

MARINE DEPARTMENT NOTICE NO. 101 OF 2016

Implementation of the **Merchant Shipping (Prevention of Oil Pollution) (Amendment) Regulation 2016**

This Notice aims to inform the shipping industry that the amendments made to the Merchant Shipping (Prevention of Oil Pollution) Regulations (Cap. 413A), giving effect to the latest requirements of the MARPOL Annex I for the prevention of oil pollution, will come into operation on 1 October 2016. The details of the amendment regulation can be found in the following website:

<http://www.gld.gov.hk/egazette/pdf/20162016/es22016201647.pdf>.

2. According to the amendment regulation, oil residue (sludge) tank for machinery space shall be provided with a designated pump for disposal of the oil residue (sludge) and the tank shall have no discharge connections to the bilge system, oily bilge water holding tank, tank top or oily water separators.

3. According to the amendment regulation, oil tankers of 150 gross tonnage and above engaged in the transfer of oil cargo at sea must have an approved Ship to Ship (STS) Operation Plan. Annex 1 of this Notice provides guidance to local oil tanker owners and operators for the preparation of an STS Operation Plan. For reference purpose, a sample of STS Operation Plan is attached at Annex 2 of this Notice.

4. All oil tankers are required to fit with a stability instrument comprises hardware and software which is capable of verifying compliance with the intact and damage stability requirements in any operational condition. Annex 3 of this Notice provides the details of the requirement and the waiving conditions for the installation of a stability instrument. Ship owners who would like to apply for waiving of the stability instrument for their ships may submit an application (application form at Annex 4 of this Notice) to the Local Vessels Safety Section.

5. Shipowners, operators and coxswains of local oil tankers are required to observe and comply with the amendment regulation. For enquiries, please contact Local Vessels Safety Section by telephone no. 2852 4444 or e-mail (lvs1@mardep.gov.hk or lvs2@mardep.gov.hk).

Maisie CHENG
Director of Marine

Marine Department
Government of the HKSAR
Date: 28 July 2016

**Guidelines for Local Oil Tanker Owners and Operators
for the Development of a Ship to Ship (STS) Operation Plan**

1. Application of the guidelines

- 1) These guidelines apply to local oil tankers of 150 gross tonnage and above engaged in the transfer of oil cargo between oil tankers at sea.
- 2) These guidelines do not apply to bunkering operations.

2. Requirements of the STS Operation Plan

- 1) The STS Operation Plan is developed to meet the requirement of the Merchant Shipping (Prevention of Oil Pollution) (Amendment) Regulation 2016 in order to prevent oil pollution due to STS operations. The ICS and OCIMF “Ship to Ship Transfer Guide for Petroleum, Chemicals and Liquefied Gases” and IMO’s “Manual on Oil Pollution, Section I, Prevention” will provide guidance for the development of an STS Operation Plan.
- 2) The Plan should include the following:
 - (1) a step-by-step description of the entire STS operations (risk assessment to be conducted prior to STS operations);
 - (2) a description of the mooring and unmooring procedures and arrangements, including diagrams where necessary, and procedures for the oil tankers moorings during the transfer of cargo;
 - (3) a description of the cargo and ballast transfer procedures, including those procedures used while underway or anchored and procedures for connecting and testing integrity of cargo hoses and hose to manifold interface, topping off cargo tanks and disconnecting cargo hoses;
 - (4) the titles, locations and duties of all persons involved in the STS operations;
 - (5) procedures for operating the emergency shut-down and communication systems and for rapid breakaway;
 - (6) a description of the drip trays and procedures for emptying them;
 - (7) procedures for reporting spillages of oil into the water (refer to approved SOPEP);
 - (8) an approved contingency plan (it can be simplified to a Muster List and submitted to Local Vessels Safety Section for approval); and
 - (9) a cargo and ballast plan in compliance with stability requirement (if an oil tanker does not require any change of ballast for the STS operations, it should be clearly declared in the STS Operation Plan, or step by step procedures should be provided in the STS Operation Plan) .

- 3) Owner and coxswain shall be aware of the relevant requirement of the local authority before the STS operations if the oil tanker is to operate outside Hong Kong waters.
- 4) The STS operations procedures and requirements as specified in the Plan are to comply fully with the safety requirements for normal cargo operation, such as prevention of fire and oil spill.
- 5) The person in overall advisory control (POAC) of STS operations should have:
 - (1) Local Coxswain Grade 1 Certificate or equivalent; and
 - (2) Completed training course for “Basic training for Oil and Chemicals Tankers Cargo Operations” or “Oil Carrier Safety (local waters) Training”; and
 - (3) Experience of the following:
 - Experience in oil tanker cargo loading and unloading;
 - At least has 3 times loading and 3 times discharging of oil cargo to other oil tankers on board practical training;
 - Conduct numerous mooring/unmooring operations in similar circumstances and with similar vessels;
 - Thorough knowledge of the geographic transfer area and surrounding areas;
 - Thorough knowledge of cargo characteristic;
 - Sound knowledge including familiarity with the equipment and resources available in the STS operations contingency plan; and
 - Thorough knowledge of the STS Operation Plan.
- 6) An STS Operation Plan (Plan) is to be written in the working language of the ship’s crew. For oil tankers only operate in the River Trade limits, the Plan written in Chinese is acceptable.
- 7) A copy of the Plan is to be available at the following locations on each oil tanker: bridge, cargo transfer control station (if applicable) and engine-room.

3. Approval of the Plan

- 1) If an oil tanker is not classed, the shipowner should submit 3 copies of the STS Operation Plan to Local Vessels Safety Section (LVS) for approval. If an oil tanker is classed, the shipowner should submit the Plan to the classification society for approval.
- 2) Should any amendment to STS operations procedures is made, the Plan should be re-submitted to LVS or classification society for re-approval.
- 3) After the Plan is approved, the Supplement to HKOPP Certificate will be revised to indicate that the ship is provided with an approved Plan.
- 4) The shipowner should develop the Plan according to the particulars of the ship and the management system of the company.

The Government of the Hong Kong Special Administrative Region – Marine Department
香港特別行政區政府 - 海事處

Application for Approval of “Ship to Ship Operation Plan”

申請審批《過運作業方案》

(Merchant Shipping (Prevention of Oil Pollution) (Amendment) Regulation 2016)

(2016 年商船(防止油類污染)(修訂)規例)

To: Local Vessels Safety Section, Marine Department
23/F, Harbour Building, 38 Pier Road, Central, Hong Kong

致：海事處 本地船舶安全組
香港中環統一碼頭道 38 號海港政府大樓 23 樓
(Fax 傳真：2542 4679 E-mail 電郵：sslv@s.mardep.gov.hk)

I hereby apply for approval of “Ship to Ship Operation Plan” under regulation 16A of “Merchant Shipping (Prevention of Oil Pollution) Regulations” for the following local licensed vessel.

本人現為以下本地牌照船隻申請審批按《商船(防止油類污染)規例》第 16A 條要求的《過運作業方案》。

Particulars of Vessel 船隻資料

Name of Vessel 船名	Certificate of Ownership No. 擁有權證明書號碼	Gross Tonnage 總噸	Carriage of Type of Cargo Oil 運載貨油類別

Particulars of Applicant 申請人資料

Name of *Owner / Agent *船東 / 代理人名稱	
Address in Hong Kong 香港地址	
Contact Telephone No. 聯絡電話號碼	
Fax No. 傳真號碼	
E-mail Address 電郵地址	
Signature of *Owner / Agent *船東 / 代理人簽名	
Date 日期	

Note : Please submit the following documents to the Local Vessels Safety Section:

- (a) a completed application form;
- (b) “Ship to Ship Operation Plan” in triplicate; and
- (c) a photocopy of HKOPP Certificate with Supplement to the HKOPP Certificate.

注意：請把以下文件遞交本地船舶安全組：

- (a) 已填妥的申請表；
- (b) 《過運作業方案》一式三份；及
- (c) 香港防止油污證書和香港防止油污證書的增補影印本。

**Delete if inapplicable 刪去不適用者*

Ship to Ship Operation Plan

過運作業方案

Name of ship 船名	
Certificate of Ownership Number 擁有權證明書號碼	
IMO Number 國際海事組織編號	
Call sign 船舶呼號	
Port of registry 船籍港	
Type of ship (Class and category) 船型 (類別及分類)	
Gross tonnage 總噸位	
Deadweight of ship (metric tons) 載重量(公噸)	
Length of ship (LOA) 船長度(總長度)	
Maximum draft 最大吃水	
Date on which keel was laid 安放龍骨日期	
Name of owner/company 船東/船公司名稱	

TABLE OF CONTENT	2
RECORD OF CHANGES.....	6
RESPONSIBLE PERSONS FOR STS OPERATIONS.....	7
1. VESSEL PARTICULARS.....	8
1.1 Ship Data.....	8
2. INTRODUCTION.....	9
2.1 Definition.....	9
2.2 STS Process.....	11
3. PRE-ARRIVAL PLANNING.....	11
3.1 CONDITIONS AND REQUIREMENTS.....	11
3.1.1 Ship Compatibility.....	11
3.1.2 Person in Overall Advisory Control (POAC).....	12
3.1.3 Recording and checklists.....	13
3.1.4 Approval from Authorities.....	13
3.1.5 Transfer Area.....	14
3.1.6 Weather Conditions.....	14
3.2 COMMUNICATIONS.....	15
3.2.1 Language.....	15
3.2.2 STS Instructions.....	15
3.2.3 Navigational Warnings.....	15
3.2.4 Communications during Operations.....	16
3.2.5 Procedures for Communication Failure.....	16
3.3 EQUIPMENT.....	17
3.3.1 Fenders.....	17
3.3.2 Hoses.....	19
3.3.3 Hose Handling.....	20
3.3.4 Pipe reducers.....	20
3.3.5 Mooring Equipment.....	20
3.3.6 Personnel Transfers.....	20
3.3.7 Lighting.....	20
3.3.8 Ancillary Equipment.....	20

3.4 EMERGENCY.....	21
3.4.1 Emergency Signal.....	21
3.4.2 Emergency Situations.....	21
3.4.3 Emergencies during manoeuvring.....	21
3.4.4 Procedures in the event of gas accumulation on deck.....	22
3.4.5 Accidental Cargo Release.....	22
3.4.6 Shipboard oil pollution emergency plan (SOPEP) or Vessel response plan (VRP).....	22
3.4.7 State of Readiness for an Emergency.....	22
3.5 Risk Assessment.....	23
3.6 Contingency Plan.....	24
3.7 SAFETY.....	24
3.7.1 General Safety.....	25
3.7.2 Prevention of Fatigue.....	25
3.7.3 Safe Watch keeping.....	25
4. ARRIVAL.....	25
4.1 OPERATIONAL PROCEDURES BEFORE MANOEUVRING.....	25
4.1.1 Preparation of Ships.....	25
4.1.2 Navigational Signals.....	26
5. BERTHING.....	26
5.1 MANOEUVRING.....	26
5.1.1 Basic Berthing Principles.....	26
5.1.2 Manoeuvring Alongside with Two Ships Under Power.....	26
5.1.3 General advice for controlling the two ships.....	26
5.1.4 Advice for manoeuvring alongside.....	27
5.1.5 Manoeuvring a combined two-ship system to anchor.....	28
5.1.6 Underway Transfer.....	28
5.1.7 Manoeuvres with One Ship at Anchor.....	29
5.2 MOORING.....	30
5.2.1 Mooring Preparations.....	30
5.2.2 Tension in Mooring Lines.....	31

5.2.3 Mooring Line Lead Angles.....	32
5.2.4 Weather Thresholds.....	32
5.2.5 Long Period Waves.....	32
5.2.6 Direction of Wave Encounter.....	32
6. CARGO TRANSFER.....	33
6.1 Pre-Transfer Procedures.....	33
6.1.1 Pre-Transfer Requirements	
6.1.2 Responsibility for Cargo Operations.....	34
6.1.3 Planning for Cargo Transfer.....	34
6.2 Cargo Transfer.....	34
6.2.1 General.....	34
6.2.2 Suspension of Cargo Transfer.....	35
6.3 Vapour Balancing Considerations.....	36
6.3.1 Vapour balancing considerations before commencing cargo transfer:...	36
6.3.2 Vapour balancing considerations during cargo transfer:.....	36
6.4 Safety during Cargo Transfer.....	36
6.4.1 Smoking and naked lights.....	37
6.4.2 Earths on electrical switchboards.....	37
6.4.3 Boilers and diesel engines.....	37
6.4.4 Ship-to-Ship electric currents.....	37
6.4.5 The use of radio and satellite communications equipment.....	38
6.4.6 Radar use.....	38
6.4.7 Gas accumulation.....	39
6.4.8 Electrical storms.....	39
6.4.9 Galley stoves.....	39
6.4.10 Readiness for fire-fighting equipment.....	39
6.4.11 Accommodation openings.....	39
6.4.12 Unauthorized craft.....	40
6.5 Operations after Completion of Cargo Transfer.....	40
7. DEPARTURE.....	40
7.1 UNMOORING.....	40
7.1.1 Unmooring Procedure While One Ship is at Anchor.....	40
7.1.2 Unmooring Procedure After Underway Transfer.....	40
7.1.3 Unmooring Checks.....	41
7.2 Procedure for Unberthing.....	41

7.2.1 Unmooring Using Quick Release Apparatus or Toggle Pins.....	42
8. Procedures for cleaning of save-all	43
9. Report of oil spill	43
10. Approved contingency plan.....	43
11. Cargo and Ballast Plan.....	43
 APPENDIX A.....	 44
A.1 CHECKLISTS.....	44
A.2 LIST OF RESPONSIBILITY AND DUTIES.....	50
APPENDIX B.....	51
B.1 MOORING ARRANGEMENT.....	51
B.2 TANK CAPACITY PLAN.....	52
REFERENCES.....	53

RECORD OF CHANGES

Change number	Revision details/description	Revised Part	Title/Name	Date

Responsible Persons for STS Operations

This document is to be circulated to all ship's staff that will be involved in ship to ship transfer operation.

[illegible]

1. VESSEL PARTICULARS

1.1 Ship Data

Deadweight (tonnes): ...

Length Overall (m): ...

Breadth Extreme (m): ...

Depth Moulded (m): ...

Max. Manifold height above waterline (m): ...

Manifold dimensions: ...

Bow to Centre Manifold: ...

Tank Capacities: (alternatively insert Tank Capacity Plan in Appendix B.2)

<i>Cargo Tanks (100% Capacity)</i>	<i>Cubic Metres (m³)</i>
No. 1 Centre Tank	
No. 2 Centre Tank	
No. 3 Centre Tank	
No. 4 Centre Tank	
No. 5 Centre Tank	
No. 6 Centre Tank	
No. 1 Side Tank (P&S)	
No. 2 Side Tank (P&S)	
No. 3 Side Tank (P&S)	
No. 4 Side Tank (P&S)	
No. 5 Side Tank (P&S)	
No. 6 Side Tank (P&S)	
Slop Tank P	
Slop Tank S	

2. INTRODUCTION

This document is a ship specific Ship to Ship (STS) operations plan for the transfer of petroleum products between two ships moored together. The plan was developed using ICS/OCIMF *Ship to Ship Transfer Guide* [1], IMO *Manual on Oil Pollution* [2] and other publications as referenced.

The purpose of this STS operations plan is to provide guidance to the master and or STS operator on board the ship in conducting the transfer in a safe and efficient manner. The STS operation are divided into five phases; Pre-Arrival Planning, Arrival, Berthing, Cargo Transfer and Departure. During each phase of the operation there are different procedures to follow and check-lists to complete. A risk assessment should be carried out before operations commence and a contingency plan should be put in place to deal with emergencies.

2.1 Definition

Within this plan, the terms below have the following meaning.

AT SEA

The term "at sea" is used throughout this guide. It is intended to indicate offshore waters or partially sheltered waters. It may be, however, that an STS transfer operation at sea is to be conducted within the jurisdiction of a local (port) authority or national government. In such cases reference has to be made to local regulations and it may also be necessary to obtain local approval.

CLOSED OPERATIONS

Ballasting, loading or discharging operations carried out without recourse to opening ullage and sighting ports. In these cases ships will require the means to enable closed monitoring of tank contents, either by a fixed gauging system or by using portable equipment passed through a vapour lock.

CONSTANT HEADING SHIP

During manoeuvring and mooring, the ship that maintains course and speed to allow the manoeuvring ship to approach and moor is referred to as the constant heading ship.

DEDICATED LIGHTERING SHIP

A dedicated lightering ship is a ship designed to perform multiple STS operations. These ships are usually fitted with adequate primary and secondary (baby) fenders, which upon completion of an STS transfer are capable of being lifted and stowed in onboard cradles. They are usually fitted with their own hoses and are generally capable of performing STS operations without external assistance such as support craft. They may also be fitted with bow and stern thrusters, or large angle rudders to assist with manoeuvrability.

DISCHARGING SHIP

The ship containing cargo for transfer to the receiving ship, and which may also be known as the Ship To Be Lightened (STBL).

MANOEUVRING SHIP

During manoeuvring and mooring, the ship that approaches the Constant Heading Ship for mooring operations is referred to as the manoeuvring ship.

ORGANISERS

Organisers are shore-based operators responsible for arranging an STS transfer operation. The Organiser may be an STS Service provider.

PERSON IN OVERALL ADVISORY CONTROL

The person agreed to be in overall control of an STS operation. It may be one of the Masters (generally the Master of the manoeuvring ship) or it may be an STS Superintendent.

PRIMARY FENDERS

Primary fenders are large fenders capable of absorbing the impact energy of berthing and wide enough to prevent contact between the ships should they roll while alongside one another.

RECEIVING SHIP

The ship to which cargo is transferred from the Discharging Ship. The Receiving Ship may also be known as the lightering ship, or Service Ship (SS).

SECONDARY FENDERS

Secondary (baby) fenders are fenders used to prevent contact between the two ships, should they be rolling or not parallel to each other. They are especially effective when rigged towards the ends of a ship and are of most benefit during mooring and unmooring operations.

SHIP-TO-SHIP (STS) TRANSFER OPERATION

An STS transfer operation is an operation where crude oil or petroleum products are transferred between seagoing ships moored alongside each other. Such operations may take place when one ship is at anchor or when both are underway. In general, the expression includes the approach manoeuvre, berthing, mooring, hose connecting, safe procedures for cargo transfer, hose disconnecting, unmooring and departure manoeuvre.

STS SERVICE PROVIDER

An STS Service provider is a company or organisation that specialises in providing services for the safe control of STS operations. The service provider may also supply the essential personnel and equipment needed such as hoses, fenders and support craft.

STS SUPERINTENDENT

A person who may be designated to assist a ship's Master in the mooring and unmooring of the ships, and to co-ordinate and supervise the entire ship-to-ship transfer operation. He may also be known as Lightering Master or Mooring Master.

SWL

SWL or Safe Working Load is the operating limit to which equipment is tested for day-to-day use. Equipment should never be used beyond its SWL.

TRANSFER AREA (if applicable)

A transfer area is an area within which an STS transfer operation takes place. Transfer areas should be selected in safe sea areas (see Section 2.3). In coastal areas they will be agreed with nearby coastal authorities and, as appropriate, in accordance with specific port or national regulations. The expression "transfer at anchor" describes an operation where a cargo transfer is carried out

TRANSFER AT ANCHOR

Transfer between ships when they are moored alongside each other and one of the ships is at anchor. The operation is an alternative to underway transfer.

UNDERWAY

By definition under the International Regulations for Preventing Collisions at Sea (COLREGS) a ship when underway is not at anchor, made fast to the shore or aground. However, she may be either steaming or drifting freely with current and weather.

2.2

STS Process

Phase 1. Pre-Arrival Planning: The Pre-Arrival Planning should be carried out before any STS operations commence. The planning of the STS operation could be performed by the ships operators and managers together.

Phase 2. Arrival: During the Arrival stage of the operation the two ships conducting the STS operation should establish radio communication, and concur that all operational procedures has been assessed and agreed upon.

Phase 3. Berthing: The Berthing phase of the STS operation consists of the manoeuvring and mooring of the two ships. For the manoeuvring operation a contingency plan should be in place to deal with any emergency situation.

Phase 4. Cargo Transfer: The Cargo transfer phase should only commence once the two ships are securely moored. The Master should ensure that all the recommended safety procedures in this plan are followed. A contingency plan should be in place to deal with any emergency situations during cargo transfer.

Phase 5. Departure: Departure is the last phase of the STS operation.

3. PRE-ARRIVAL PLANNING

3.1 CONDITIONS AND REQUIREMENTS

3.1.1 Ship Compatibility

It should be ensured that the ships are compatible in design and equipment; that they comply with the various recommendations included in this plan; and that mooring operations, hose handling and communications can be conducted safely and efficiently. It is essential that information relating to the overall dimensions, freeboard, position of manifolds, mooring points and fenders should be passed to the Masters of the ships.

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.

The following should be determined prior to berthing:

CARGO HANDLING COMPATIBILITY	
1	The sizes and number of manifold to be used
2	The minimum and maximum expected height of the manifold above the waterline during the transfer operation, and the freeboard difference during the cargo transfer (see figure 4)
3	Whether the cargo cranes or derricks are in satisfactory condition and of suitable safe working load (SWL)
4	The hose supports at the ship's side are adequate to prevent damage to the hose length through chafing
5	That both ships have manifolds that comply with OCIMF <i>Recommendation for Oil Tanker Manifold and Associated Equipment</i> [5]

Table 1: Cargo handling compatibility

3.1.2 Person in Overall Advisory Control (POAC)

A ship-to-ship transfer operation should be under the advisory control of a designated Person in Overall Advisory Control (POAC). The POAC will either be one of the Masters of the vessels concerned or an STS Superintendent, Lightering Coordinator or Mooring Master employed by an STS Resource Provider. It is not intended that the POAC in any way relieves the ships' Masters of any of their duties, requirements or responsibilities.

The Administration, cargo owners or oil tanker's operators should agree and designate the

POAC who should have at least the following qualifications:

- (a) Local Coxswain Grade1 Certificate or equivalent; and
- (b) Completed training course for "Basic training for Oil and Chemicals Tankers Cargo Operations" or "Oil Carrier Safety (local waters) Training" and
- (c) Experience of the following:
 - Experience in oil tanker cargo loading and unloading;
 - At least has 3 times loading and 3 times discharging of oil cargo to other oil tankers on board practical training;
 - Conduct numerous mooring/unmooring operations in similar circumstances and with similar vessels;
 - A thorough knowledge of the geographic transfer area and surrounding areas;
 - A throughout knowledge of cargo characteristic;
 - Sound knowledge including familiarity with the equipment and resources available in the STS operations contingency plan; and
 - Thorough knowledge of the STS Operations Plan.

The POAC should:

- ◆ Ensure that the cargo transfer, mooring and unmooring operations are conducted in accordance with the required STS plan, the contents of this chapter of the Manual and take into account the recommendations contained in the industry publication "*Ship to Ship Transfer Guide – Petroleum*";
- ◆ Advise the Master(s) of the critical phases of the cargo transfer, mooring and unmooring operation;
- ◆ Ensure the provisions of the contingency plan are carried out in the event of a spill;
- ◆ Ensure that all required reports are made to the appropriate authorities;
- ◆ Ensure that crewmembers involved in each aspect of the operation are properly briefed and understand their responsibilities;
- ◆ Ensure that approach and mooring operations are not attempted until proper effective communication has been confirmed between the two oil tankers and appropriate checks have been completed;
- ◆ Ensure that a pre-transfer STS safety check is undertaken in accordance with accepted industry guidance; and

- ◆ Ensure that appropriate checks are undertaken prior to unmooring.

The POAC should have the authority to advise:

- Suspend or terminate the transfer operation;
- Amend the transfer plan for the particular operation.

3.1.3 Recording and checklists

The STS operation should be recorded in the Oil Record Book Part II, as required for all oil cargo transfer and ballast operations. The checklists contained in Appendix A.1, should be followed and filled out concurrently with the STS operation.

All records should be retained onboard for at least three years.

3.1.4 Approval from Authorities

When the STS transfer is performed within the territorial waters or Exclusive Economical Zone of a country, local and national regulations should be checked and appropriate approvals obtained. The responsible person should inform the appropriate authorities of STS transfer operations to be conducted in the lightering area.

Minimum 48 hours in advance NOTICE TO AUTHORITIES	
1	Name, flag, call sign, IMO Number and estimated time of arrival of the oil tankers involved in the ST operations
2	Date, time and geographical location at the commencement of the planned STS operations
3	Whether STS operations are to be conducted at anchor or underway(if applicable)
4	Oil type and quantity
5	Planned duration of the STS operations
6	Identification of STS operations service provider or person in overall advisory control and contact information
7	Confirmation that the oil tanker has onboard an STS operations plan meeting the requirements of MARPOL Annex I, Chapter 41, 42 & 43.

Table 2: Advance Notice to Authorities

Where, in an exceptional case, all the information specified above is not available more than 48 hours before the STS operations are to take place, the oil tanker discharging the oil cargo shall notify the authorities not less than 48 hours in advance that an STS operation will occur. The information specified above shall be provided to the authorities at the earliest opportunity.

Once the initial report for any ETA has been made, it should, if possible, be updated when a variance of more than two hours is expected from the time given in the latest report.

3.1.5 Transfer Area

The STS transfer area should be specially selected for safe operations, in co-ordination with appropriate authorities. Points to be considered when selecting the transfer area:

TRANSFER AREA	
1	Notify and obtain agreement from the applicable coastal authority
2	The shelter provided from the weather, particularly from sea and swell
3	Present and forecast weather conditions
4	Tidal current conditions
5	Safe distance from offshore installations
6	The availability of a designated lightering area
7	Sufficient sea-room to be available to allow for normal drift or streaming patterns when the cargo transfer operation are conducted underway
8	Sufficient sea room and depth required for manoeuvring during berthing and un-berthing
9	Locations of underwater pipelines, cables, artificial reefs or historic sites
10	Selection of a safe anchorage with sufficient good holding ground
11	Traffic density
12	Availability of emergency and oil spill response capability
13	Distance from shore logistic support
14	Security threat

Table 3: Transfer area

3.1.6 Weather Conditions

The weather condition limit will mostly depend on the effect of the sea and swell on the fenders or mooring lines and the rolling movements induced by the participating ships, taking into account the relative freeboard and displacement.

The following items should be taken into account regarding weather condition:

If the transfer takes place with one ship at anchor, special care should be given to the ultimate strain placed on the anchor cable due to yawing movements aggravated by the current and weather condition.

Weather forecasts should be obtained before and during the transfer.

Throughout the berthing operation the visibility should be good enough for safe manoeuvring, taking into account the safe navigation and collision avoidance requirements

3.2 COMMUNICATIONS

3.2.1 Language

A common language for communication should be agreed before operations commence.

3.2.2 STS Instructions

The organisers generally provide STS instructions. This may be the operator of the ships if carrying out "in-house" operations or it may be an STS Service provider. Normally such providers send advance STS instructions to the ships concerned.

The following information should be sent to the ship by the STS organisers.

INFORMATION TO BE SENT TO THE SHIP BY ORGANISERS	
1	The organizer's full title, identification of Person in Overall Advisory Control and contact number
2	Description of the planned STS operation including the location of the transfer area
3	Details of equipment (including conformation of integrity of fenders, hoses etc.), logistical support and personnel to be provided
4	Requirements for the preparation of moorings , manifolds and lifting gear
5	Local and national STS regulations, where applicable
6	Identity of the ST service provider and or STS Superintendent

Table 4: **Information to be sent to the ship by organisers**

3.2.3 Navigational Warnings

The following navigational warnings should be broadcasted, before and during the transfer operation, to all ships advising:

NAVIGATIONAL WARNINGS	
1	The name and flag of the ships involved
2	Geographical position of operations and general headings
3	Nature of operations
4	Time of starting and expected duration
5	Request for wide berth and the need to exercise caution when navigating in the transfer area

3.2.4 Communications during Operations

Contact should be established on the appropriate VHF channel at the earliest opportunity. Approach, mooring and unmooring should not be attempted until proper effective communication has been confirmed between the two ships.

It should be confirmed that the portable radios (suitable for use in oil tankers) on each ship are capable of working on the same frequencies, alternatively that one of the vessels have enough portable devices to adequately supply both vessels. Ship's officers responsible for mooring stations should be provided with portable radios. Ship's emergency portable VHF radios should not be used for routine operations.

3.2.5 Procedures for Communication Failure

If communication breakdown occurs during the approach manoeuvre, the manoeuvre should be aborted if appropriate and safe to do so and the subsequent actions taken by each ship should be indicated by the appropriate sound signals as prescribed in the *International Regulations for Preventing Collisions at Sea* (COLREGS)[8].

If communication is lost during cargo transfer the emergency signal should be sounded and all operations in progress should be suspended immediately if it is safe to do so. Operations should not be resumed until satisfactory communications have been re-established

3.3 EQUIPMENT

3.3.1 Fenders

Fenders may be secured in place on either ship, but it is recommended that they are placed on the manoeuvring ship. It should be noted that where fenders are to be rigged on the manoeuvring ship there may be more stresses on the head fender wire, and that the fender wire utilizes one head wire per winch.

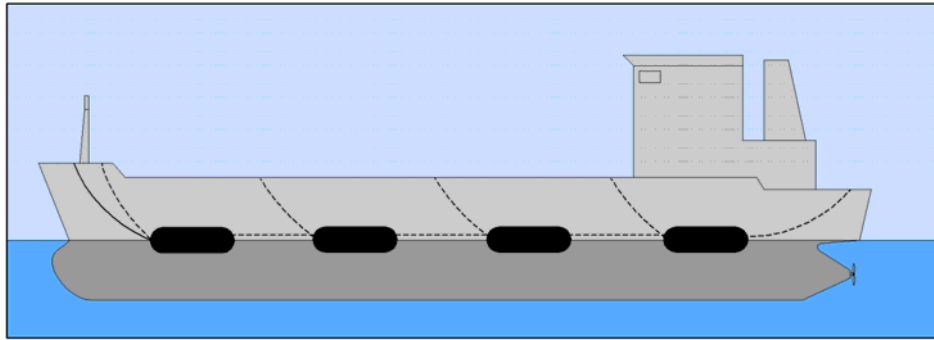


Figure 1: Fenders rigged in continuous string

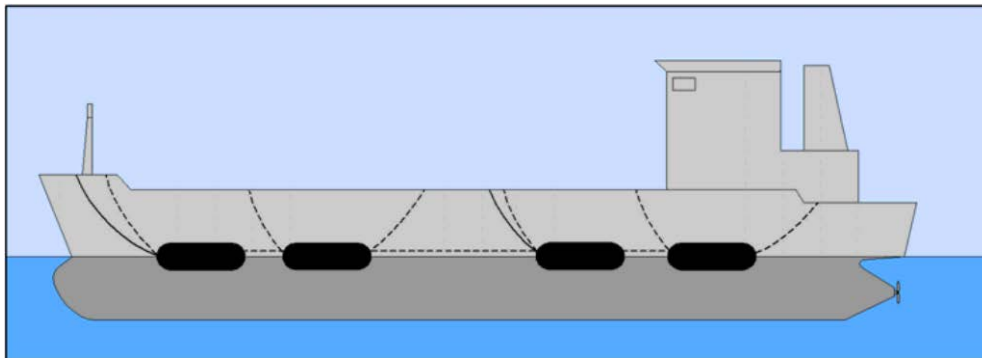


Figure 2: Fenders rigged in pairs

When fenders are fitted to the manoeuvring ship, primary fenders should be positioned one at each end of the parallel body, with similar additional units fitted in between (see Figure 1). The fender string may be made up to a pre-arranged length. Alternatively in some operations where four fenders are used, it has been found beneficial to position them in two groups of two (see Figure 2). In this way, and with each group positioned well forward or well aft on the parallel body, better protection can be provided. Secondary fenders may be positioned fore and aft of the parallel body. Fender moorings should be monitored frequently and tended as necessary to ensure that they do not become too slack or too taut and that the fenders remain in position. The length of the fender string should be such that the fenders will be able to distribute the maximum anticipated impact load within the parallel body of both ships.

If fenders are provided by an STS Service provider, the Master, responsible person or organiser should ascertain the age of the fenders to be used and should be satisfied that reasonable measures have been taken to ensure that they are fit for the intended service. The fender certificates should be made available to assist with this.

<p style="text-align: center;">FENDER SECTION ASSISTANCE REQUEST FORM</p> <p style="text-align: center;">For Ship-to-ship Use</p> <p style="text-align: center;">(To be filled out prior to contacting fender providers)</p>		
Location of Site_____		
Potential Sea State_____ Potential Beaufort Scale_____		
	Ship A	Ship B
Type of ship		
Displacement Tonnage (start of STS operations)		
Gross Tonnes		
Deadweight		
Length overall		
Length between particulars		
Loaded Draft		
Beam		
Freeboard when coming into contact		
Relative approach velocity of ships		
Other relevant information		

Table 6: Fender Selection Assistance Request Form

3.3.2 Hoses

The hoses used for the STS transfer of crude oils or petroleum products should be specially designed and constructed for the product being handled and the purpose for which they are being used. [Hoses used should comply with EN1765 (or latest equivalent) with regard to specification for the assemblies and with BS1435 (or latest equivalent)] and OCIMF guidelines with regard to their handling, inspection and testing. Hoses should bear the following durable indelible markings:

- .1 the manufacturer's name or trademark;
- .2 identification of the standard specification for manufacture;
- .3 factory test pressure (Note: equal to rated working pressure, maximum working pressure, maximum allowable working pressure);
- .4 month and year of manufacture and manufacturer's serial number;
- .5 indication that the hose is electrically continuous or electrically discontinuous, semi-continuous or anti-static; and
- .6 the type of service for which it is intended, e.g., oil or chemical.

Test data with respect to each hose should be available and should be sighted prior to the hose being used for transfer.

The diameter for a chosen cargo transfer hose is governed mainly by the required flow rate and the manifold dimensions.

Hose lengths should be considered on a case-by-case bases and but as a reference, hose lengths equal to twice the maximum difference in manifold height between the two ships are usually sufficient to allow for variables during transfer.

A rule of thumb for calculating the minimum bending radius (MBR) of a rubber hose is given by the formula:

$$\text{MBR} = \text{Nominal Bore of Hose} \times 6$$

As the tanker rises or falls as a result of cargo transfer, the hose should be adjusted so as to avoid undue strain on the hoses, connections and ship's manifold and to ensure that the radius of the curvature of the hose remains within the limits recommended by the manufacturer.

A visual inspection of each of the hose assemblies should be carried out before they are connected to the manifolds to determine if any damage has been caused.

If hoses are provided by an STS Service provider, the Master, shipping company or organiser should ascertain the age of the hoses to be used and should be satisfied that reasonable measures have been taken to ensure that they are fit for the intended service.

[The hose certificates should be made available by the STS Service provider.]

3.3.3 Hose Handling

Hose Connection

STS transfer operations require hose connections to be well made. Flanges or, if used, quick release couplings should be in good condition and properly secured to ensure leak tight connections.

Hose Inspection and Testing

Hose used should be subject to regular inspection for damage or deterioration. A record of inspection and pressure/vacuum testing, where relevant, should be available.

A visual inspection of each of the hose assemblies should be carried out before they are connected to the manifolds to determine that they are free of damage. If damage to a hose or flange is present, the hose should be withdrawn from use for further inspection, repair or retirement.

Hoses should be withdrawn from service and retired against defined criteria which may include the following:

- .1 the presence of defects detected during visual inspections. Defects prompting retirement could include irregularities in the outside diameter, such as kinking, damaged or exposed reinforcement or permanent deformation of the casing and damage, slippage or misalignment of end fittings;
- .2 after a defined period in service, established in consultation with the manufacturer; and
- .3 when the temporary elongation of the hose, measured during routine pressure tests, exceeds maximum allowable values.

Although oil hoses are robustly constructed for a marine environment, they can be damaged from improper handling. In general, while handling hoses, adequate support is the key to the prevention of over-bending (kinking), which can lead to premature hose retirement.

When transferring the one end of the hose to the other ship, lifting straps should be used that are preferably flat nylon or equivalent reinforced cloth bands, and at least 150 mm wide to prevent any chafing of the hose cover. If nylon or equivalent straps are not available, the best substitute is a sling of large circumference nylon or polypropylene rope. Wire should not be used.

3.3.4 Pipe reducers

It should be ascertained that adequately sized pipe reducers with packings are available onboard, to accommodate actual manifold and hose dimensions.

3.3.5 Mooring Equipment

Typically a mooring pattern for exposed locations for lightering vessels not fitted with special mooring arrangements would consist of at least six headlines, two forward and two back springs, and four stern lines. Where specialized mooring equipment is fitted (e.g. on dedicated STS transfer ships) the number of headlines could be reduced to four where this has proven to be reliable for the local operating environment.

3.3.6 Personnel Transfers

Transfer of personnel between ships should be kept to an absolute minimum.

3.3.7 Lighting

During STS transfers at night, normal in-port deck lighting should be adequate. The minimum recommended lighting is five foot-candles (lumens) at transfer connection points and one foot-candle in oil transfer operation work areas (measured one metre above the deck). Portable spotlights, which should be flameproof, and bridge wing spot lights are useful for night mooring and unmooring operations.

3.3.8 Ancillary Equipment

All ancillary equipment - wires, messengers, stoppers, strops and shackles etc. should be inspected for condition prior to commencing the STS operation.

During each STS operation consideration should be given to having a tender or work vessel available to deploy response equipment and to conduct clean-up of any oil which may be spilled during the transfer operation.

3.4 EMERGENCY

3.4.1 Emergency Signal

The agreed signal to be used in the event of an emergency on either ship should be clearly understood by the personnel on both ships. An emergency on either ship should be indicated immediately by sounding the ship's internal alarm signal and by sounding seven or more short blasts on the whistle to warn the other ship. All personnel should then proceed as indicated by the contingency plan.

3.4.2 Emergency Situations

In an emergency, the Masters involved should assess the situation and act accordingly. The following actions should be taken, or considered, in the event of any emergency arising:

ACTIONS TO BE TAKEN DURING EMERGENCY	
1	Stop the transfer
2	Sound the emergency signal
3	Inform both crews on the ships of the nature of the emergency
4	Man emergency stations
5	Implement emergency procedures
6	Drain and disconnect cargo hoses
7	Send mooring gangs to stations
8	Confirm the ships main engine is ready for immediate use
9	Advise standby boat of the situation and any requirement

Table 7: **Emergency Situations**

In addition, Masters should decide jointly, particularly in the case of fire, whether it is to their mutual advantage for the ships to remain alongside each other.

The basic actions, as listed above, should be included in individual STS contingency plan and be consistent with the ship's safety management system.

3.4.3 Emergencies during manoeuvring

The Masters of both ships and the POAC should always be prepared to abort a berthing operation if necessary. The decision should be taken in ample time while the situation is still under control. The Masters of both ships should be immediately informed of each other's actions. The *International Regulations for Preventing Collisions at Sea* (COLREGS) must be complied with.

3.4.4 Procedures in the event of gas accumulation on deck

The transfer operation should be suspended if excessive cargo vapours are detected around the decks or manifolds of either ship, and should not be resumed until the risk to both ships and their personnel is considered to have been averted.

3.4.5 Accidental Cargo Release

Any leakage or spillage should be reported immediately to the officers on cargo watch who should stop the cargo transfer and advise the person in overall advisory control. The transfer must remain suspended until it is agreed between the relevant persons/authorities that it is safe to resume.

3.4.6 Shipboard oil pollution emergency plan (SOPEP) or Vessel response plan (VRP)

Risk of oil pollution during STS transfer operations need not be greater than during in-port cargo transfers. However, as a transfer area may be out of range of port services, a contingency plan within the SOPEP or VRP to cover such risk should be available and should be activated in the case of an oil spill.

3.4.7 State of Readiness for an Emergency

The following arrangements should be made on both ships:

PREPARED FOR EMERGENCY	
1	Main engines and steering gear ready for immediate use
2	Cargo pump and all other equipment trips relevant to the transfer to be tested prior to the operation
3	Crew available and systems prepared to drain and disconnect hoses at short notice
4	Oil spill containment equipment prepared and ready for use
5	Mooring equipment ready for immediate use and extra mooring line ready at mooring stations as replacement in case of breakage
6	Firefighting equipment ready for immediate use

Table 8: State of readiness for emergency

3.5 Risk Assessment

A risk assessment should be carried out before each STS transfer operation and should cover operational hazards and the means by which they are managed.

As a minimum, the risk assessment should:

RISK ASSESSMENT	
1	Identify the hazards associated with the operation (collision risks in the vicinity, cargo vapour pressure, H ₂ S content etc.)
2	Assess the risks according to the probability and consequence
3	Identify the means by which to prevent and or mitigate the hazard
4	Contain procedure for dealing with unanticipated events

Table 9: Risk Assessment Guidelines

The scope of the Risk Assessment should include confirmation of the following:

RISK ASSESSMENT SCOPE	
1	Adequate training, preparation or qualification of oil tanker's personnel
2	Suitable preparation of oil tankers for operations and sufficient control over the oil tankers during operations
3	Proper understanding of signals or commands
4	Adequate number of crew assigned to control and perform oil transfer operations
5	Suitability of the agreed STS plan
6	Adequate communications between oil tankers and responsible person(s)
7	Proper attention given to the differences in freeboard and the listing of the oil tankers when transferring cargo
8	The condition of transfer hoses
9	Methods of securing the connecting hose(s) to the oil tankers and manifolds
10	Recognition of the need to discontinue oil transfer when sea and /or weather conditions deteriorate
11	Adequate of navigational processes

Table 1: Risk Assessment Scope

The level of complexity required will depend on the type of operations. For a particular transfer area utilising standard approved STS equipment and ships that are fully operational, a generic risk assessment might be appropriate. For STS operations being undertaken in a new area, or in the

event of a deviation from a routine STS transfer, e.g. VLCC to VLCC operation, a risk assessment should be carried out for each 'non standard' activity and the Master shall advise the Company. Operations shall not proceed until a full risk assessment has been carried out and agreed by the Master and the Company.

3.6 Contingency Plan

A contingency plan should be put in place covering all possible emergencies, especially during the *manoeuvring* and *cargo transfer* phase, and provide for a comprehensive response. In addition, contingency plans should have relevance to the location of the operation and take into account the resources available both at the transfer area and with regard to nearby back-up support. Where appropriate, the contingency plan should be integrated with similar plans prepared by the responsible local authority.

The contingency plan should be agreed between both ships, the STS organiser and the local or national authorities (as appropriate) before STS operations commence.

The lightering/receiving ship will generally be playing the lead role in an STS transfer operation. Accordingly, where organisers have delegated the preparation of a contingency plan, it will normally be incumbent on the Master of such a ship to establish the overall plan that will be reviewed and agreed.

The SOPEP or VRP identifies measures to deal with *operational oil spills* and also *spills resulting from casualties*. Please see the appropriate section of the SOPEP/SMPEP or VRP for measures to be implemented during such emergencies.

The following Emergency Procedures should be taken into account when preparing the contingency plan:

1. Each vessel must have emergency duties assigned to designated members of the crew in case of accidents that may arise during the transfer of oil, particularly in the case of spillages of oil. Refer to the SOPEP or VRP for list of responsible persons and actions regarding oil spills.
2. Having discovered a spillage, the operation should be stopped and the immediate measures set forth in the contingency plan should be implemented. The appropriate authorities should be informed of any oil spillage together with size, nature and cause. Each case of oil spillage must be entered in the Oil Record Book.
3. In case of spillage of 100 tons and above a report is to be prepared in the form recommended by the IMO. It should be forwarded to the Administration of the coastal State or to the Flag State Administration if the vessel is in waters beyond the jurisdiction of the coastal state. The report should be in accordance with the IMO Interim Guidelines for Reporting Incidents Involving Harmful Substances.

3.7 SAFETY

3.7.1 General Safety

For all STS transfer operations each Master remains at all times responsible for the safety of his own ship, its crew, cargo and equipment and should not permit safety to be prejudiced by the actions of others. Each Master should ensure that the procedures recommended by this STS transfer operations plan are followed and, in addition, that internationally accepted safety standards are maintained. In this regard, the most prominent international safety manual in use for cargo handling advice is the *International Safety Guide for Oil Tankers and Terminals* (ISGOTT) - [3].

3.7.2 Prevention of Fatigue

To prevent human fatigue during the STS transfer operation, the POAC and/or all the responsible

officers for the lightering operation should comply with rest period requirements of relevant ILO, IMO and national regulations, and the relevant section of the ISM. Records of rest and work hour compliance should be retained.

3.7.3 Safe Watch keeping

The Master should take into consideration the estimated duration of operations to ensure that safe and fatigue-free watch keeping can be maintained throughout.

For reasons of crew workload, transfer operations taking place simultaneously from either side of the STBL (delivering ships) are generally not recommended unless fully reviewed by risk assessment.

4. ARRIVAL

4.1 OPERATIONAL PROCEDURES BEFORE MANOEUVRING

4.1.1 Preparation of Ships

PREPARATION BEFORE MANOEUVRES BEGIN	
1	Ensure that the crew is fully briefed on procedures and hazards, with particular reference to mooring and unmooring
2	Ensure that the oil tankers conforms to relevant guidelines, is upright and at a suitable trim
3	Confirm all essential cargo and safety equipment have been tested
4	Confirm that all mooring equipment is prepared in accordance with the mooring plan
5	Fenders and transfer hoses are correctly positioned, connected and secured
6	Cargo manifold and hose handling equipment are prepared
7	Obtain a weather forecast for the STS transfer area for the anticipated period of the operation
8	Agree the actions to be taken if the emergency signal on the oil tanker's whistle is sounded

Table 2: Preparation before manoeuvres begin

The following information should be exchanged between the two ships:

INFORMATION TO BE EXCHANGED BETWEEN SHIPS	
1	Mooring arrangement
2	Quantities and characteristics of the cargoes to be loaded (discharged) and identification of toxic components
3	Sequence of loading (discharging) of tanks
4	Details of cargo transfer system, number of pumps and maximum permissible pressure
5	Rate of oil transfer during operations (initial, maximum and topping-up)
6	The time required by the discharging oil tanker for starting, stopping and changing rate of delivery during topping-off tanks
7	Normal stopping and emergency shutdown procedure
8	Maximum draught and freeboard anticipated during the operations
9	Disposition and quantity of ballast and slops and disposal if applicable

10	Details of proposed method of venting or inerting cargo tanks
11	Details of crude oil washing, if applicable
12	Emergency and oil spill containment procedures
13	Sequence of action in case of spillage of oil
14	Identified critical stage of the operation
15	Watch or shift arrangement
16	Environmental and operational limits that would trigger suspension of the transfer operation and disconnection and unmooring of the tankers
17	Local or government rules that apply to the transfer
18	Co-ordinate of plans for cargo hose connection, monitoring, draining and disconnection
19	Unmooring plan

Table 3: Information to be exchanged between ships

4.1.2 Navigational Signals

The lights and shapes to be shown, and the sound signals made are those required by the *International Regulations for Preventing Collisions at Sea* (COLREGS), and local regulations. These lights and shapes should be checked and rigged ready for display prior to the STS operation.

5. BERTHING

5.1 MANOEUVRING

5.1.1 Basic Berthing Principles

Berthing and unberthing operations should be conducted during daylight unless the personnel concerned are suitably experienced in night-time STS manoeuvring operations.

For some inshore areas the port authority may require a pilot to be taken. In such circumstances the pilot should advise on all aspects of navigation and piloting, but the Master remains in overall control and in command of his ship.

5.1.2 Manoeuvring Alongside with Two Ships Under Power

The larger of the two ships should maintain steerage way at slow speed (preferably about 5 knots) keeping a steady course heading. Local conditions and knowledge will dictate the appropriate heading with due regard to transfer area and weather conditions. The manoeuvring ship then manoeuvres alongside.

It is recommended that the manoeuvring ship approaches and berths with the port side to the starboard side of the constant heading ship.

Be aware that some local jurisdictions may have regulations specifying some aspects of manoeuvring between the ships.

5.1.3 General advice for controlling the two ships

Each ship should take the following into account:

- courses requested by the manoeuvring ship must be followed by the constant heading ship.
- ship's speed should be controlled by adjusting engine revolutions (or propeller pitch). Any

adjustment should be limited; for example, to plus or minus 5 rpm rather than using the relatively coarse engine room telegraph system. However normal full operating range must remain readily available.

- for diesel engines, ascertain number of air starts available.
- at night the deck should be adequately lit and, if possible, the ship's side and fenders should be lit by spot lights
- the side for mooring should be clear of all over side obstructions; permanent and otherwise.
- the navigation lights and shapes appropriate to STS transfers should be displayed.
- there should be effective radio communications between the bridge and mooring personnel.
- there should be effective communications between the Masters of each ship.
- there should be effective communications between the Masters of each ship.

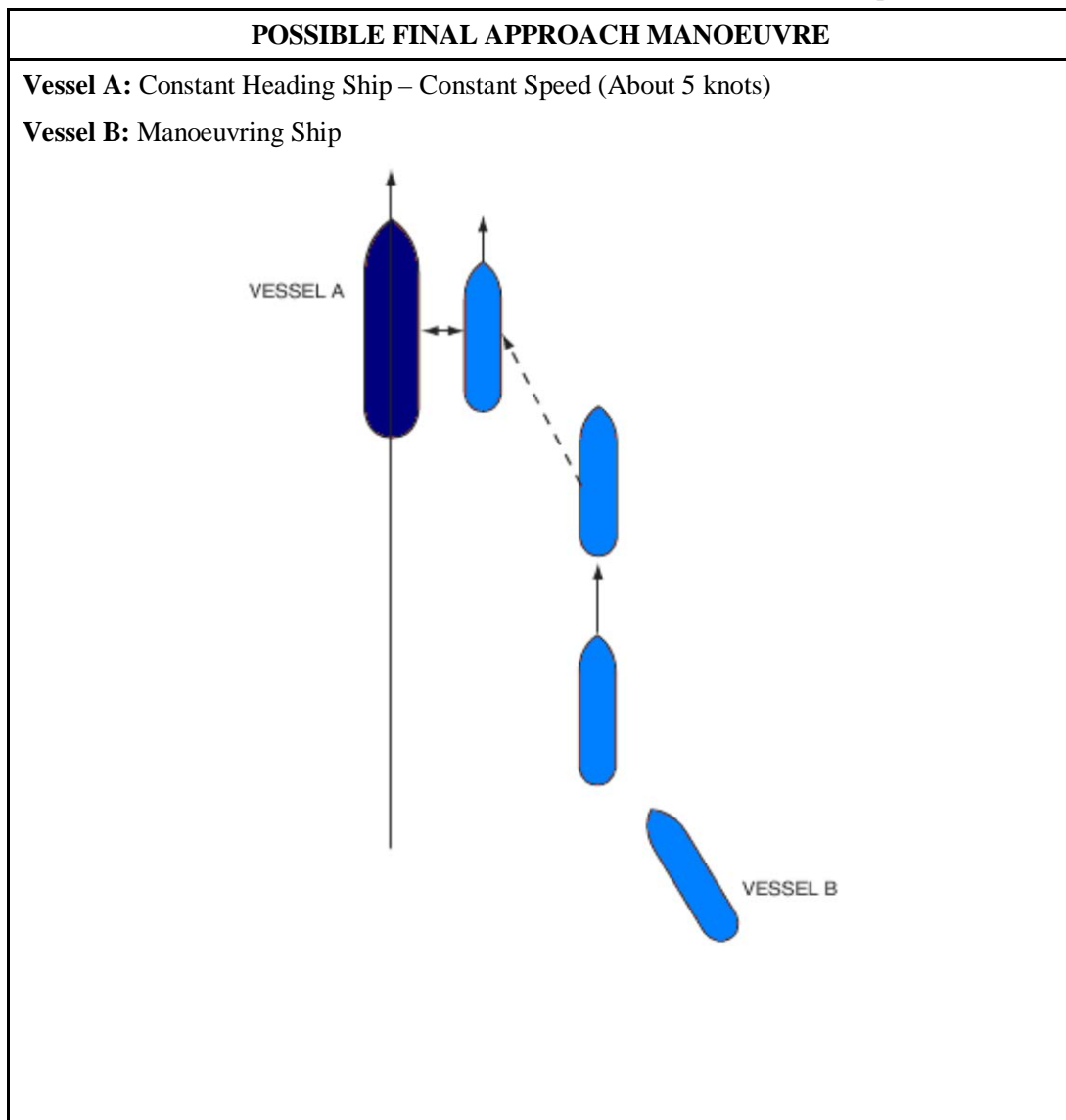


Figure 3: A possible final approach manoeuvre

5.1.4 Advice for manoeuvring alongside

- If either of the Masters of the ships or the STS Superintendent has the slightest doubt about the safety of the manoeuvre, the berthing operation should be aborted.
- at all times each ship is responsible for maintaining a proper lookout.
- generally, during manoeuvring, the wind and sea are kept on the port bow of the usually larger constant heading ship; however local conditions or knowledge may indicate an alternative approach.
- the angle of approach adopted by the manoeuvring ship should not be excessive.
- a common method of berthing is for the manoeuvring ship to approach the constant heading ship from the quarter on the side of berthing. On closer approach the manoeuvring ship should parallel the course of the constant heading ship at a safe distance that is appropriate to the conditions, before then positioning itself relative to the constant heading ship. Contact is made by manoeuvring ship reducing the distance by appropriate rudder and engine movements until the fenders touch. (See Figure 11)
- the two ships should preferably make parallel contact at the same speed with no astern engine movements being necessary.
- no engine movement on the constant heading ship should be made without advising the STS Superintendent or Master of the manoeuvring ship.
- the effects of ship interaction should be anticipated when manoeuvring at close quarters.

5.1.5 Manoeuvring a combined two-ship system to anchor

On completion of mooring, the constant heading ship will usually power all future manoeuvres and, if a transfer at anchor is planned, will proceed to the agreed anchoring position. During this time, the (former) manoeuvring ship will have its engines stopped and rudder amidships. It should be emphasised that, for this period, in order to avoid problems for the manoeuvring ship the constant heading ship should not use strong astern engine movements. ***Speeds through the water should be minimal.***

The constant heading ship should use the anchor on the side opposite to that on which the other ship is moored.

Once at anchor, each ship is responsible for watch keeping arrangements.

5.1.6 Underway Transfer (if applicable)

As long as adequate sea-room is available and traffic conditions, weather, sea conditions and forecasts are suitable, then transfers of this type can be carried out, but it should be noted that speeds through the water should be minimal.

The constant heading ship maintains steerage way at slow speed on a steady course and the (former) manoeuvring ship keeps its rudder amidships and remains (with engines stopped) as a towed ship. In order to minimise towing loads on the moorings, the constant heading ship should alter her engine revolutions sparingly, adjusting speed very gradually. The chosen course and speed should be agreed by the two Masters and the STS Superintendent and should result in

minimum relative movement between the two ships and minimum turbulence in the gap between the hulls.

Under such circumstances, while the ships are moored together as a unit, safe navigation and collision avoidance is usually the responsibility of the constant heading ship but may be under the direction of the person in overall advisory control aboard the lightering ship.

The two ships can drift freely provided conditions are suitable and a transfer area of suitable size is available.

The use of the underway transfer system requires a full navigational watch to be kept on the bridge of each ship.

5.1.7 Manoeuvres with One Ship at Anchor

One ship anchors in a pre-determined position using the anchor on the side opposite to that on which the other ship will moor. The berthing operation should only commence after the anchoring ship is brought up to her anchor and is lying on a steady heading with reference to prevailing current and wind conditions.

The Master of the ship which is to anchor should allow for the fact that the single anchor will be required to hold both ships. When anchoring in deep water, and using an extended scope of cable, the Master of the ship that is to anchor should also ensure that the windlass is capable of recovering the cable and anchor once the operation is completed.

The type of berthing operation then undertaken by the manoeuvring ship is similar to a normal approach to a jetty. A risk assessment should be undertaken by the organisers to evaluate the necessity of tug assistance for the manoeuvring ship.

A careful watch should be kept on the heading of the anchored ship and the anchored ship should advise the manoeuvring ship immediately if she has any tendency to yaw. Where there is a tendency to yaw excessively, a tug should be employed to hold the anchored ship on a steady heading. If no tug is available, postponement of the operation should be considered.

This manoeuvre can be preferred for more constrained transfer areas, especially when tug assistance is available, or if the manoeuvring ship is fitted with a bow thruster. Where current and wind are not from the same direction or the wind varies in speed or direction the anchored ship can yaw (or lie cross-current), making it difficult for the manoeuvring ship to berth alongside. Also both ships could experience different effects due to their different freeboards and draughts. In these circumstances tug assistance may be advisable to hold the anchored ship on a steady heading during berthing.

It is recommended that the services of an experienced STS Superintendent be utilised for this type of operation. ***However, berthing should not be attempted when the tidal stream is due to change.***

When approaching a ship at anchor some Masters recommend a wider angle of approach than that adopted for manoeuvres underway. A wider angle of approach, especially when tugs are not available, helps to avoid early ship-to-ship contact in cases where the anchored ship might yaw unexpectedly. It is recommended that the manoeuvring ship approaches and berths with her port side to the starboard side of the other ship. When mooring to an anchored ship, care should be taken not to pull the anchored ship quickly towards the manoeuvring ship.

5.2 MOORING

5.2.1 Mooring Preparations

Moorings should be arranged and rigged to allow safe, effective line tending when the ships are secured together. This is very important on board the manoeuvring ship whose mooring lines will normally be used, but this should also be addressed on the constant heading ship where rope messengers have to be made ready between fairleads and deck winches.

When preparing the mooring plan the following factors should be taken into account:

MOORING PLAN PREPARATION	
1	Size of each ship and the difference in their sizes
2	The expected differences in freeboard and displacement
3	The anticipated weather and sea conditions
4	The degree of shelter offered by the location
5	The efficiency of the mooring line leads available

Table 4: Mooring plan preparation

Most STS Service providers have a standard mooring plan, suitable for the particular location. It is important to ensure moorings allow for ship movement and freeboard changes to avoid over stressing the lines throughout the operation, but that they are not so long that they allow unacceptable movement between the ships. Mooring lines leading in the same direction should be of similar material.

The order of passing mooring lines during mooring, and of releasing lines during unmooring, should be agreed. Where the STS Service providers utilise quick-release mooring hooks, their role and use should be discussed to ensure proper understanding.

Scope for additional head and stern lines is preferred, and at any time spare lines should be readily available to supplement moorings if necessary or in the event of a line failure.

The mooring lines are normally deployed from the manoeuvring ship. However, when prevailing weather conditions or weather forecasts require it, sending lines from both ships can increase the number of mooring lines. Loads should not be concentrated by passing most of the mooring ropes through the same fairlead or onto the same mooring bitts. *Use should be made of all available fairleads and bitts.*

During the operation, freeboard differences should be kept to a minimum, with consideration given to ballasting the higher ship and de-ballasting the lower one where this is possible. The steeper the orientation of the mooring lines, the less effective they will be in resisting horizontal loads. The maximum anticipated freeboard difference should therefore be taken into account when planning the mooring plan in order to ensure that the vertical angle of each mooring line stays as small as practicable throughout the operation. See below figure 4 for maximum and minimum freeboard heights.

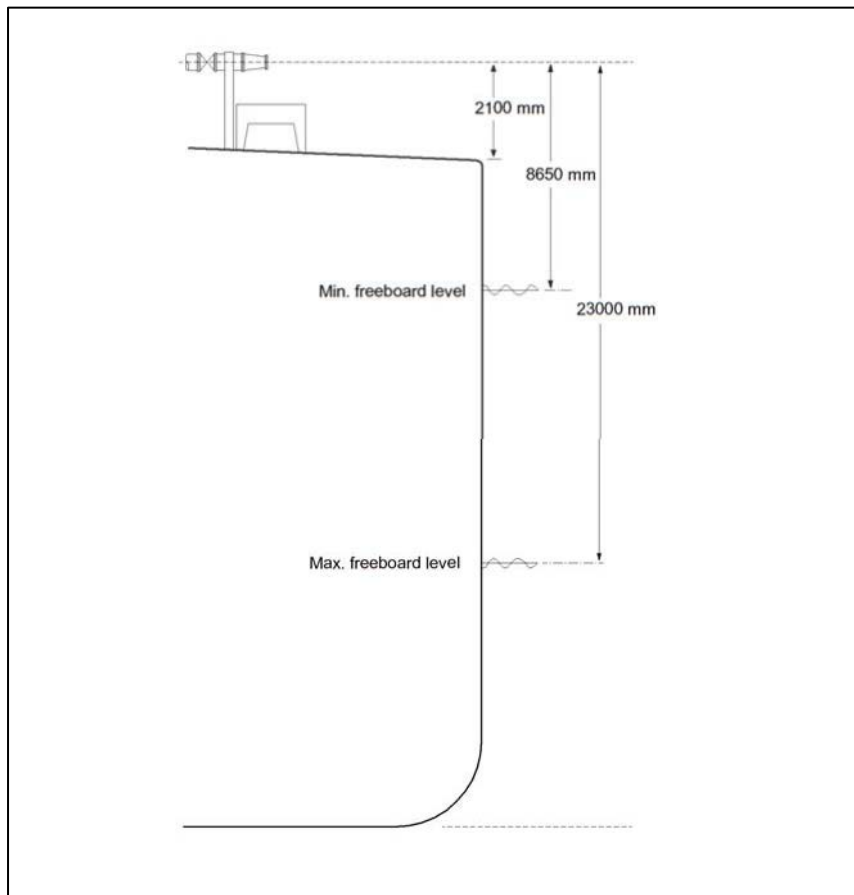


Figure 4: Maximum and minimum freeboard heights

A ship's standard complement of mooring lines is generally suitable for STS transfer operations but ships equipped with steel wire or high modulus synthetic fibre mooring lines should fit soft rope tails to them. The connection between the primary line and the soft rope tail should be made with an approved fitting e.g. Mandel or Tonsberg Shackle.

Rope tails should be at least 11 metres long and have a dry breaking strength at least 25% greater than that of the wires to which they are attached in accordance with OCIMF *Mooring Equipment Guidelines* [4]. Soft rope tails fitted to wire moorings also introduce the benefit of making the cutting of mooring lines easier in an emergency and, for this purpose, long-handled firemen's axes or other suitable cutting equipment should be available at all mooring stations.

Strong rope messengers should be readied 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.

Non-pyrotechnic line-throwing equipment may be used to make the first connection.5.2.2

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 in order to ensure changes to the relative freeboards do not create excessive strain in the moorings.

5.2.3 Mooring Line Lead Angles

Peak loads on individual head and stern mooring lines can be minimised if the lead angles are similar and thus more effectively share the mooring loads.

5.2.4 Weather Thresholds

Higher weather thresholds for mooring loads can be tolerated when the STBL is at or close to fully loaded displacement. Masters and persons in overall advisory control should be aware that weather thresholds may change significantly during the course of an STS operation as the STBL is lightened.

5.2.5 Long Period Waves

STS operations in locations subject to long period waves should be undertaken with caution. The load on mooring lines at any specific significant wave height greatly increases as the wave period, or period of encounter, increases.

5.2.6 Direction of Wave Encounter

Wave encounter from a beam direction during STS operations should be avoided. This will need particular attention when using exposed anchorage STS locations subject to strong currents, where the ships can lie at a large angle to the wind and waves.

When conducting underway STS operations, the optimum wave encounter direction to control mooring loads is normally considered to be on the port bow, with the STBL to windward. But, depending on the relative size and displacements of the two ships, this may not always be the case. For instance, when both ships are of similar size and as the lightering ship's displacement increases relative to the STBL, the optimum mooring load wave encounter direction may change to the starboard bow, with the lightering ship to windward. In such a case, it may be advantageous to have sea-room available for course alterations across the wind.

6. CARGO TRANSFER

6.1 Pre-Transfer Procedures

Pre-Transfer Requirements

When the two ships are securely moored and before cargo transfer commences, good communications should be established between the personnel responsible for cargo operations on each ship and the pre-transfer checks should be satisfactorily completed. Before commencing the transfer operation the responsible person(s) on the ships should ensure:

PRE_TRANSFER EQUIPMENT	
1	Proper mooring of the ships
2	Availability of reliable communication between the two oil tankers
3	Emergency signals and shutdown signals are agreed
4	Proper connections and securing hoses, hoses saddles and supports
5	Proper condition and position of hoses, hoses saddles and supports
6	Flanged joints, where used, are fully bolted and sealed and ensured oil tight
7	Proper blanking of unused cargo and bunker connection
8	Tools required for the rapid disconnection of hoses are located at the Manifold
9	Any valve through which oil could be discharged to the sea is closed and inspected and, if not used in the operation, is sealed to ensure that it is not inadvertently opened
10	Deck scuppers are properly plugged
11	Availability of empty drip trays on both oil tankers under couplings of hoses, and means for drip tray drainage
12	Availability of materials on the oil tankers for on-deck clean up in case of spillage
13	Fires axes or suitable cutting equipment is in position throughout the transfer and the main engines will be ready for immediate use
14	An engine room watch will be maintained throughout the transfer and the main engine will be ready for immediate use
15	A bridge watch and or anchor watch will be maintained
16	Officers in charge of the cargo transfer are identified and details are posted
17	A deck watch is established to pay particular attention to moorings, fenders, hoses and manifold during operations
18	Correct understanding of commands and signals by the responsible person(s) on the oil tankers during operations
19	Confirm completion of STS checklists 4 & 6

Table 5: Pre-Transfer Requirements

6.1.2 Responsibility for Cargo Operations

Cargo transfer operations should be carried out in accordance with the requirements of the receiving ship. The person in charge of the cargo operations for each ship should be positively identified on a list posted on the bridge and cargo control room of both ships, together with the names of other persons supervising the cargo transfer.

The transfer operation may be started only after the responsible person(s) on both oil tankers and the POAC have agreed to do so, either verbally or in writing.

6.1.3 Planning for Cargo Transfer

When preparing cargo loading and discharging plans, due regard should be given to ensuring that adequate stability is maintained, hull stresses remain within design limits and free surface effects are kept to a minimum throughout.

The cargo transfer operation should be planned and agreed in writing between the two ships and, where applicable, should include information on the following:

CARGO TRANSFER OPERATION INFORMATION	
1	Quantity of each grade of cargo to be transfer
2	Sequence of grades, cargo density, temperature and specific precautions such as those that might be necessary for static accumulator products
3	Details of cargo transfer system, number of pumps, maximum pressure
4	Crude oil washing procedures
5	Initial and maximum topping off rates and notice period of rate change
6	Normal stopping and emergency shutdown procedure
7	Emergency and spill containment procedures
8	Watch or shift arrangement
9	Critical stages of the operation
10	Local or government rules that apply to the transfer
11	Material Data Sheet (MDS) in respect of cargo to be transferred to ensure that the receiving ship is aware of particular properties of the cargo, e.g. high Hydrogen Sulphide (H ₂ S) content, special fire-fighting requirements etc.
12	Receiving ship to provide details of previous cargo
13	Co-ordination of plan for cargo hose connection, monitoring, drainage and disconnection
14	Ballast plans for both discharging ship and receiving ship

Table 6: Cargo transfer operation information

Before starting cargo transfer, the discharging ship must be informed by the receiving ship of the flow rates required for the different phases of the cargo operation. If variations in transfer rate become necessary, the receiving ship should advise the discharging ship of its requirements. The discharging ship should similarly inform the receiving ship of any variations in flow rates due to its operations.

The agreed transfer rate should not exceed the manufacturer's recommended flow rates for the cargo hoses.

Cargo Transfer

6.2.1

General

Throughout cargo transfer operations, the discharging ship and the receiving ship should station a responsible person at the cargo manifold area to observe the hoses and to check for leaks. In addition, throughout the cargo transfer, a responsible person equipped with a portable radio should

be stationed at or near the cargo pump controls or in the cargo control room on the discharging ship, to take action as required.

Cargo transfer should begin at the agreed slow rate to enable the receiving ship to check that the cargo pipeline system is correctly set. The transfer rate should also be reduced to an agreed topping off rate when the receiving ship's tanks are reaching their filling limits. Throughout the transfer, as a minimum hourly transfer rate checks and comparisons should be made between the two ships, and the results logged. Any differences or anomalies should be carefully checked and if necessary cargo operations should be suspended until the differences are resolved.

It should be ensured that adequate ullage space is left in each tank being filled. When it is required to stop cargo transfer operations, the responsible person should advise the pumping oil tanker in ample time.

Cargo operations should be conducted under closed conditions i.e. with ullage, sounding/sampling ports securely closed. In some parts of the world vapour balancing procedures are enforced and due regard should therefore be given to local regulations.

Consideration should be given to the prevention of pressure surges by careful planning and control of pump speeds and the operation of valves.

Static accumulator cargoes will require extra precautions and ISGOTT [3] should be referred to when handling this type of cargo.

During cargo transfer, appropriate ballast operations should be performed in order to minimise the differences in freeboard between the two ships, and to avoid excessive trim by the stern. Listing of either ship should be avoided, except as required for cargo tank draining on the discharging ship.

Any national or local regulations controlling discharge of ships' ballast water should be complied with.

Constant attention should be paid to mooring lines and fenders to avoid chafing and undue stress, particularly that caused by changes in relative freeboard. If at any time mooring lines need to be re-positioned or adjusted this should only be done under strictly controlled conditions.

6.2.2 Suspension of Cargo Transfer

Both ships should be prepared to immediately discontinue the lightering operation, and to unmoor if necessary. The operation should be suspended when:

SUSPENSION OF CARGO TRANSFER	
1	Movement of the ships alongside reaches the maximum permissible and may cause loss of strength or excessive strain on hoses
2	Under adverse weather and or sea conditions
3	Either vessel experience a power failure
4	There is a failure of the main communication system between the ships and there are no proper standby communications
5	Escape of oil through sea valve or ship plating is discovered
6	There is an unexplained pressure drop in the cargo system
7	Fire danger is discovered
8	Any oil leakage is discovered from hoses, couplings, or the ship's deck piping
9	Any oil overflow on the ship(s)' deck caused by overfilling of tank occurs
10	Faults or damage threatening the escape of oil are discovered
11	There is a significant, unexplained difference between the quantities of cargo delivered and received
12	There is any failure of the fendering system
13	When hours of work are exceeded on either ship

Table 7: Suspension of Cargo Transfer

6.3 Vapour Balancing Considerations (if applicable)

Cargo operations should be conducted under closed conditions with ullage, sounding and sampling ports securely closed. Due regard must be given to any local regulations that may require the adoption of vapour balancing procedures.

6.3.1 Vapour balancing considerations before commencing cargo transfer:

- Equipment should be provided on at least one of the vessels to enable the oxygen content of the vapour stream to be monitored. This should draw samples continuously from a location close to the vapour manifold connection and should include the facility for audible and visual alarms in the event that the oxygen content of the vapour stream exceeds 8% by volume. The oxygen analyser and associated alarms should be tested for proper function prior to each cargo transfer operation.
- The oxygen content of the vapour space of each tank connected to the IG main in both ships should be checked and confirmed to be less than 8% by volume.
- The vapour transfer hose should be purged of air and inerted prior to commencing transfer of vapours.
- The vapour manifold valves should not be opened until the pressure in the cargo system of the receiving vessel exceeds that of the ship discharging cargo.

6.3.2 Vapour balancing considerations during cargo transfer:

- The inert gas system on the discharging ship should be kept operational and on standby, with the inert gas main deck isolating valve closed. The inert gas system should be used if the inert gas pressure in the discharging vessel falls to a low level (300 mm WG).
- The inert gas pressure on both ships should be monitored and each ship advised of the other's pressure on a regular basis.
- No air should be allowed to enter the cargo tanks of the discharging ship
- Transfer operations should be suspended if the oxygen content of the vapour stream exceeds 8 % by volume and should only be resumed once the oxygen content has been reduced to 8% or less by volume.
- The cargo transfer rate must not exceed the design rate for the vapour balancing hose.

6.4 Safety during Cargo Transfer

The basic safety requirements for a transfer operation are similar to those for a normal port cargo operation as contained in the latest edition of ISGOTT [3]. The following points are emphasised for an STS transfer operation:

6.4.1 Smoking and naked lights

Regulations regarding smoking and the use of naked lights should be strictly enforced. Warning notices should be displayed and smoking rooms should be designated and clearly marked.

6.4.2 Earths on electrical switchboards

Earth indicator lights showing on the main switchboard indicate a faulty circuit and such faults should be immediately traced and isolated. This is to avoid the risk of arcing, especially in deck areas where hazardous accumulations of gas may be present.

6.4.3 Boilers and diesel engines

Precautions such as soot-blowing should be carried out prior to commencing the approach manoeuvre in order to avoid hot ash falling onto a ship's deck during the cargo transfer. In case of sparking from the funnel, transfer operations should be stopped immediately.

6.4.4 Ship-to-Ship electric currents

The Elimination of Electrical Current and Electrostatic Charge in Cargo Hoses

In order to eliminate the potential for incentive arcing between the two ships when presenting the hose string for connection:

- a single insulating flange should be fitted within each hose string (or at one ship's manifold);
or
- one length of electrically discontinuous hose should be fitted in each hose string; or
- hoses that are specially constructed to prevent static build-up or electrical currents transferring between ships should be used.

The electrical potential between the two ships should be reduced to the minimum. Switching off cathodic protection systems of the impressed current type is not, in general, considered to be a feasible method of minimising ship-to-ship currents in the absence of an insulating flange or hose. If both ships have properly functioning impressed current cathodic protection systems, this is probably best achieved by leaving them running. Likewise, if one has an impressed system and the
41

other a sacrificial system, the former should remain in operation. However if either ship is without cathodic protection, or its impressed system has broken down, consideration should be given to switching off the impressed system on the other ship well before the two ships come together.

Other Places Where Electrical Arcing May Occur

All ship-to-ship mooring lines should be insulated either by using the natural properties of soft mooring lines or by attaching a soft rope tail to the eye of each steel wire mooring line. If using soft rope tails, they should be of suitable length so that they extend to the outboard side of the ship receiving the mooring. Care should be taken to avoid low resistance ship-to-ship electrical contact in the following areas:

- non-insulated metallic ladders or gangways between the ships - by the fitting of rubber ends.
- derrick or crane wire runners and hooks - by careful operation.
- unprotected bare wires and chains within fender support nets or cages - by good quality maintenance.

6.4.5 The use of radio and satellite communications equipment

Main Radio Equipment

Transmissions from the ship's main radio station can cause electrical resonance in insulated parts of some ship fittings, such as mast stays, and this can cause arcing across deck fittings. Similarly, arcing can occur on a ship's wireless aerials, especially over the surface of insulators when they have a coating of salt, dirt or water.

The use of the ship's main radio equipment during cargo operations can be dangerous. Radio transmissions should not be permitted during periods when there is the possibility of flammable gas in the region of the antennae or where there is doubt about the effective earthing of stays, derrick equipment and other such fittings.

The main radio transmitting aerials on both ships should be earthed (grounded) and neither ship should use this equipment while alongside one another. Satellite communications equipment can be used for communications; however, the risks described below should be taken into account.

Satellite Communications

Satellite communications equipment normally operates at 1.6 GHz and the power levels generated are considered to present few ignition hazards. However, this equipment should not be used when flammable gas is in the vicinity of antennae.

VHF and UHF Radios

Any hand-held VHF and UHF radios, as used for mooring and cargo operations, should be of intrinsically safe manufacture.

Automatic Identification Systems (AIS)

Where either or both ships involved in STS operations are required to have an AIS operating while underway or at anchor, the AIS equipment should remain in use at all times, including during STS operations.

The VHF equipment used for the AIS broadcasts need not be set to low power output during STS operations. However, during STS operations consideration should be given to using the optimal text entry area in the AIS message to include a phrase to indicate that the ship is restricted in her ability to manoeuvre, underway or at anchor, as a result of conducting STS transfer operations. It may be necessary to abbreviate the optional message to include this information. AIS broadcasts should not supplant the recommendation to broadcast navigational warnings by other means.

Portable Electronic Devices

It should be noted that portable cellular (mobile) telephones, pagers, cameras using batteries, Portable Data Assistants (PDAs), calculators etc, could constitute a risk to the ships if used in a hazardous area. Precautions should be taken to ensure that all personnel involved in the transfer, especially those who may be visiting the ships on other business (technicians, surveyors etc) are made fully aware of the dangers and any restrictions on the use of such items.

6.4.6 Radar use

General

The use of radar involves the operation of electrical equipment which is not intrinsically safe. Depending on the relative size of the two ships, during cargo transfer operations the radar beam of

one ship may at times sweep the cargo deck of the other and be close enough to create potentially hazardous power densities in areas where flammable gas mixtures could be present. Consultation between Masters is advisable before radar is used during cargo transfer operations. The following section gives further advice.

The Use of 3cm and 10cm Radar

Radiation from radar operating at frequencies above 9000 MHz (3cm) may be considered safe at distances of over 10 metres. The radiated power from such radar should not present an ignition hazard provided scanners are correctly sited above the superstructure. Radar operating in the 3cm waveband will normally be safe but should only be used with discretion.

At the lower frequencies, as used by 10cm radar, the possibility of induced arcing in parts of a ship's structure is present at ranges of up to 10 metres.

Marine radars normally operate with a pulsed signal and a rotating scanner, so people are not continuously exposed to radiation. Therefore the power-scanner interlocks should never be overridden without an appropriate risk assessment.

6.4.7 Gas accumulation

The STS transfer operation should be suspended if cargo vapour accumulation around the decks or manifolds of either ship constitutes a risk to the ship or personnel, and should not be resumed until it is considered safe to do so.

The receiving ship should, prior to cargo transfer, provide details of the ship's previous cargo to the discharging ship (STBL). This will enable the discharging ship's personnel to take suitable precautions in the event that the previous cargo contained toxic vapours that could be displaced onto the deck of the discharging ship. Particular attention should be given to the potential of high H₂S levels in the cargo vapours and all necessary personal safety precautions should be taken.

6.4.8 Electrical storms

When an electrical storm is present or imminent in the transfer area, the cargo transfer operation should be suspended and all vent risers, cargo systems and IGS systems secured until such time as it is considered safe to resume operations.

6.4.9 Galley stoves

Before permitting the use of galley stoves and other cooking appliances while a ship is engaged in STS operations, the ship's Master and the STS Superintendent (if applicable) must, after taking into consideration the location, construction and ventilation of the galley, jointly agree that no associated danger exists. Oil or gas fired stoves or electrical appliances using exposed elements should not be used.

6.4.10 Readiness for fire-fighting equipment

Fire-fighting equipment should be ready for immediate use on both ships. Foam monitors on each ship should be pointed towards the cargo manifold in use and left in a suitable condition for hands-off operation. Additional foam fire-fighting equipment should be immediately available for use on deck.

6.4.11 Accommodation openings

All access doors to the accommodation should be kept closed during cargo transfer operations.

The Master of each ship should designate those access doors that are to be used for personnel transit. Where possible, only doors remote from the main deck cargo area should be used. All doors opened for personnel transit should be closed immediately after use. The air conditioning intakes must be set to ensure the atmospheric pressure inside the accommodation is always greater than that of the external atmosphere. Air conditioning systems should not be set to 100% recirculation, as this will cause the pressure of the internal atmosphere to fall less than that of the external atmosphere, due to extraction fans operating in sanitary spaces and galleys.

6.4.12 Unauthorised craft

No unauthorised craft should be allowed alongside either ship throughout the transfer.

6.5 Operations after Completion of Cargo Transfer

In accordance with previously agreed procedures, after completion of cargo transfer the following operations should be carried out:

OPERATION AFTER OF CARGO TRANSFER	
1	All hoses should be drained into one ship prior to disconnecting. The oil tanker with the greatest freeboard should close the valve at the manifold and drain the oil contained in the hoses into the tank of the other oil tanker
2	Hoses should be disconnected and securely blanked
3	Cargo manifold should be shut and securely blanked
4	Authorities should be informed of completion of cargo transfer and the anticipated time of unmooring

Table 8: **Operations after completion of cargo transfer**

When the loading or discharging of cargo is completed, it must be recorded in the Oil Record Book.

7. DEPARTURE

7.1 UNMOORING

7.1.1 Unmooring Procedure While One Ship is at Anchor

It is recommended that unmooring at anchor be carried out only by persons with considerable experience in STS operations and use of tugs should be considered where available, especially if yawing of the anchored ship is anticipated. It is also recommended not to unmoor during a change of tide.

If, in the judgement of the POAC, the weather and current conditions so require, the constant heading ship should weigh her anchor and unmooring should be carried out while making way.

7.1.2 Unmooring Procedure After Underway Transfer

If the STS transfer operation have taken place while underway, it is normal to unmoor with the wind and sea on the port side and then bring the combined two-ship system head to the wind to spread apart the ships, unless local conditions dictate otherwise.

7.1.3 Unmooring Checks

Sufficient crew should be allocated to unmooring stations and consideration should be given to the following points:

UNMOORING CHECKS	
1	The cargo transfer side of the ship should be cleared of obstruction including derricks or cranes
2	The method of disengagement and letting go of mooring lines should be agreed
3	Fenders, including their towing and securing lines, should be checked and to be in good order
4	Winches and winch lasses should be ready for immediate use
5	Rope messengers and rope stoppers should be ready at mooring stations
6	Sharp fire axes or other suitable cutting equipment should be available at each mooring station
7	Communications should be confirmed between ships
8	Communication should be established between mooring personnel
9	Mooring personnel should be instructed to let go mooring lines only when directed
10	Shipping traffic in the vicinity should be checked
11	Checklist 5 should be completed

Table 9: Unmooring checks and considerations

7.2 Procedure for Unberthing

Special care needs to be taken when unmooring to avoid the two ships coming into contact. While there are other methods, a common method of unmooring is achieved by: The forward gang let go the forward Springs and then the Headlines. The after gang lets go the Stern lines and then the After Springs and the manoeuvring ship moves clear. Special care should be adopted during letting go of the last lines. This needs to be performed both safely and effectively. A method that can facilitate this is the “toggle pin technique”. The mooring lines sequence may be changed at times according to weather conditions and/or at the discretion of the Mooring Master. The two vessels will be informed prior to the unmooring of any changes. The constant heading ship should not independently manoeuvre until advised that the manoeuvring ship is clear.

It should be noted that local conditions or ship configurations may cause difficulties in separating the two ships and alternative plans should be considered.

7.2.1 Unmooring Using Quick Release Apparatus or Toggle Pins

Special care should be taken in regard to letting go the last lines in an expeditious and safe manner. This operation should be planned in advance, be undertaken by experienced crew and requires good communications and supervision.

Different methodologies can be applied by STS Superintendents and ships' crews to carry out this task safely and effectively. One such method involves the use of quick release hooks secured around the mooring bitt or a "toggle" pin that is used in conjunction with a messenger to take the load of the mooring line while it is removed from the mooring bitt. The deployment of the toggle pin technique is shown below in Figure 8.1.

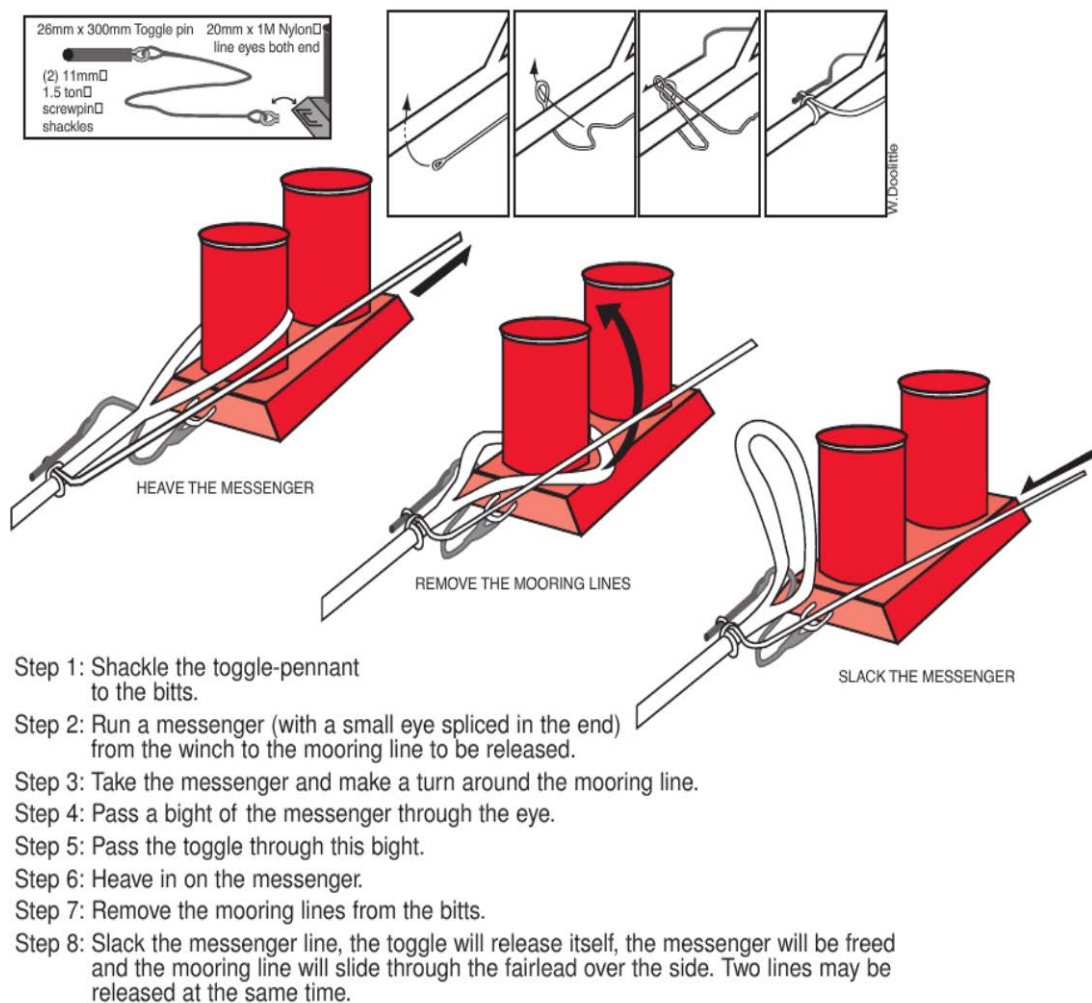


Figure 5: Use of Release or Toggle Pins

8. **Procedures for cleaning of save-all**
9. **Report of oil spill** (refer to SOPEP)
10. **Approved contingency plan** (It can be simplified as a Muster List and submitted to Local Vessels Safety Section for approval)
11. **Cargo and Ballast Plan** (If an oil tanker does not require any change of ballast for the STS operations, it should be clearly declared in the STS Operations Plan, or step by step procedures should be laid down in the STS Operations Plan)

APPENDIX A

A.1 CHECKLISTS

Attached checklists are from OCIMF [1], alternatively the management may develop their own.

SHIP TO SHIP TRANSFER CHECK-LIST 1-PRE ARRIVAL INFORMATION (FOR EACH SHIP) (BETWEEN SHIP OPERATOR/CHARTERER AND ORGANISER)		
Ship Name:		IMO No.
Ship operator	Ship Charterer	STS Organiser
Preferred Contact No. (e.g. INMARSAT)	Ship Operator's Confirmation	Remarks
1. What is the LOA? What is the parallel body length at loaded and ballast draughts?		
2. Will the transfer be conducted underway and, if so, can the ship maintain about 5 knots for a minimum of 2 hours		
3. Is the ship manifolds in accordance with OCIMF Recommendations for Oil Tanker Manifolds and Associated Equipment?		
4. IS the ship's lifting equipment in accordance with OCIMF Recommendations for Oil Tanker Manifolds and Associated Equipment?		
5. What is the maximum and minimum expected height of the cargo manifold from waterline during transfer?		
6. Sufficient manpower will be provided for all stages of operations?		
7. Are enclosed fairleads and mooring bitts in accordance with OCIMF Mooring Equipment Guidelines and are they of a sufficient number?		
8. Can the ship supplying the moorings provide all lines on winch drums?		
9. If mooring are wires or high modulus synthetic fibres ropes, are they fitted with synthetic tails at least eleven metres in length?		
10. Full-sized mooring bitts of sufficient strength are suitably located near all enclosed fairleads to receive mooring ropes eyes?		
11. Both sides of the ship are clear of any overhanging projections including bridge wings?		
12. The transfer are has been agreed?		
FOR DISCHARGING ()/ RECEIVING SHIP		
Name		
Rank		
Signature	Date	

SHIP TO SHIP TRANSFER CHECK-LIST 2- BEFORE OPERATIONS COMMENCE			
Discharging Ship Name			
Receiving Ship Name			
Date of Transfer			
	Discharging ship checked	Receiving Ship Checked	Remarks
1.The two ships have been advised by ship owners that Check-List 1 has been completed satisfactorily?			
2. Personnel comply with the rest requirement of ILO 180, STCW or national regulations as appropriate?			
3. Radio communications are established?			
4. Language of operations has been agreed?			
5.The rendezvous position off the transfer area is agreed?			
6. Berthing and mooring procedures have been agreed, including fender positions and number/type of ropes to be provided by each ship?			
7. The system and method of electrical insulation between ships have been agreed?			
8. The ships are upright and suitable trim without any overhanging projections?			
9. Engines, steering gears and navigational equipment have been tested and found in good order?			
10.Ships boilers and tubes have been cleared of soot and it is understood that during STS operations, no soot blowing is allowed?			
11. Engineers have been briefed on engine speed (and speed adjustment) requirements?			
12 Weather forecast has been obtained for the transfer area?			
13 Hose lifting equipment is ready and suitable for use?			
14 Cargo transfer hoses are properly tested and certified and in good condition?			
15 Fenders and associated equipment are visually in good condition?			
16 The crew has been briefed on mooring procedures?			
17 The contingency plan has been agreed?			
18 Local authorities has been advised about the operations?			
19 A navigational warning has been broadcast?			
20 The other ship has been advised that Check-List 2 is satisfactorily completed?			
FOR DISCHARGING () / RECEIVING SHIP ()			
Name			
Rank			

Signature	Date		
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SHIP TO SHIP TRANSFER CHECK –LIST 3- BEFORE MANOEUVING AND MOORING Discharging Ship Name Receiving Ship Name Date of Transfer			
	Discharging Ship Checked	Receiving Ship Checked	Remarks
1 Check-List 2 has been satisfactorily completed?			
2 Primary fenders are floating in their proper place? Fender pennants are in order?			
3 Secondary fenders are in place, if required?			
4 Over side protrusions on the side of berthing are retracted?			
5 A proficient helmsman is at wheel?			
6 Cargo manifold connections are ready and marked?			
7 Course and speed information has been exchanged and is understood?			
8 Ship's speed adjustment is controlled by changes to revolutions and or propeller pitch?			
9 Navigational signals are displayed?			
10 Adequate lighting is available?			
11 Power is on winches and windlass and they are in good order/			
12 Rope messengers, rope stoppers and heaving lines are ready for use?			
13 All mooring lines are ready?			
14 All mooring personnel are in position?			
15 Communications are established with mooring personnel?			
16 The anchor on opposite side to transfer is ready for dropping?			
17 The other ship has been advised that Check-List 3 is satisfactorily completed?			
FOR DISCHARGING () / RECEIVING SHIP ()			
Name			
Rank			
Signature		Date	

SHIP TO SHIP TRANSFER CHECK –LIST 4- BEFORE CARGO TRANSFER			
Discharging Ship Name Receiving Ship Name Date of Transfer			
	Discharging Ship Checked	Receiving Ship Checked	Remarks
1 The ISCOTT Ship/Shore Safety Check-List has been satisfactorily completed			
2 Procedures for transfer of personnel have been agreed?			
3 The gangway (if used) is in good condition and well secured?			
4 An inter-ship communication system is agreed?			
5 Emergency signals and shutdown procedures are agreed?			
6 As engine room watch will be maintained throughout transfer and main engine ready for immediate use?			
7 Fires axes or suitable cutting equipment is in position at fore and aft mooring stations?			
8 A bridge watch and or anchor watch are established?			
9 Officers in charge of transfer on both ships are identified and posted?			
10 A deck watch is established to pay particular attention to moorings, fenders, hoses, manifold observation and cargo pump controls?			
11 The initial cargo transfer rate is agreed with the other ship?			
12 The maximum cargo transfer rate is agreed with the other ship?			
13 The topping-off rate is agreed with other ships?			
14 Cargo hoses are well supported?			
15 Tools required for rapid disconnection are located at cargo manifolds?			
16 Details of the previous cargo of the receiving ship have been given to the discharging ship?			
17 The other ship has been advised that Check-List 4 is satisfactorily completed?			
FOR DISCHARGING () / RECEIVING SHIP ()			
Name			
Rank			
Signature		Date	

SHIP TO SHIP TRANSFER CHECK –LIST 5- BEFORE UNMOORING			
Discharging Ship Name Receiving Ship Name Date of Transfer			
	Discharging Ship Checked	Receiving Ship Checked	Remarks
1 Cargo hoses are properly drained before disconnection?			
2 Cargo hoses or manifolds are blanked?			
3 The transfer side of the ship is clear of obstruction (including hose lifting equipment)?			
4 Secondary fenders are correctly positioned and secured for departure?			
5. The method of unberthing and of letting go moorings have been agreed with the other ship?			
6 Fenders including fender pennants are in good order?			
7 Power in on winches and windlass?			
8 There are rope messengers and rope stoppers at all mooring stations?			
9 The crew are standing by at their mooring stations?			
10. Communications are established with mooring personnel and with other ship?			
11 Shipping traffic in the area has been checked?			
12 Main engine (s) and steering gear have been tested and are in a state of readiness for departure?			
13 Mooring personnel have been instructed to let go only as requested by the manoeuvring ship?			
14 Navigational warnings have been cancelled (when clear of other ship)?			
15 The other ship has been advised that Check-List 5 is satisfactorily completed?			
FOR DISCHARGING () / RECEIVING SHIP ()			
Name			
Rank			
Signature		Date	

A.2 LIST OF RESPONSIBILITY AND DUTIES

INSERT LIST WITH THE TITLES, LOCATION AND DUTIES OF ALL PERSONS INVOLVED IN THE STS OPERATION

APPENDIX B

B.1 MOORING ARRANGEMENT

**INSERT MOORING ARRANGEMENT PLAN OR GA WITH MOORING EQUIPMENT
MARKED**

B.2 TANK CAPACITY PLAN

INSERT TANK CAPACITY PLAN

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- [5] Oil Companies International Marine Forum, “Recommendations for Oil Tanker Manifolds and Associated Equipment,” Witherbys Publishing, February 2007.
- [6] Oil Companies International Marine Forum, “Guidelines for the Handling, Storage, Inspection and Testing of Hoses in the field,” Witherbys Publishing, February 1995.
- [7] Standard Marine Communication Phrases (IMO)
- [8] International Regulations for Preventing Collisions at Sea (COLREGS) (IMO)
- [9] Ship and Port Facility Security (ISPS) Code (IMO)
- [10] International Convention on Standards and Training, Certification and Watch keeping and STCW Code (IMO)
- [11] Guide to Helicopter / Ship Operations (ICS)
- [12] International Regulations for Preventing Collisions at Sea (COLREGS) (IMO)
- [13] Guidelines on the Use of High-Modulus Synthetic Fibre Ropes as Mooring Lines on Large Tankers (OCIMF)
- [14] Recommendations for Ships’ Fittings for Use with Tugs with Particular Reference to Escorting and Other High Load Operations (OCIMF)

**Requirements of Installation of
Stability Instrument on Local Oil Tankers**

1. In accordance with the Merchant Shipping (Prevention of Oil Pollution) (Amendment) Regulation 2016, all local oil tankers constructed after 1 January 2016 shall be fitted with a stability instrument, capable of verifying compliance with intact and damage stability requirements approved by the Director having regard to the performance standards recommended by the International Maritime Organization (IMO)ⁱ.

.1 oil tankers constructed before 1 January 2016 shall comply with this requirement not later than the first renewal survey of the ship after 1 October 2016;

.2 a stability instrument fitted on an oil tanker constructed before 1 January 2016 need not be replaced provided it is capable of verifying compliance with intact and damage stability requirements approved by the Director; and

.3 for the purposes of control, the Director shall issue a document of approval for the stability instrument.

2. The Director may waive the requirement of installing a stability instrument for the following oil tankers if they are loaded in accordance with the conditions approved by the Director after taking into account the guidelines adopted by IMOⁱⁱ:

.1 oil tankers which are on a dedicated service, with a limited number of permutations of loading such that all anticipated conditions have been approved in the stability information provided to the master of the tanker in accordance with regulation 29(5) of Cap 413A;

.2 oil tankers where stability verification is made remotely by a means approved by the Director;

.3 oil tankers which are loaded within an approved range of loading conditions;
or

.4 oil tankers constructed before 1 January 2016 which are provided with approved limiting KG/GM curves covering all applicable intact and damage stability requirements.

3. Owners and operators of local oil tankers may submit a completed application form (Annex 4 refers) and supporting document to the Local Vessels Safety Section (address: 23/F, Harbour Building, 38 Pier Road, Central, Hong Kong) for waiving the requirement of installing a stability instrument based on the conditions mentioned in paragraph 2 of this Annex.

ⁱ Refer to Part B, chapter 4, of the International Code on Intact Stability, 2008 (2008 IS Code), as amended; the *Guidelines for the Approval of Stability Instruments* (MSC.1/Circ.1229), annex, section 4, as amended; and the technical standards defined in part 1 of the *Guidelines for verification of damage stability requirements for tankers* (MSC.1/Circ. 1461).

ⁱⁱ Refer to operational guidance provided in part 2 of the *Guidelines for verification of damage stability requirements for tankers* (MSC.1/Circ. 1461).

The Government of the Hong Kong Special Administrative Region – Marine Department
香港特別行政區政府 - 海事處

Application for *Waiver / Survey of Stability Instrument

申請 *免除 / 檢驗 穩定性儀器

(Merchant Shipping (Prevention of Oil Pollution) (Amendment) Regulation 2016)

(2016 年商船(防止油類污染)(修訂)規例)

To: Local Vessels Safety Section, Marine Department

23/F, Harbour Building, 38 Pier Road, Central, Hong Kong

致：海事處 本地船舶安全組

香港中環統一碼頭道 38 號海港政府大樓 23 樓

(Fax 傳真：2542 4679 E-mail 電郵：sslvs@mardep.gov.hk)

I hereby apply for *waiver / survey of Stability Instrument required under regulation 29(6) of the “Merchant Shipping (Prevention of Oil Pollution) Regulations” for the following local licensed vessel.

本人現為以下本地牌照船隻申請 *免除 / 檢驗 按《商船(防止油類污染)規例》第 29(6)條要求的穩定性儀器。

Particulars of Vessel 船隻資料

Name of Vessel 船名	Certificate of Ownership No. 擁有權證明書號碼	Gross Tonnage 總噸	Carriage of Type of Cargo Oil 裝載貨油類別

Particulars of Applicant 申請人資料

Name of *Owner / Agent *船東 / 代理人名稱	
Address in Hong Kong 香港地址	
Contact Telephone No. 聯絡電話號碼	
Fax No. 傳真號碼	
E-mail Address 電郵地址	
Signature of *Owner / Agent *船東 / 代理人簽名	
Date 日期	

Note: If applying for waiver of Stability Instrument, please complete Part 1; if applying for survey of Stability Instrument, please complete Part 2.

注意：如申請免除穩定性儀器，請填妥第一部份；如申請檢驗穩定性儀器，請填妥第二部份。

**Delete if inapplicable 刪去不適用者*

Part 1: Application for Waiver of Stability Instrument

第一部份：申請免除穩定性儀器

Note: According to regulation 29(11) of the “Merchant Shipping (Prevention of Oil Pollution) Regulations”, the Director may waive the requirements of regulation 29(6) and 29(7) (i.e. stability instrument) for any of the following Hong Kong oil tankers if it is loaded in accordance with the conditions approved by the Director after taking into account of the guideline adopted by IMO.

注意：根據《商船(防止油類污染)規例》第 29(11)條，凡任何符合以下說明的香港油輪，按照處長批准的條件裝載貨油，處長在給予批准前，已顧及國際海事組織採納的指引，則處長可就該油輪，免除第 29(6) 及 29(7) 條(即穩定性儀器)所指的規定。

Please specify which one of the following conditions that the above vessel has complied with: 請說明上述船隻符合下列那項條件：		(✓) where applicable 如適用
(a)	An oil tanker which is on a dedicated service, with a limited number of permutations of loading such that all anticipated conditions have been approved in the stability information provided to the master of the tanker in accordance with regulation 29(5). 該油輪提供某項專用服務，該項服務的裝載組合數目有限，因而按照第 29(5)條規例向該油輪的船長提供的穩定性資料中所有預計條件，已獲批准。	
(b)	An oil tanker where stability verification is made remotely by a means approved by the Director. 已用處長批准的方法，對該油輪遙距進行穩定性核實。	
(c)	An oil tanker which is loaded within an approved range of loading conditions. 在經批准的一系列裝載條件的範圍內，裝載貨油。	
(d)	An oil tanker constructed before 1 January 2016 which is provided with approved limiting KG/GM curves covering all applicable intact and damage stability requirements. 在 2016 年 1 月 1 日之前建造，而該油輪設有經批准的限制 KG/GM 曲線，該等曲線涵蓋所有適用的完整及破艙穩定性規定。	

Note: Please submit the following documents to the Local Vessels Safety Section:

- a completed application form;
- supporting documents based on the conditions mentioned above; and
- a photocopy of HKOPP Certificate with Supplement to the HKOPP Certificate.

注意：請把以下文件遞交本地船舶安全組：

- 已填妥的申請表；
- 符合上述條件的證明文件；及
- 香港防止油污證書和香港防止油污證書的增補影印本。

Part 2: Application for Survey of Stability Instrument

第二部份：申請檢驗穩定性儀器

Place, Date and Time of Survey 檢驗地點、日期及時間	Details of Survey 檢驗項目

Note: Please submit the completed application form and a photocopy of HKOPP Certificate with Supplement to the HKOPP Certificate to the Local Vessels Safety Section.

注意：請把已填妥的申請表，及香港防止油污證書和香港防止油污證書的增補影印本遞交本地船舶安全組。