
- Iced conditions

2.3. Weather

It is impractical to lay down the limiting weather conditions under which an STS operation can be carried out because much will depend on the effect of the sea and swell on the fenders and the movements induced in the participating vessels, taking account of their relative displacement and freeboard.

STS operations in locations subject to long period waves should be treated with caution. When an STS transfer is to take place at anchor, the combined effect of current and weather conditions on the movements of the moored vessels and the ultimate stress on the anchor cable should be carefully considered.

Available weather forecasts for the transfer area are to be obtained before operations begin.

Throughout the berthing operation, visibility conditions are required to be safe for manoeuvring, considering navigation and collision avoidance requirements.

The following are the Company's guidelines on weather condition limits on STS operations, the STS operation should be suspended under these conditions:

- 2 -3 meters swell height or
- 30 knot winds or more or
- Less than 1 mile visibility

2.4. Tension in Mooring Lines

Excessive or uneven tension in mooring lines should be avoided because it can significantly reduce the weather threshold at which the forces in mooring lines will exceed their SWL. Attention should be given to this throughout the STS operation to ensure changes to the relative freeboards do not create excessive strain in the moorings.

3. Duties and responsibilities of the STS Superintendent

The role of the STS Superintendent is not to relieve the Master of their duties and responsibilities. The STS Superintendent should ensure, through the provision of professional advice and guidance to the Master, the co-ordination and safe completion of the STS operation.

The STS Organizer appoints the STS Superintendent, who will have overall advisory control of the STS Operation. The role of the STS Superintendent can be delegated to any of the Masters involved in the transfer. The responsibilities of the STS Superintendent include the following:

- Advising both vessel Masters on safe mooring.
- Reviewing the mooring apparatus and configuration of both vessels.
- Assessing vessel compatibility.
- Reviewing the STS-specific Risk Assessment.
- Ensuring the correct positioning of fenders

The STS Superintendent should have at a minimum, prior experience of the following:

- Mooring operations with similar types of vessels.
- Similar loading and discharging operations.
- Assessing fendering requirements.
- Location assessment.
- Drafting a Risk Assessment, and vessel compatibility analysis.
- Handling emergency situations, including contingencies.

The qualifications of the STS Superintendent should be assessed in advance by both Masters. In this regard, it is recommended that STS Superintendents maintain detailed records of past STS Operations.

The STS Superintendent should advise the Master when to suspend or terminate the STS operation. The STS Superintendent and the Master(s) of the vessels should have the authority to request suspension or termination of the STS operation should they have any concerns related to the safety and/or operational integrity of the operations or risk of accident.

3.1. Vessel Master and Crewmembers involved in STS Operations

Throughout the entire period of STS operations, the ship's Master and crew members always remain fully responsible for the safe operation of their own vessel, including (but not limited to) navigation, deck and mooring watches, cargo operation and emergency response.

3.2. Safe Watch keeping

STS transfer operations place additional demands on a ship's crew. Each Master should take into consideration the estimated duration of operations so that safe and fatigue-free watch keeping can be maintained throughout. When planning STS operations, the STS Organizer and the Masters involved should bear in mind that statutory minimum manning requirements might not address simultaneous operations, e.g. cargo operations and navigation or anchor watch.

During a transfer operation, the following simultaneous safety watch keeping actions are required:

3.2.1. Deck watch keeping

Continuous roving deck watch keeping alongside for verifying and/or identifying:

- fender arrangements to maintain safe standing-off distances
- mooring lines for chaffing
- any evidence of cargo spillage into water

.

3.2.2. Navigation/Anchor watch keeping

- A qualified deck officer shall maintain a navigation/anchor watch on the bridge.
- A full navigational watch is to be kept on each ship during an underway transfer

4. Ship Compatibility in Design and Equipment

When planning the STS operations, the STS Organizer should verify that the ships involved are compatible in design and equipment.

1. Dimension compatibility – Overall dimensions, freeboard, position of lifting appliances, loaders, mooring points and fenders
2. Mooring compatibility – Size and quality of mooring lines, winches, closed fairleads and other mooring related equipment.
3. Cargo handling compatibility –Lifting appliances, cargo holds, the minimum/maximum expected height of hatch coamings, the freeboard differences and other cargo handling related equipment and conditions.

It is recommended that ships with bridge wings that extend beyond the ship's maximum breadth are not used for STS transfer operations. Consideration should be given to any precautions and mitigating measures necessary regarding bridge wings that do not extend to ship side.

4.1. STS Transfer Operations – Similar Length

Vessel of similar length the LOA differential is of less than 10 pct. The risk assessment should include mitigation measures as detailed below:

- Identification of optimum mooring arrangement. Due to the headlines being in breast line configuration, it may be necessary to deploy additional line in a fore and aft direction to compensate
- Identification of optimum securing arrangement for fenders to ensure that mooring arrangement are not compromised due to a lack of usable chock/fairleads
- Adjustment of the fore and aft positions of the ships so that the bridge wings are offset. In doing so, it should be ensured that all the primary fenders will rest on the parallel body of both
  the vessels throughout the operation
- For transfer operations conducted at anchor with one of the vessel's offset, consideration should be given to the need for extra headlines to counter the additional forces on the vessels with the exposed bow.

- Provision of larger diameter fenders to increase separation distances
- Reduction of limiting environmental parameters, once the lead and effectiveness of the mooring line configuration have been considered

5. Joint Plan of Operation (JPO)

The STS Superintendent or any of the participating Masters should ensure that the Joint Plan has been thoroughly communicated and agreed, over the toolbox meeting prior to the STS Operation. The JPO should also include as a minimum, the following information:

- Location assessment
- Risk Assessment
- Weather forecast
- A Mooring plan
- Fendering Plan
- Certificates of STS Equipment
- Last test of cargo cranes
- Details of involved tugs
- Sequence of cargo discharging
- Contingency Plan

6. Contingency Planning

The risk of accident and the potential scale of consequences require that the company and/or STS Organizer develop contingency plans for dealing with emergencies. These contingency plans should be developed based on the output of the risk assessment.

Using the risk mitigation measures for each operational hazard identified, contingency plans should be developed covering all possible identified emergencies and providing a comprehensive response. The contingency plans should be relevant to the location of the operation and the vessels of concern and consider the resources available both at the transfer area and with regard to nearby back-up resources.

Emergency scenarios should cover the full scope of the operation. Examples of such scenarios are as follows:

- Vessel collision during mooring/unmooring manoeuvres,
- Cargo pollution at sea,
- Fire/explosion,
- Multiple mooring line failure,
- Emergency unmooring,
- Emergency on own vessel or other vessel involved in operation,

7. Training and Familiarization of Crew

The crew may need to take on additional or different tasks, roles, and responsibilities compared to those required during routine port and cargo operations. It’s crucial that any additional roles and responsibilities are identified, and that appropriate training is provided before the operation.

Training may include items such as:

- Roles and responsibilities of involved parties.
- Bridge watchkeeping procedures.
- Deck watchkeeping procedures.
- Machinery operation.
- Mooring and unmooring, which includes procedures for passing lines between vessels, properties of mooring lines, fender management, measures to minimise chafing of lines, and awareness of snap-back zones.
- Operation of cranes /conveyors.
- Personnel transfer.
- Transfer equipment.
- Emergency operations, such as aborting mooring operations, collision, cargo spill, and emergency departure.

The level of knowledge and training required will depend on a person's role and past experience.

.

8. Post-operation feedback and assessment

Master is encouraged to provide the post-operation feedback and assessment on the difficulties experienced. This may include, but is not limited to, the following:

- Environmental Conditions (e.g., weather, sea state),
- Vessel Handling and Manoeuvring,
- Performance/ suitability of the STS Location,
- Performance of participating vessel,
- Performance of the STS Organizer/ STS Superintendent,
- Communication Effectiveness,
- Equipment Performance and Reliability,
- Safety Procedures and Emergency Response,
- Crew Competency and Training,
- Compliance with Regulations and Guidelines,
- Incident Reporting and Lessons Learned.

9. STS operational and safety checklists

- Checklist 1 – Pre-fixture Information (for each ship)
- Checklist 2 – Before Operations Commence
- Checklist 3 – Before Run-in and Mooring
- Checklist 4 – Before Cargo Transfer
- Checklist 5 – Before Unmooring

10. STS Equipment

10.1. Floating Pneumatic Rubber Fenders:

These fenders are arranged by the STS service provider company and must be capable of withstanding anticipated berthing energies and evenly distributing the forces over the appropriate areas of both bulk carriers' hulls. The fenders, and their pennants should be maintained in good condition. Objective evidence of a visual inspection prior to the STS operation should be available on board.

10.2. Use of gravity-based self-unloading and/or hybrid self-unloading system:

The components of the gravity-based self-unloading system or hybrid self-unloading system (including conveyor belts and cranes) used for the STS transfer of bulk cargos should be maintained and kept in good working condition, as per manufacturer or industry recommendations.

10.3. Mooring Equipment:

It is important that ships involved in STS operations are equipped with good quality mooring lines, efficient winches, well-placed and sufficiently strong fairleads, bollards, and other associated mooring equipment. All mooring equipment should be in good order and free of defects.

10.4. Personnel transfer-at Sea operation:

Personnel transfer using ship's crane is not permitted. If a cargo or provision crane is used, the crane must be upgraded prior to transferring personnel and certified for personnel transfer by the classification society.

Potential means of transfer could include the accommodation ladder, a workboat, or a personnel transfer basket.

10.5. Ancillary Equipment:

Ancillary equipment refers to the additional apparatus used in conjunction with the main equipment to form a complete system. For the STS operation, the ancillary equipment, which includes wires, messengers, stoppers, strops, and shackles, should be inspected for their condition before initiating the STS operation.