Ship To Ship Transfer Operations Plan

For compliance with Chapter 8, Regulations 40, 41 and 42,
Annex I of MARPOL 73/78

Ship Name : British Cygnet

IMO No : 9297345

Lloyd's Register EMEA
A member of the Lloyd's Register group

Design Support, London Office

EXAMINED

This plan has been examined and given the status as shown in the Design Appraisal Document (DAD) number below

DAD Number:
LDSO - WP 4098455

Date: **14 Jan 2011** Initials: **N.A.S.**

Lloyd's Register

LR2008.001.2

This document has been processed electronically
and it is therefore valid without any signature.

IMO No. **9297345**

APPROVED

for and on behalf of the Government of the vessel's Registration as complying with the Regulations stated below.

SHIP-TO-SHIP OIL TRANSFER OPERATIONS PLAN

The information contained in this Plan has been examined for compliance with Regulation 41.1 of MARPOL 73/78 Annex I as revised by IMO resolution MEPC.186(59), and in conjunction with IMO's "Manual on Oil Pollution, Section I, Prevention" as amended in MEPC 61/8/1 and the ICS and OCIMF "Ship-to-ship Transfer Guide, Petroleum", fourth edition, 2005.

The owner remains responsible for the operational and training requirements included on the above mentioned documents.

Lloyd's Register EMEA
A member of the Lloyd's Register group
N.A.S 14 Jan 2011
Design Support, London Office

Signed: Nouman Ahmad Siddiqui Date: 14 January 2011
Surveyor to Lloyd's Register EMEA
A Member of The Lloyd's Register Group

Approval is subject to verification at the next MARPOL Annex I survey, that the arrangements onboard are identical to those described in this Plan.

Signed _____ Date:
Surveyor to Lloyd's Register .....
A Member of The Lloyd's Register Group

APPROVAL HISTORY			
Original approval:			
NAME	**PORT OF REGISTRY AND FLAG**	**OFFICIAL NO. OR CALL SIGN**	**SURVEYOR/DATE**
"BRITISH CYGNET"	**DOUGLAS** **ISLE OF MAN (UK)**	**MGSG6**	**Nimia Herrera** **24 November 2010** Lloyd's Register EMEA A member of the Lloyd's Register group N.H. 24 Nov 2010 Design Support, London Office Lloyd's Register
Changes:			
This supersedes the document approved on 24 November 2010			**Nouman Ahmad Siddiqui** **14 January 2011** Lloyd's Register EMEA A member of the Lloyd's Register group N.A.S. 14 Jan 2011 Design Support, London Office Lloyd's Register

Ship to Ship Transfer Operations Plan (STS Plan)

Ship Name	**British Cygnet**
IMO Number	**9297345**
Call Sign	**MGSG6**
INMARSAT No.	**773156077**
Ship Type	**Oil Tanker**
Port of Registry	**Douglas**
Flag	**United Kingdom (Isle of Man)**
Deadweight	**113,782 Metric Tonnes**
Maximum Draft	**15.04 metres**

Record of changes

This document is to be circulated to the ship's staff that will be responsible for ship to ship transfer operations. After reading, the STS Plan is to be signed.

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

Name	Rank	Date Joined	Signature and date

Table of contents

Introduction

1. The STS Transfer Operations Plan (STS Plan) has been developed in accordance with the standards describe in MARPOL Annex I, as amended by Resolution MEPC.186(59), Chapter 8: Prevention of Pollution during Transfer of Oil Cargo between Oil Tankers at Sea, Regulations 40, 41, 42.

2. The STS Plan has been developed taking into account the information contained in the best practice guidelines for STS operations as identified by the International Maritime Organization[1] (IMO). The STS operations Plan may be incorporated into an existing Safety Management System required by Chapter IX of the International Convention for the Safety of Life at Sea, 1974, as amended, if that requirement is applicable to the oil tanker in question. Any oil tanker subject to this chapter and engaged in STS operations shall comply with its STS Plan.

3. The Person in Overall Advisory Control **(POAC)** of STS operations shall be qualified to perform all relevant duties, taking into account the qualifications contained in the best practice guidelines for STS operations identified by the Organization[2], as required by MARPOL Annex I, Chapter 8, Regulation 41.4

4. Records of STS operations shall be retained on board for three years and be readily available for inspection by a party to the MARPOL Convention, as required by MARPOL Annex I, Chapter 8, Regulation 41.5.

5. The purpose of the plan is to provide guidance to the Master and officers directly involved in Ship to Ship Transfer (STS) Operations with respect to the steps to be followed when this operation is likely to occur.

6. The Plan contains guidance on general conditions and operational requirements for vessel involved in Ship to Ship Transfer Operations. The Appendices contain list of contact points for the Notification of STS operations, Records of STS operations, hose connection guide, mooring arrangements and other reference material.

7. In ship to ship transfers, both tankers shall comply fully with the safety precautions required for normal cargo operations.

8. The Plan has been approved by Lloyd's Register EMEA on behalf of The Flag Administration and, except as provided below, no alteration or revision shall be made to any part of it without the prior approval of the Lloyd's Register Group.

9. Changes to the Appendices will not be required to be approved by the Lloyd's Register Group. The Appendices shall be maintained up to date by the vessel's managers, owners and operators.

10. Routine drills conducted on board will not only ensure that the ship's staff are familiar with their duties but will assist in forming a proficient team to combat all pollution incidents in an efficient manner.

[1] IMO's" Manual on Oil Pollution, Section I, Prevention" as amended, and ICS and OCIMF "Ship to Ship Transfer Guide, Petroleum", fourth edition, 2005.

[2] IMO's" Manual on Oil Pollution, Section I, Prevention" as amended and ICS and OCIMF "Ship to Ship Transfer Guide, Petroleum", fourth edition, 2005.

Scope

1. Each oil tanker involved in the cargo transfer operation shall have on board a plan prescribing how to conduct STS transfer operations.

2. The plan shall be written in the working language of the master and officers and, if the working language of the master and officers is not English, French, or Spanish, include a translation into one of these languages.

3. A copy of the STS Plan should be available at the following locations on each oil tanker:

   .1 the bridge,

   .2 the cargo transfer control station; and

   .3 the engine-room.

Objectives

The STS Plan contains the following information:

1. a step-by-step description of the entire STS operation,

2. a description of the mooring and unmooring procedures and arrangements, including diagrams where necessary, and procedures for tending the oil tankers' moorings during the transfer of cargo,

3. a description of the cargo and ballast transfer procedures, including those used while underway or anchored and procedures for connecting cargo hoses, topping off cargo tanks and disconnecting cargo hoses,

4. the titles, locations and duties of all persons involved in the STS operation,

5. procedures for executing 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,

8. an approved contingency plan (See section 2),

9. a cargo and ballast plan,

10. a description of deployment and un-deployment of fenders; and

11. a description of hose connection and disconnection procedures.

The Master of each oil tanker shall ensure that the STS Plan on board is current and shall require all personnel on board to follow the procedures described therein.

Note: It is understood that some local authorities will require that an STS Operator Company intended to provide STS transfer services within their territorial waters must be licensed by the appropriate Authorities. The STS Operator Company in some cases should also have in place a Site Specific Manual for Ship to Ship transfer. This Site Specific Manual will need to be approved by the appropriate local Authority, to be able to operate in its Territorial Waters.

Part A: STS Transfer Operations Plan

Section 1: Conditions and requirements for vessels involved in ship to ship transfer operations

This section of the Plan includes general provisions which may be supplemented by special instruction from the shipowners on how to implement procedures based on the peculiarities of design, oil tanker equipment and operational conditions.

This Plan is intended for Masters and crews directly involved in Ship-to-Ship Transfer Operations.

1.1 Control of Operations

1.1.1 **Person in Overall Advisory Control (POAC)**
A ship-to-ship transfer operation must 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 local authority. **It is not intended that the POAC in any way relieves the ships' Masters of any of their duties, requirements or responsibilities**.

1.1.2 The Administration, cargo owners or oil tanker's operators shall agree and designate/appoint the POAC for each and every transfer. As a minimum requirement, the POAC should be qualified as follows:

.1 holds an appropriate management level deck licence or certificate meeting international certification standards, with all STCW and dangerous cargo endorsements up to date and appropriate for the ships engaged in the STS operation,

.2 by attendance at a recognized ship-handling course which may include cargo familiarization course and GMDSS licence,

.3 by conduct of a suitable number of mooring/unmooring operations in similar circumstances and with similar vessels,

.4 having experience in oil tanker cargo loading and unloading operations,

In addition, the POAC should be able to demonstrate:

.5 a thorough knowledge of the transfer area and surrounding areas,

.6 a knowledge of spill clean-up techniques, including familiarity with the equipment and resources available in the STS contingency plan; and

.7 thorough knowledge of the STS Plan.

1.1.3 Furthermore, the POAC should:

1. ensure that the ships scheduled to conduct an STS are dimensionally compatible for the operation and that the STS Equipment mobilised for the operation is appropriate for them and record this in Checklist No 1 contained in the ICS/OCIMF "Ship to Ship Transfer Guide - Petroleum". (See checklist reproduced in Appendix B),

2. ensure that the cargo transfer, mooring and unmooring operations are conducted in accordance with the required STS Plan, the content of chapter 6 of the Manual on Oil Pollution Section 1, and take into account the recommendations contained in the industry publication "Ship to Ship Transfer Guide – Petroleum",

3. ensure that fenders appropriate for the size of ships involved in the STS operation are deployed so as to provide most effective standoff between the structure of both ships,

4. support the Master(s) in identifying of the critical phases of the cargo transfer, mooring and unmooring operation,

5. support the Master (s) in ensuring the provisions of the contingency plan are carried out in the event of a spill,

6. support the Master (s) in ensuring that all required reports are made to the appropriate authorities,

7. ensure that crewmembers involved in each aspect of the operation are properly briefed and understand their responsibilities,

8. ensure that approach and mooring operations are not attempted until proper effective communication has been confirmed between the two oil tankers and appropriate pre-mooring checks have been completed and recorded in Checklist 2 and 3 contained in the ICS/OCIMF publication ""Ship to Ship Transfer Guide – Petroleum",

9. ensure that pre-transfer STS safety checks are undertaken and recorded in Checklist No.4 contained in the ICS/OCIMF publication "Ship to Ship Transfer Guide – Petroleum",

10. monitor the continued integrity of equipment associated with the cargo transfer throughout the operation,

11. closely monitor prevailing environmental conditions and weather forecasts relevant to the location at which the STS is being conducted,

12. ensure connection and disconnection of cargo hoses and fenders is conducted in a manner which will prevent the potential for loss of containment,

13. support the Master(s) and recommend any adjustment to the STS Plan for the particular operation; and

14. ensure that appropriate checks are undertaken prior to unmooring and recorded in Checklist 5 contained in the ICS/OCIMF publication ""Ship to Ship Transfer Guide – Petroleum". (See checklist reproduced in Appendix B).

1.1.4 The POAC and the Master(s) of the vessels shall have the authority to:

.1 request suspension or termination of the STS operation should they have any concerns regarding the safety and/or operational integrity of the operation; and

.2 if such concerns relate to the location at which the STS is scheduled to be conducted, propose an alternative location for such operation to take place.

1.1.5 Each oil tanker shall have a person in charge of the cargo transfer operation on board, during each watch, throughout the operation. Each person in charge shall:

.1 inspect the cargo transfer system before transfer,

.2 supervise all aspects of the transfer operation on board the oil tanker,

.3 conduct the transfer operation in accordance with the STS Plan; and

.4 ensure that all moorings, fenders and safety measures are checked on a regular basis.

1.1.6 **Master**

It is the responsibility of the Master to ensure that the Plan is current and that the STS operations are conducted according to the requirements described on this Plan, ICS/OCIMF Ship to Ship transfer Guide – Petroleum and ISGOTT, as well as to maintain relevant records (see Appendix C). Both ship's Masters are responsible for respective operations, in spite that one of them may be agreed to be in overall advisory control of the operation (POAC). Each must satisfy himself that procedures reflect safe practice. Even in case an STS Superintendent is employed, the Master retains his overall responsibility for the safety of the ship and its crew.

1.1.7 **STS Superintendent, Lightering Coordinator or Mooring Master**

If the Master is unfamiliar with, or inexperienced in STS transfer operations, an STS Superintendent (employed by specialized STS Resource provider) may be employed to advise them. In that case, the quality of services and equipment it can provide are paramount if operations are to be carried out safely, reliably and efficiently. Before employing such assistance the Master, shipping company, or STS organizer shall ensure that the STS Resource provider will provide trained and experienced STS Superintendents. The STS Resource provider shall provide evidence of the quality and competence of the intended STS Superintendent.

1.1.8 **Allocation of Duties (example):**

The Titles, locations and duties of all persons involved in STS operations shall be clearly identified in a table similar to that shown hereunder:

Title	Location	Duties
POAC		
MASTER	Bridge	
Chief officer	e.g cargo control room	
Chief engineer		
2nd – 3rd Engineer		
Deck officer on duty		
Officer on watch		
Engineer officer on duty		
Ratings on duty		

The allocated duties are to be assigned by the ship management team based upon the anticipated manpower workload for the scheduled operations, having due regard to the provisions regarding prevention of fatigue referred to in Section 1.1.9 of this document.

A copy of the allocated duties table should accompany the STS Plan posted in the bridge, cargo transfer control station and engine room.

1.1.9 **Prevention of Fatigue**

Provisions may need to be made to ensure that the hours of work and hours of rest for the persons involved in STS Operation included the 'Person in Overall Advisory Control' are in accordance with requirements of the relevant ILO (Regulation 2.3 Standard A2.3 of the 'Maritime Labour Convention 2006' (or equivalent)), IMO (STCW Convention) and national regulations. Records of rest and work hour compliance shall be retained.

For STS operations of prolonged duration such compliance may require that the duties and accountability for the role is shared between two persons under an agreed rota system.

1.2. Transhipment Area and Weather Conditions

Transhipment areas vary considerably with regard to their space, exposure to prevailing weather conditions, available depth of water, nature and composition of sea-bed or proximity to land, navigational routes and navigational hazards. The local conditions at such a location will dictate the type of manoeuvring employed for the following operations:

- Berthing,
- cargo transfer; and
- un-berthing.

For example, at an exposed deep water location where there is sufficient manoeuvring space, all of the foregoing operations may take place whilst both vessels are underway. At more confined transhipment areas where both the depth of water and type of sea-bed are appropriate for anchoring, the vessels may conduct berthing operations whilst underway and cargo transfer and un-berthing operations whilst the larger of the vessels is lying to her anchor. Alternatively in the latter example the berthing, cargo transfer and un-berthing operations may all take place whilst the larger of the vessels is lying to her anchor.

Transhipment areas can be within port limits or in specified approved offshore locations.

1.2.1 The STS transhipment area should be specially selected for safe operations, in co-ordination with appropriate authorities. In selecting the area for STS transhipment, the following items should be amongst those taken into account:

1. Notify and where applicable, request permission from the applicable coastal authority.
2. The degree of shelter afforded from the prevailing weather conditions, particularly from sea and swell.
3. Forecast weather conditions and the availability of shelter at an alternative location should such an option prove to be available and preferable.
4. Prevailing Tidal and/or current streams.
5. Safe distances from offshore installations.
6. The availability of a designated transhipment area.
7. The need for sufficient sea-room and water depth required for manoeuvring during berthing and un-berthing.
8. The need for sufficient sea-room to be available to allow for safe passing distance from traffic navigating the area, anchorages and fixed navigational hazards when cargo transfer operations are conducted whilst both ships are underway.
9. Proximity to environmentally sensitive areas.
10. The locations of underwater pipelines, cables, artificial reefs or historic sites.
11. The selection of a safe anchorage with sufficiently good holding ground.

12. The availability of emergency and oil spill response capability.
13. Distance from shore logistical support.
14. Security threat.
15. Ice Conditions.

1.2.2 **Weather conditions**

Weather conditions can have significant impact upon STS operations. Accordingly, applicable weather forecasts shall be obtained before and during STS operations. Manoeuvres shall only start when relevant personnel are satisfied that conditions are suitable for mooring and cargo transfer.
If cargo transfer is to take place at anchor, the combined effect of current and weather conditions on the yawing movements of the anchored ship and ultimate strain on the anchor cable shall be considered.

1.3. Notification to Authorities

1.3.1 Each oil tanker subject to Regulation 42, of Chapter 8, MARPOL Annex I, as amended, that plans STS operations within the territorial sea, or the exclusive economic zone (EEZ) of a Party to the Convention, shall notify that Party not less than 48 hours in advance of the scheduled STS operations. The following information shall be provided to the Party at the earliest opportunity:

1. Name, flag, call sign, IMO Number and estimated time of arrival (ETA) of the oil tankers involved in the STS 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,
4. Oil type and quantity,
5. planned duration of the STS operations,
6. Identification of the STS Resource Provider and/or POAC and their contact details information; and
7. Confirmation that the oil tanker has on board an STS operations Plan meeting the requirements of regulation 41.

Where, in an exceptional case, all of the information required to be provided is not available not less than 48 hours in advance, the oil tanker discharging the oil cargo **shall** notify the Party to the Convention, not less than 48 hours in advance that an STS operation will occur and the information specified above shall be provided to the Party at the earliest opportunity.

1.3.2 Once the initial report for any Estimated Time of Arrival (ETA) has been made, it shall be updated when a variance of more than six hours is expected from the time given in the latest report. Each time stated in a report required by this section must be given in Greenwich Mean Time (GMT).

1.3.3 When STS transfers are to be conducted in an area in international waters, one of the ships involved in the operation should transmit by radio, or some other means of communication, a navigational warning (security) to all ships stating:

.1 the name and nationality of the vessels involved in the operation,

.2 the geographical position of operations and general headings,

.3 nature of operations,

.4 the planned start time of the operations and expected duration; and

.5 request for wide berth and the need to exercise caution when navigating in the STS transfer area.

1.3.4 On completion of the STS operation, the person having overall advisory control or his designee shall cancel the navigational warning.

1.4 Communications

1.4.1 Good, safe and reliable communications between the two oil tankers is an essential requirement for the safe and successful conduct of STS transfer operations. In order to prevent misunderstanding and possibly incorrect interpretations of commands and signals, communications between the oil tankers shall be conducted in a common language mutually agreed upon and known to personnel directly involved in transfer operations. Should a serious language problem be encountered, action shall be taken to resolve this such as suspension of operations until an experienced person fluent in both languages is made available prior to resumption of operations.

1.4.2 The oil tankers shall establish initial communications as early as practicable to plan operations and to confirm the transfer area. During this initial communication, the POAC must be confirmed. Details of the operation, including approach, mooring, cargo transfer and unmooring plans shall be discussed and agreed, together with the joint use of operational safety checklists. (See examples contained in the ICS/OCIMF "Ship to Ship Transfer Guide – Petroleum" which are reproduced in Appendix B).

1.4.3 Essential personnel on board both oil tankers involved in the operation of oil transfer shall be provided with a reliable means of communication (for instance, walkie-talkies) for the duration of the operation.

1.4.4 In the event a significant failure of communication occurs during an approach manoeuvre, the manoeuvre shall be aborted, if appropriate and safe to do so, and the subsequent actions taken by each oil tanker shall be indicated by the appropriate sound signals, as prescribed in the International Regulations for Preventing Collisions at Sea (COLREGS).

1.4.5 In the event of a breakdown of communications on either oil tanker during cargo operations, the vessel shall sound an agreed emergency signal. At this signal, the oil transfer operations shall be suspended and only resumed after the regular means of communication have been restored.

1.4.6 For STS operations conducted within Port Limits, the harbour authority may designate appropriate working channels for the various stages of the STS operation.

1.4.7 Prior to commencing and STS transfer operation, and thereafter at intervals in accordance with local requirements (or more frequently if the situation warrants it), the POAC or his/her designee shall broadcast navigational warnings to all ships advising:

- name and flag of ships involved,
- Geographical position of operations, general headings and speeds,
- Nature of operations being conducted,
- Time of commencement of operations and anticipated duration; and
- Request for wide berth.

On completion of transfer operations the POAC or his/her designee shall broadcast a cancellation to the navigational warning.

1.4.8 For STS operations organised by an STS service provider, advance STS instructions will be sent to both ships scheduled to conduct the STS operation. Such instructions should include the following:

- Identity of the STS service provider and/or STS Superintendent and relevant contact details,
- a description of the planned STS operation including the location of the transhipment area,
- details of STS equipment (including confirmation of integrity of fenders, hoses etc), logistical support and personnel to be provided,
- requirements for the preparation of moorings, manifolds and lifting gear; and
- local and national STS regulations, where applicable.

Upon receipt of the foregoing instructions, the ship should respond with information that includes the following details:

- confirmation of systems integrity e.g. navigational equipment, machinery, steering gear, cargo system, COW, IGS, fire-fighting, mooring equipment, derrick or cranes etc,
- confirmation of ETA at agreed intervals,
- confirmation that copies of thy ICS/OCIMF Ship-to-Ship Transfer Guide (Petroleum) and International Safety Guide for Oil Tankers and Terminals (ISGOTT) are on board and that ship's personnel are conversant with the procedures therein,
- cargo details,
- confirmation of arrival draught, freeboard, height of manifold above the waterline (including both minimum and maximum manifold heights anticipated during the transhipment operation); and
- confirmation that the ship complies with applicable local and national requirements.

In addition to the foregoing, the ship should send an electronic copy of the classification society approved 'Ship to Ship Transfer Operations Plan' to the STS Service Provider inclusive of all attachments thereto.

1.4.9 When both ships approach the transhipment area, contact shall be established on the appropriate VHF channel at the earliest opportunity, thereafter switching to a mutually agreed working channel. Approach, berthing and un-berthing operations shall not be attempted or continued unless proper and effective communication has been established and maintained between both ships.
Portable radios are invaluable for inter-ship communications during mooring and cargo operations. Confirmation shall be sought that the portable radios on each ship are capable of working on the same frequencies. In the event that same frequencies are not available, provision shall be made to exchange compatible equipment between ships.

Ship's emergency portable VHF radios shall not be used for routine operations.

1.4.10 In addition to ensuring that a reliable means of communications is maintained between essential personnel on both ships during cargo operations an effective back-up system shall be agreed between both ships. It shall also be ensured that spare radios and batteries are made available on both ships.

1.5. Ships Compatibility and Cargo Handling

Ship Compatibility

1.5.1 The safety of lightering operations depends significantly upon the dimensional compatibility of the two vessels involved and design features that support the use of equipment specific to Ship to Ship Transfer Operations. (See Appendix E).
When organisers are planning an STS transfer operation they shall ensure that the ships to be used are compatible in design and equipment; that they comply with the various industry recommendations; and that mooring operations, hose handling and communications can be conducted safely and efficiently. The initial information required in Check-List 1 of Appendix 1, of the Ship to Ship Transfer Guide – Petroleum should be supplied to the organisers by the ship's operator and the ship's master should send an electronic copy of the classification society approved 'Ship to Ship Transfer Operations Plan' inclusive of all attachments thereto.

The information relating to the overall dimensions, freeboard, position of manifolds, mooring points and fenders shall be passed to the Masters of the ships at the earliest opportunity.

Cargo Handling Compatibility

1.5.2 The following shall be determined prior to berthing:

- the size and number of manifolds to be used,
- the minimum and maximum expected height of the cargo manifold from the waterline during the transfer operation, and the freeboard differences during the cargo transfer,
- whether the cargo cranes or derricks are in a satisfactory condition and of suitable Safe Working Load (SWL),

- that hose supports at the ship's side are adequate to prevent damage to hoses through chafing; and
- that both ships have manifold arrangements which comply with OCIMF Recommendations for Oil Tanker Manifolds and Associated Equipment.

1.6. STS Equipment

Prior to starting the STS transfer operation, the Masters of the oil tankers shall exchange information concerning the availability, readiness and compatibility of the equipment to be used in the operation.

1.6.1 Fenders

Fenders used in STS transfer operations are divided into two categories:

- Primary fenders, which are positioned along the parallel body of the ship to afford the maximum protection while alongside. They are also designed to absorb energy as the vessels berth alongside.
- Secondary fenders which are used to protect the bow and stern plating from inadvertent contact if the ships get out of alignment during mooring or unmooring.

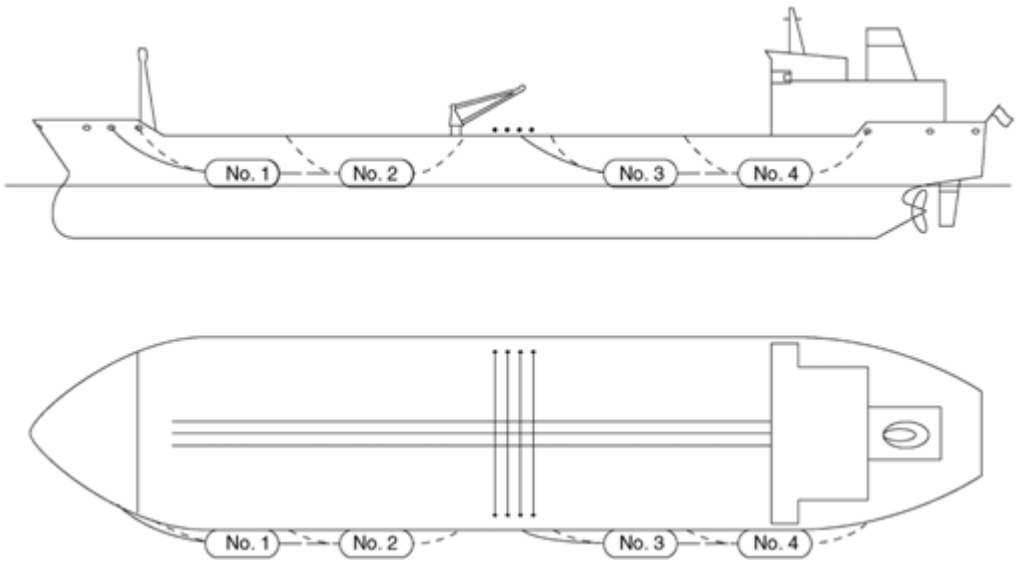
In general, fenders are placed on either: -

- Port side of the manoeuvring ship.
- Starboard side of the receiving ship.

Care must be taken to ensure that the fenders are maintained at their design pressure during STS usage. The fenders in ARA are normally 'Pneumatic 50' and have an internal pressure of 0.5 Bar (0.5 kgf/cm²).
If 'Pneumatic 80' fenders are used, they are inflated to 0.8 Bar (0.8 kgf/cm²). The increased pressure and the higher fender specifications, result in higher guaranteed energy absorption and reaction forces.

The oil tanker(s) shall be provided with certified and “in date” fenders (primary and secondary). These fenders shall be capable of withstanding the anticipated berthing energies and shall be able to distribute the forces evenly over the appropriate area of the hulls of both oil tankers.

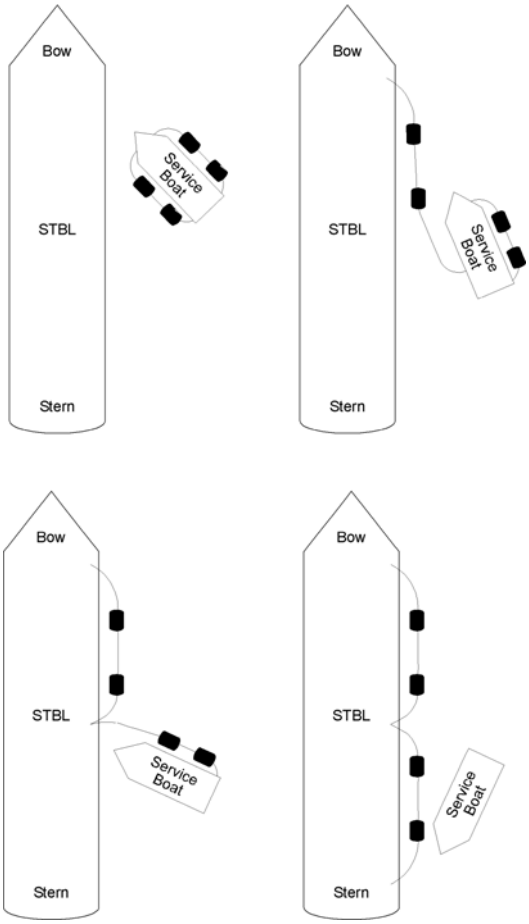
Fenders may be secured on either oil tanker. However, landing on an unprotected hull section is less likely if the fenders are rigged on the manoeuvring ship and it is therefore preferable that fenders be secured to that ship. The diagram below demonstrates how four (4) pneumatic fenders may be secured as pairs to the port side of a manoeuvring ship:



An alternative arrangement for securing the fenders is in a continuous string, rather than in pairs. The methodology used will depend upon the customary practice adopted by the STS Service provider at the Transhipment Area in question.

The POAC shall advise the position and method of securing the fenders to the oil tankers in advance of the operation.

Except in cases where the STS transfer is conducted using a dedicated lightering ship, it is probable that fendering operations will be carried out with the assistance of an STS service provider. Such companies usually have service craft available and these vessels will normally assist in positioning fenders on the relevant oil tanker. An example of deploying a set of fenders to the Ship To Be Lightered (STBL) is shown in the diagram below:



Fender ‘moorings’ must be tended by ship’s personnel during transhipment operations. Such tending may include greasing of fairleads through which such moorings are deployed and/or parcelling of ropes with canvas to reduce abrasion damage to the fender ropes.

During multiple transfers, the fenders must be checked after each transfer to verify their continued integrity.

International Standard (ISO 17357) specifies the material, performance and dimensions of floating pneumatic fenders which are intended to be used for the berthing and mooring of a ship to another ship or berthing structure.
Each fender certified to ISO 17357 shall have markings on the fender body to indicate the following:

- International Standard number, and applicable year, i.e. ISO 17537:2002,
- Size, diameter and length,
- Initial internal pressure,
- Date of manufacture or its abbreviation,
- Full or abbreviated name of manufacturer,
- Individual serial number; and
- Type of reinforcement layer.

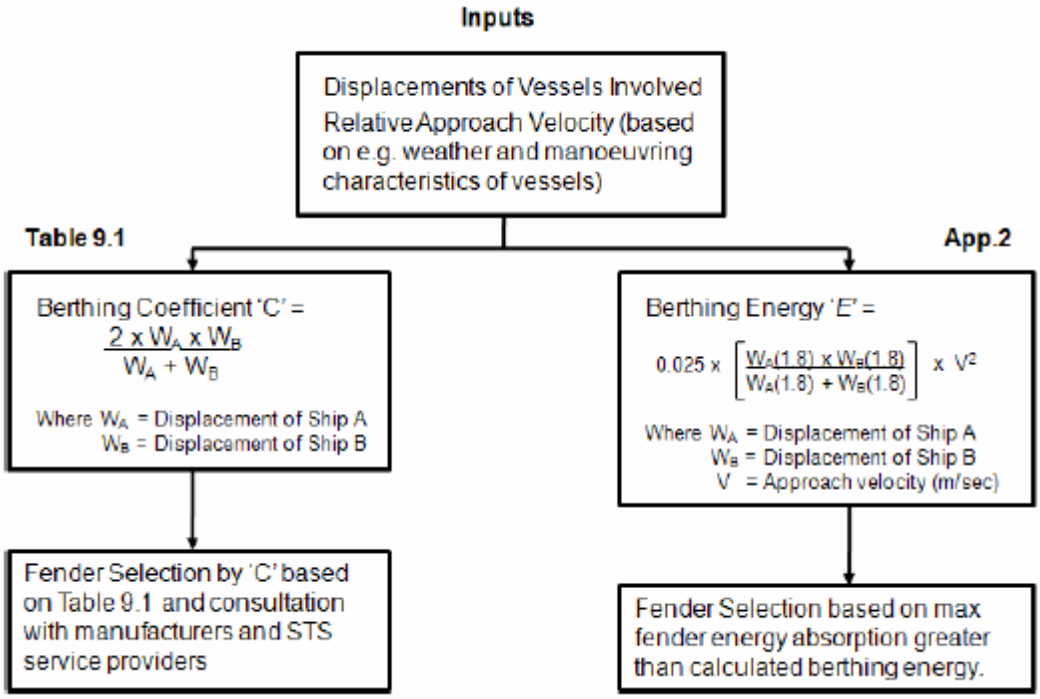
1.6.2 **Fender selection guidelines**

In order to determine a suitable fender arrangement for a scheduled STS operation, it is necessary to calculate the berthing energy of a ship which must be absorbed by the fender at the point of contact. Guidelines for fender selection are included in the ICS/OCIMF Ship-to-Ship Transfer Guide (Petroleum); as is a sample form illustrating the type of information usually required when requesting assistance in fender selection (see Page 66 of the Guide). STS service providers or individual fender manufacturers shall be consulted to determine the appropriate number and sizes of fenders for a particular operation.

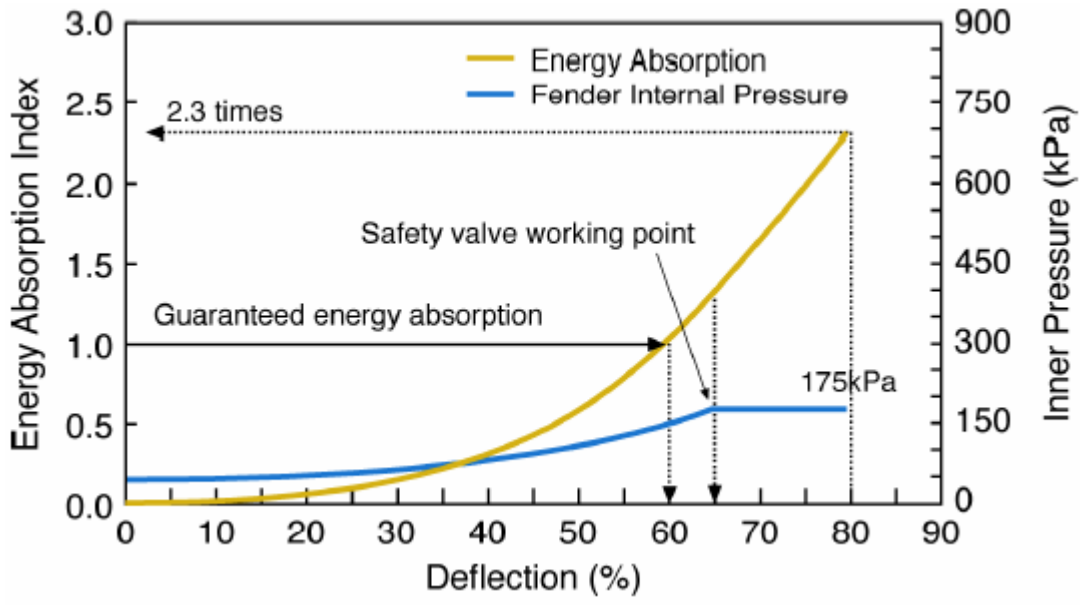
Table 9.1 in the ICS/OCIMF STS Guide (Petroleum) provides a quick reference guide to fender selection for STS operations. The number and size of fenders is determined based on the berthing coefficient ('C') and an assumed relative berthing velocity. The berthing coefficient is determined by calculation based on the displacement of the two vessels. When planning to undertake reverse lightering, consideration should be given to utilizing fenders with higher energy absorption for the berthing phase than those recommended in Table 9.1 or by taking measures to reduce berthing velocities.

As stated in the ICS/OCIMF STS Guide (Petroleum), the data presented in Table 9.1 is intended to be used with considerable discretion, based on knowledge and experience of the type of operation to be carried out. When considering 'C' values in excess of 200,000, the step changes for the 'C' value in the Table are large, namely to 330,000 and 500,000, and also coincide with recommendations for increased sized fenders, from 3.3 x 6.5 metres to 4.5 x 9.0 metres. The precise 'break point' prompting recommendations for the larger size fender is not indicated in the table but has been determined to be in the region of 'C' values in excess of 300,000.

For reverse lightering operations, in particular where 'C' values in excess of 200,000 will often be relevant, it is recommended that berthing energy is calculated using the procedure detailed in Appendix 2 (Fender Selection Calculation) of the ICS/OCIMF STS Guide. This calculation will provide the berthing energy when landing on one fender during a quarter point berthing and is calculated based on the displacement of the two ships and an assumed berthing approach velocity. A constant of 1.8 is applied to account for the force of the surrounding seawater which acts to push the ships towards one another on berthing.
The berthing energy calculated using the Appendix 2 procedure should be used to ascertain the energy absorption requirements of the fenders and, following reference to manufacturer's data, the type and size of fenders may be determined.
The following graphic summarises the two procedures for fender selection contained in the STS Guide:



The table in Appendix 2 of the ICS/OCIMF STS Guide provides information on energy absorption values for fenders based on typical data from manufacturers. These values assume a maximum guaranteed energy absorption at 60% compression. While this value should be used for assessing fender requirements, it must be borne in mind that most manufacturers of pneumatic fenders ensure that a safety margin is built in to the design to protect against accidental over-deflection beyond the guaranteed value. This is illustrated in the following graphic:



In the diagram, the guaranteed energy absorption is shown at 60% deflection, equating to an energy absorption index of 1.0. The safety valve is shown to typically lift at a pressure equivalent to approximately 65% deflection, equating to an energy absorption index of 1.3. If subjected to continuing forces, the fender will continue to absorb the energy until the deflection reaches the largest diameter of the mouthpiece metal parts. At this stage, the fender will be subjected to an over-compression equivalent to some 2.3 times the fender's designed energy absorption capability.

The assessment of approach velocities is not a precise art and is often based on professional estimations from experienced mariners. However, as stated in the ICS/OCIMF STS Guide, the approach velocity can have a dramatic effect on the berthing energy absorption requirements of the fender system. As an example, an increase of about 0.02 m/sec (0.04 kts) in approach velocity could result in approximately 28% increase in energy absorption requirements at berthing approach speeds in the range of 0.15 m/sec (0.3 kts) and a 20% increase at berthing speeds in the range of 0.20 m/sec (0.4 kts).
In reverse lightering operations, the manoeuvring vessel is often fully laden and will therefore be more difficult to manoeuvre alongside in anything other than calm weather conditions. In planning the operation, it is prudent to err on the safe side when selecting fenders and to take account of the potential for increased berthing velocities and higher angles of approach when compared with conventional STS operations. Should fenders of a larger size than required through calculation be available, consideration should be given to their employment. If the size of available fenders poses limits on acceptable berthing velocities, arrangements shall be employed to ensure that these berthing velocities are not exceeded. These would include, for example, imposing environmental limits on the operation or requiring the use of tugs to assist in berthing.
Simulation tools are available to support the assessment of berthing forces in varying environmental conditions and may be useful in determining limiting criteria for an operation.

The avoidance of steel-to-steel contact between vessels during STS operations is addressed in the ICS/OCIMF STS Guide by recommending that fenders are adequately sized to ensure that there can be no contact between ship's structures through rolling. These principles apply equally to reverse lightering operations.

The required stand-off distance may be a limiting factor for operations in anything other than calm weather conditions. Dynamic modeling tools can be used to identify optimum stand-off distances in specific conditions.

As mentioned above, in some locations, equipment availability may serve to restrict the size and displacements of vessels involved in reverse lightering or the allowable berthing approach velocities to ensure fender energy absorption limits are not breached. Furthermore, the limitations of available service craft to handle the larger sizes of fenders may also pose restrictions on fender availability. Each operation shall be planned based on an assessment of available equipment and a joint discussion between vessel operators and STS service providers.

The following bullet points summarise the key recommendations referred to above:

- Before committing to a reverse lightering operation, the parties involved should carry out a risk assessment as outlined in Section 3.1.1 of the ICS/OCIMF STS Guide,
- when considering a reverse lightering operation, berthing energy should be calculated using the formulae in Appendix 2 of the STS Guide in order to determine the required fender absorption capability,
- due account must be taken of the effect of approach velocities on the berthing energy absorption characteristics of the fender system. Weather, sea and swell conditions will influence the ability of the loaded vessel to manoeuvre during the berthing approach and should be considered as a limiting factor,
- should fenders of a larger size than required through calculation be available, consideration should be given to their employment for reverse lightering operations,
- if the size of available fenders poses limits on acceptable berthing velocities, arrangements shall be employed to ensure that these berthing velocities are not exceeded. These would include, for example, imposing environmental limits on the operation or requiring the use of tugs to assist in berthing,
- when planning a reverse lightering operation, due consideration needs to be given to the availability of fenders of a required type and size and of equipment, such as service vessels, capable of safely handling them; and
- consideration may be given to using STS berthing simulation tools to calculate berthing forces and stand-off distances in varying environmental conditions to assist in the identification of weather windows for an operation.

Note: For Double Banked STS operations conducted within port limits, due to the sheltered conditions, availability of tugs for mooring operations, the fenders do not have to comply with the fender selection guidelines contained in the ICS/OCIMF STS Guide (Petroleum).

1.6.3 Hoses

The hoses used for the STS transfer of crude oils or petroleum products shall be specially designed and constructed for the product being handled and the purpose for which they are being used. Hoses used shall 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.

Hoses shall 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.

A visual inspection of each of the hose assemblies shall 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 shall be withdrawn from use for further inspection, repair or retirement.

STS transfer operations require that the connection of transfer hoses is supervised closely by experienced personnel to ensure containment integrity between both ships. Flanges and gaskets must be in good condition and properly secured to ensure leak tight connections.
In general oil transfer hoses used for STS operations are made up using two (2) x 12 metre length hose sections. This results in the connection between both hoses being suspended between the hulls of both ships during the cargo transfer operation. If this hose connection fails, it will result in loss of containment of cargo to the sea.
(Refer to Appendix D for Example of instructions for connection of STS hoses).

Hose manufacturers recommend the following with regard to hose handling in order to prevent damage:

- Avoid kinking of hoses by lifting them on board the ship using a suitable strop or snotter passed around the body of the hose,
- NEVER lift a hose utilising a blank flange handle as a lifting point,
- Always ensure that any bends in the hose exceed the hose's design minimum bend radius; and
- If available, use a hose bun to support the hose outboard of the ship's manifold.


Hose bun

1.6.4 **Mooring equipment**

To ensure the security of moorings, it is important that both oil tankers are fitted with good quality mooring lines, efficient winches and sufficiently strong closed fairleads, bitts and other associated mooring equipment that is fit for purpose. Effective leads between fairleads and mooring bitts and mooring winches shall be available for the handling of all mooring lines.
All fairleads used shall be of the enclosed type, except on an oil tanker that will always have a substantially greater freeboard than the other. This will ensure that the fairleads remain effective in controlling mooring line leads as the freeboard difference between the two oil tankers changes.

Steel wire mooring lines and high modulus synthetic fibre ropes should be fitted with synthetic fibre tails to provide the additional elasticity required for STS mooring arrangements.

A minimum of four strong rope messengers should be available on both oil tankers, preferably made from a buoyant synthetic fibre material.

1.6.5 **Transfer of Personnel**

In general it is recommended that the transfer of personnel between ships be kept to an absolute minimum. If the transfer of personnel is unavoidable the recommendations referred to in ICS/OCIMF Ship to Ship Transfer Guide – Petroleum, and the relevant Working Practice in the Fleet Operating Management System shall be complied with

1.6.6 **Lighting**

During STS transfers at night, normal in-port deck lighting should be adequate but, if not adequate, shall be augmented. The minimum recommended lighting is five foot-candles (lumens) at transfer connection points and one foot-candles in oil transfer operation work areas (measured one metre above the deck). Portable spotlights, which shall be flameproof, and bridge wing spotlights are useful for night mooring and unmooring operations.

1.6.7 **Ancillary Equipment**

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

1.6.8 **Equipment Noise Levels**

The **British Cygnet** complies with the Code on noise levels on board ships (IMO Resolution A468 (XII)) as verified during her sea trials.

Section 2: Safety and emergencies

2.1 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 shall ensure that the procedures contained in this guide 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).

In case of accidents that may arise during the transfer of oil, particularly in the case of spillages of oil, the guidance included in the ships SOPEP should be followed. A contingency plan within the SOPEP or VRP to cover such risk shall be available and shall be activated in the case of an oil spill.

2.1.1 Risk Assessment

The risk assessment should follow the Company procedure and the Company must ensure that clause 1.2.2.2 of the ISM Code is complied with.

Before committing to an STS transfer operation, the parties involved should carry out a risk assessment that should include sufficient information to ensure a good understanding of the operation. The risk assessment should cover operational hazards and the means by which they are managed. Many tools are available to assist in this process and operational safety Check-Lists, as provided in Appendix B, are one such example of a risk management tool.

As a minimum the risk assessment should:

1. identify the hazards associated with the operation (collision risks in the vicinity, cargo vapour pressure, H2S 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; and
4. contain procedures for dealing with unanticipated events.

The scope should include but not be limited to confirmation of the following:

.1 adequate training, preparation or qualification of oil tanker's personnel,

.2 suitable preparations 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 controlling and performing oil transfer operations,

.5 suitability of the agreed STS plan,

.6 adequate communications between oil tankers or responsible person(s),

.7 proper attention given to the differences in freeboard or the listing of the oil tankers when transferring cargo,

.8 the condition of transfer hoses,

.9 methods of securely connecting hose(s) to the oil tanker(s) manifold(s),

.10 recognition of the need to discontinue oil transfer when sea and weather conditions deteriorate; and

.11 adequacy of navigational processes.

.12 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.

The level of complexity required will depend on the type of operation. For any 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, a risk assessment should be carried out for each 'non standard' activity.

The overall safety of any STS transfer operation depends on the type and condition of the equipment in use; the weather and sea-state; the ships involved in the transfer operation; the quality of the supervision (whether this is provided by one of the Masters or by an STS service provider); and strict adherence to well documented safety procedures, which should be provided to both ships by the person in overall advisory control. The procedures adopted shall be in accordance with these guidelines and shall be discussed and agreed with the Masters of both ships before the operation commences. The equipment used in the STS operation, such as fenders and transfer hoses shall, where appropriate, conform to internationally recognised standards (see Chapter 1.6).

2.2 Contingency Planning and Emergency Procedures

2.2.1 The risk of accident and the potential scale of the consequences during STS operations require that all parties involved in such operations develop contingency plans for dealing with emergencies. Before committing to an STS transfer operation, the parties involved should carry out a risk assessment covering operational hazards and the means by which they are managed. The output from the risk assessment should be used to develop risk mitigation measures and contingency plans covering all possible emergencies and providing for a comprehensive response, including the notification of relevant authorities. The contingency plan shall have relevance to the location of the operation and take into account the resources available, both at the transfer location and with regard to nearby back-up support.

2.2.2 Each oil tanker must assign emergency duties 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.

2.2.3 The risk of oil pollution from STS operations is no greater than during in-port cargo transfers. However, as a transfer area may be out of range of port services, a contingency plan with the Shipboard Oil Pollution Emergency Plan (SOPEP) or Vessel Response Plan (VRP) shall be available to cover such risk and shall be activated in the event of an oil spill.

2.2.4 Any leak or spillage during the transfer shall be reported immediately to the officers on cargo watch who shall immediately stop the cargo transfer and notify the person in overall advisory control. The immediate measures set forth in the contingency plan shall be implemented. The transfer shall remain suspended until it is agreed between the relevant persons/authorities that it is safe to resume.

2.3 Emergencies

2.3.1 Emergency Duties

In case of accidents that may arise during the transfer of oil, particularly in the case of spillages of oil, the guidance included in the ship's SOPEP shall be followed.
However, a table similar to that shown below, containing emergency duties assigned to designated members of the crew may be used as general guidance:

Sample - Emergency Duties Allocation

Title	Location	Duties
POAC		
MASTER	Bridge	
Chief officer	e.g cargo control room	
Chief engineer		
2nd – 3rd Engineer		
Deck officer on duty		
Officer on watch		
Engineer officer on duty		
Ratings on duty		

The allocated duties are to be assigned by the ship management team based upon the anticipated manpower workload for the scheduled operations, having due regard to the provisions regarding prevention of fatigue referred to in Section 1.1.9 of this document.

A copy of the allocated duties table should accompany the STS Plan posted in the bridge, cargo transfer control station and engine room.

2.3.2 **Emergency Signal**

The agreed signal to be used in the event of an emergency on either ship shall be clearly understood by the personnel on both ships.

2.3.3 **State of readiness for an emergency**

The following arrangements shall be made on both oil tankers:

.1 main engine and steering gear maintained ready for immediate use,

.2 cargo pump and all other equipment trips relevant to the transfer are tested prior to the operation,

.3 crew are readily available and systems are prepared ready to drain and disconnect hoses at short notice,

.4 oil spill containment equipment is prepared and ready for use,

.5 mooring equipment is maintained ready for immediate use with extra mooring lines available at mooring stations as replacements in case of line failure; and

.6 fire-fighting equipment is ready for immediate use.

2.4 Cessation of oil transfer operations as a precautionary measure

All oil transfer operations shall cease should an unsafe or environmentally hazardous condition develop. Such conditions may include but are not limited to:

.1 failure of hoses or moorings,

.2 deterioration of weather and/or sea conditions,

.3 a dangerous concentration of gas on the deck of the oil tanker(s); and

.4 a significant spill of oil.

Section 3: Preparation for operations

3.1 Operational Preparation before manoeuvring

Prior to the STS operation, the Masters of both oil tankers and, if appointed, the POAC, shall make the required preparations before manoeuvres begin in accordance with the guidance included in ICS/OCIMF Ship to Ship Transfer Guide (Petroleum) and IMO Manual on Oil Pollution Section 1 – Prevention, Chapter 6.

3.1.1 Prior to the STS operation, the Masters of both oil tankers and, if appointed, the POAC, shall make the following preparations before manoeuvres begin:

.1 carefully study the operational guidelines contained herein and in the industry publication “ICS/OCIMF Ship to Ship Transfer Guide – Petroleum”, as well as any additional guidelines provided by the shipowner and cargo owner,

.2 ensure that the crew is fully briefed on procedures and hazards, with particular reference to mooring and un-mooring,

.3 ensure that the oil tanker conforms to relevant guidelines, is upright and at a suitable trim,

.4 confirm that the steering gear and all navigation and communications equipment is in satisfactory working order,

.5 confirm that engine controls have been tested and the main propulsion plant has been tested ahead and astern,

.6 confirm that all essential cargo and safety equipment has been tested,

.7 confirm that mooring equipment is prepared in accordance with the mooring plan,

.8 confirm that fenders and transfer hoses are correctly positioned, connected and secured,

.9 confirm that the cargo manifolds and hose handling equipment are prepared,

.10 obtain a weather forecast for the STS transfer area for the anticipated period of the operation,

.11 agree the actions to be taken if the emergency signal on the oil tanker’s whistle is sounded; and

.12 Confirm completion of the relevant pre-operational checklists. (See Appendix B).

.13 Confirm the Security Level at which the ship is operating in accordance with the provisions of the ISPS Code, and the requirements being undertaken on board to ensure compliance.

.14 Confirm that the Navigational Signals to be shown and the sound signals made, during STS transfer operations are those required by the International Regulations for Preventing Collisions at Sea (COLREGS).

3.1.2 Communications with the master of the other oil tanker shall be established in accordance with section 1.4 at an early stage to co-ordinate the rendezvous and the method and system of approach, mooring and disengaging.

3.1.3 When the preparation of either oil tanker has been completed, the other vessel shall be so informed. The operation may proceed only when both oil tankers have confirmed their readiness.

3.2 Manoeuvring and Mooring

For more detailed guidance regarding Manoeuvring and Mooring refer to relevant sections in the ICS/OCIMF Ship to Ship Transfer Guide (Petroleum)

3.2.1 Navigational Signals

Lights and shapes must be shown on vessels engaged in STS operations as per the International Regulations for the Prevention of Collisions at Sea (COLREGS).

3.2.2 Daytime or Night Time Restrictions regarding berthing and un-berthing operations.

Providing traffic, weather conditions and local restrictions permit, berthing and un-berthing operations may be conducted during daytime or night time.

3.2.3 Manoeuvring Alongside with both ships underway

In general, the larger vessel maintains steerage on a constant heading at a speed of about 5 knots. The smaller manoeuvring ship approaches the former vessel ensuring that the final approach angle is as slight as possible with a transverse closing speed of preferably less than 0.3 knots.

Transverse speed is directly related to the energy absorption of each fender (particularly the forward most fender). The greater the transverse speed the greater the energy absorption required by the fenders. It is therefore VITAL that the transverse speed does not exceed 0.3 knots, especially when performing reverse lightering of large vessels.

3.2.4 Manoeuvring Alongside with one ship at anchor

If at all possible the most favourable, sheltered anchorage location shall be identified prior to mooring the vessels together. Generally the anchored vessel should be allowed to swing to the prevailing tidal stream or current prior to the manoeuvring vessel commencing her approach. It is prudent to avoid making such an approach if it is anticipated that a change in tidal direction is imminent. Extreme caution shall be exercised if the heading of the anchored vessel is governed by the wind such that she is lying across the tide, as her heading could change with little or no warning if the wind direction or strength should change during the final approach of the manoeuvring vessel.

In general a wider angle of approach can be effective when approaching a vessel at anchor. This is to avoid unplanned contact if the anchored vessel has a tendency to yaw.
Maintaining open dialogue with the anchored vessel will ensure that the Bridge Team on manoeuvring vessel is kept fully informed of any heading changes.

Anchored vessels may have a tendency to yaw during STS berthing operations. This is more likely to be prevalent, but not unique to; vessels with a high block coefficient such as FSU's anchored where there is a noticeable tidal stream. In some areas an additional tug may have to be utilised on the stern of the anchored vessel, in order to counter any tendencies to yaw. It may also be advisable to delay berthing operations until tidal stream rates decrease or vessels are turned in tide or head to weather.

3.2.5 Manoeuvring Alongside with one ship berthed (double banking)

The larger vessel is normally berthed alongside a berth, dolphins or moored to buoys.
In general the smaller tanker manoeuvres alongside the berthed tanker in a controlled manner under pilotage, utilising its thrusters or with tug assistance.

The final approach angle must be as slight as possible and the transverse closing speed less than 0.3 knots.

For locations affected by currents or tidal streams, the approach should be made by 'stemming' the predominant flow of water.

3.2.6 Considerations with regard to manoeuvring alongside for a Reverse Lightering Operation

A Reverse Lightering Operation requires the manoeuvring of a laden vessel alongside a larger ballasted, or partly laden, tanker.

Particular caution is required due to the increased inertia of the manoeuvring vessel.

When conducting a reverse lightering operation at anchor, the Master and STS Superintendent must ensure that sufficient tugs, of suitable bollard pull, are utilised for mooring and unmooring, bearing in mind the slower response of laden tankers.

3.2.7 Mooring Plan and mooring preparations

Careful planning prior to a STS associated mooring operation is essential. Special care is required in order to avoid ropes and wires chafing in the same fairlead. Ropes and wires passing through the same fairlead and which lead in the same direction should be avoided.

The POAC shall obtain details of expected weather and plan a suitable mooring pattern during operations preplanning.

Mooring compatibility between both vessels scheduled to perform an STS shall be determined using data taken from the STS Mooring Equipment Map, General Arrangement Plan and Anchor Handling & Mooring Arrangement Plan(s).

Ideally a mooring plan shall be drafted showing the planned mooring and lead geometry and sequence of deployment of each mooring line via a specified lead.

For STS operations where the service of an STS Superintendent has been engaged, the vessel compatibility for the scheduled STS operation will have been verified at pre-fixture stage by the STS service provider.

The contents of this mooring plan shall be shared with the ship Management Teams on both vessels to enable them to include its details to all personnel that will be involved in the forthcoming mooring operation in the pre-mooring briefing.

It should be noted that STS operations scheduled between vessels of similar or identical dimensions can lead to difficulties in obtaining an optimum mooring geometry, particularly with regard to head ropes and stern ropes. Such a situation can lead to the requirement for such moorings being led forward and aft from main deck spring leads backed up by short breast-lines deployed between the forecastle and poop decks of both vessels. In such a scenario, forward and aft springs may be deployed from the forecastle and poop decks.

This can result in the following:

- excessive snatch loads on the breast-lines due to movement of both vessels in a seaway; and
- cross-over of forward and aft springs with head ropes and stern ropes deployed from the main deck spring leads which at some stage of the operation could lead to fouling due to change of freeboard of both vessels resulting from cargo transfer.

It is essential that both vessels prepare good messengers for mooring as it is preferred that moorings are passed two at a time in order to secure the vessels for STS operations as soon as practicable.

Closed leads MUST be used for all moorings when fitted. The only exception to this rule is for a vessel that has and will maintain a significantly greater freeboard than the other vessel throughout the entire STS operation. This exception needs to be supported by a thorough analysis before the vessels are fixed to perform an STS operation with one another.

Ideally, as per Section 1.6.4; steel wire mooring lines and high modulus synthetic fibre ropes should be fitted with synthetic fibre tails. At some Transfer Areas, the STS Service Provider may request removal of such tails or alternatively provide steel wire tails for fitting to the mooring lines. Such a request should be based upon the operational experience of the STS Service Provider for coordinating STS Operations at the specific Transfer Area in question.

During mooring it is usual to send away two headlines and the aft springs first, followed by two forward springs and two aft stern lines. Alternatively, two mooring gangs can work forward and send two headlines at the same time as two forward springs.

It is safer to send these ropes (wires with tails) from rope drums to minimise manual handling. This practice will also ensure that the tension on each individual mooring can be adjusted as required to address change of freeboard of both vessels resulting from cargo transfer

Normal moorings during STS operations are 6 head/stern lines and 2 spring lines fore and aft.

The first lines are normally sent from the manoeuvring vessel. It is advisable, during expected inclement weather, to send additional moorings from either ship. These additional moorings serve to reduce the risk of an unplanned break out.

Towing springs from the mother ship are an effective supplement to the mooring in heavy swell conditions with vessels steaming.

Prevailing and forecast weather conditions need to be monitored and appraised closely to determine the optimum heading direction to minimise ship movement during the mooring operation by optimising the direction of wave encounter.

As an example, in situations where the manoeuvring vessel has a right hand turning propeller when going ahead viewed from aft, she should berth to the other vessel's port side to capitalise on the transverse thrust when astern propulsion is used to square up with the other vessel after making contact on the forward fender.

In this situation, the approach should be made with the other vessel steaming on a course with the wind direction approximately two points on her port bow.
Under certain weather conditions it would be prudent to suspend mooring operations until weather conditions have improved sufficiently. Such a decision can be made unilaterally by the ship master on either of the vessels.

Masters' should be aware that under certain prevailing sea and weather conditions a mooring operation could be completed safely and successfully, but that such conditions may not be conducive to the vessels remaining safely alongside one another and/or conducting a subsequent unmooring operation if it should be required. Such an un-mooring operation may be deemed to be necessary, for instance; shortly after completing a mooring operation when it transpires that excessive ship movement is exposing the fenders and/or moorings to extreme load conditions

Long period swell or waves can lead to significant movement of both vessels exposing the moorings and fender equipment to excessive load conditions. Under such circumstances if longer mooring tails are available, these could be employed to improve their potential energy absorption. At some locations, vessels conduct operations with a long period swell on their quarters to increase the encounter interval between successive sell wave peaks and troughs. Such mitigation measures should only be taken when the POAC has sufficient experience in employing them safely at the particular transfer area in question.

3.3 Joint Plan of Operation

A joint plan of operation in alignment with the STS plan established for each ship should be developed on the basis of information exchanged between the two oil tankers scheduled to perform an STS operation.

The plan should cover, but need not be limited to the following:

.1 mooring arrangements,

.2 quantities and characteristics of the cargo(es) to be loaded (discharged) and identification of any 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 of tanks,

.7 normal stopping and emergency shutdown procedures,

.8 maximum draught and freeboard anticipated during 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 actions in case of spillage of oil,

.14 identified critical stages of the operation,

.15 watch or shift arrangements,

.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-ordination of plans for cargo hose connection, monitoring, draining and disconnection; and

.19 unmooring plan.

The cargo manifolds of the two oil tankers should be correctly aligned.

Hoses shall be suspended in such a way that excessive strain on manifold fittings is prevented and the possibility of twisting and pinching between the oil tankers is minimized. Care shall be taken to ensure that hoses are not bent to a radius less than that recommended by the manufacturer and that they do not rub against the ships' structure.

3.4 Considerations before commencing cargo transfer operations

Before commencing the cargo transfer operation, the responsible person(s) on the oil tankers shall ensure:

1. proper mooring of the oil tankers,

2. availability of reliable communication between the two oil tankers,

3. emergency signals and shutdown signals are agreed,

4. proper connections and securing of hoses to the oil tanker's manifolds,

5. proper condition and position of hoses, hose saddles and supports,

6. flanged joints, where used, are fully bolted and sealed,

7. proper blanking of unused cargo and bunker connections,

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. fire axes or suitable cutting equipment is in position at fore and aft mooring stations,

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 an anchor watch will be established,

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 integrity,

18. correct understanding of commands and signals by the responsible person(s) on the oil tankers during operations; and

19. confirm completion of relevant pre-transfer checklists.

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.

Section 4: Performance of Cargo Transfer Operations

4.1 Cargo Transfer Operation

4.1.1 When the 2 ships are securely moored and before cargo transfer commences, good communication shall be established between the personnel responsible for cargo operations on each ship and the pre-transfer checks shall be satisfactorily completed (checklist 4 STS Guide – Petroleum OCIMF/ICS). In addition, attention should be given to the appropriate safety check-list from ISGOTT. (Appendix B)

Note: The operation shall be started at a slow rate in order to ensure that all connections and hoses are tight, that the oil is being directed into intended pipelines and tanks, that no excessive pressure is being built up in the hoses and pipelines and that there is no evidence of oil leakage in way of the tankers' hulls.

Only after being satisfied there is no leakage, that the oil is being transferred into the intended pipelines and tanks and that there is no excessive pressure, may the rate of transfer be increased up to the maximum indicated in the plan of operation.

4.1.2 Throughout the cargo transfer operations, the discharging ship and the receiving ships shall station a responsible person on the cargo manifold area to observe the hoses and to check for leaks. In addition, a responsible person equipped with a portable radio shall be stationed at or near the cargo pump controls or in the cargo control room on the discharging ship, to take action as required.

The responsible persons on both oil tankers shall periodically check the following throughout cargo transfer operations and, if necessary, take appropriate remedial action:

.1 for any leakage from the equipment and system*, or through the oil tanker's plating,

.2 that there is no leakage into pump-rooms, ballast or void spaces or cargo tanks not scheduled to be loaded,

.3 if there is any excessive pressure in piping and hoses,

.4 the mooring arrangements,

.5 the condition of hoses and their support arrangements; and

.6 tank ullages and quantities transferred.

* Note: Particular attention shall be paid to the oil transfer hose connection between the two ships as any leak from this connection will fall directly into the sea below.

4.1.3 Care must be taken to prevent surge pressures when changing over tanks on the oil tanker being loaded. The filling valves of the next tanks in sequence should be opened before the valves on the tank being filled are closed. The discharging ship shall be advised before such tank's valves are operated. If necessary the discharging ship can gradually slow down the cargo pumps until valves have been confirmed as shut.

The oil transfer hose connection between the two ships shall be closely monitored throughout any changing of tanks and whenever the rate of transfer is being changed for whatever reason.

Information on quantities transferred shall be routinely and regularly exchanged between the two oil tankers. Any significant discrepancies between the quantity discharged and the quantity received shall be promptly investigated and if necessary cargo operations shall be suspended until the differences are resolved.

4.1.4 **Ballast Operations**

During cargo transfer, appropriate ballast operations shall be performed in order to minimize the differences in freeboard between the two oil tankers and to avoid excessive trims by the stern. Listing of either ship shall be avoided, except as may be required by the discharging oil tanker to facilitate tank draining.

Constant attention shall 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 shall only be done under strictly controlled conditions.

4.2 Vapour Balancing Considerations

Vapour balancing operations may be required in association with STS cargo transfers at STS Transhipment Areas. Such operations must be conducted in accordance with the recommendations contained in ISGOTT Chapter 7.1.6.4 and in compliance with any applicable national or local regulations.

4.2.1 **Vapour balancing considerations before commencing cargo transfer:**

- Within 24 hours of commencement of transfer operations the 'Hanla' oxygen vapour pressure monitoring system is to be calibrated.
- The 'Hanla' oxygen vapour pressure monitoring system shall be prepared to enable the oxygen content of the vapour stream to be monitored. It shall be set up to draw samples continuously from the vapour manifold connection to which the vapour transfer hose will be connected. The oxygen analyser and associated alarms shall be tested for proper function prior to commencement of each cargo transfer operation.
- The oxygen content of the vapour space of each tank connected to the IG main in both ships shall be checked and confirmed to be less than 8% by volume.
- The vapour transfer hose shall 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.

4.2.2 **Vapour balancing considerations during cargo transfer**:

- The 'Hanla' oxygen vapour pressure monitoring system shall be fully operational with the sampling point connected to the vapour manifold being used for vapour transfer operations selected for sampling
- The inert gas system on the discharging ship shall be kept operational and on standby, with the inert gas main deck isolating valve closed. The inert gas system shall 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 shall be monitored and each ship advised of the other's pressure on a regular basis.
- No air shall be allowed to enter the cargo tanks of the discharging ship.
- Transfer operations shall be suspended if the oxygen content of the vapour stream exceeds 8 % by volume and shall 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.

4.3 Completion of cargo transfer operations

4.3.1 It shall 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 shall advise the pumping oil tanker in ample time.

4.3.2 Upon completion of the oil transfer, 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; then the manifold valve on the other ship should be closed. The hose should then be disconnected from the manifold on one of the oil tankers and its end should be securely blanked prior to transfer to the other oil tanker for final draining.

Once the hoses have been removed from the cargo manifolds, they should also be securely blanked.

Following completion of hose transfer to the oil tanker (which has not yet disconnected the hoses from her manifolds), the hoses should once again be drained prior to disconnection from the ship's manifolds. This operation is usually achieved by lifting the outboard end of the hoses vertically using the ship's crane /derrick and draining the hose contents to an empty (preferably de-pressurised tank) via the manifolds to which they are connected.
It is recommended that prior to conducting the foregoing operation that a blank remains fitted to the outboard end of each hose to prevent spillage of hose contents during the lifting operation or when the manifold and cargo tank valves are opened exposing the hose interior to positive tank pressure.

Whenever possible, the POAC should supervise the connection, disconnection and drainage of the cargo hoses.

4.3.3 Following completion of hose disconnection and prior to unmooring, the POAC and masters on both the vessels should liaise to prepare a coordinated unmooring plan taking into consideration prevailing sea and weather conditions. Ship's masters are to be mindful of the fact that historically a significant proportion of STS incidents have occurred during unmooring operations and are to ensure that all critical manoeuvring equipment has been tested and proven as being fully operational prior to commencement of such operations. Once the unmooring plan has been agreed by all elements of Checklist No 5 in the ICS/OCIMF STS Transfer Guide - Petroleum (Appendix B) shall be verified and completed by both vessels.

4.3.4 As soon as practicable after the transfer operation has been completed, and before unmooring, the responsible person on each oil tanker should ensure that all valves in their system are closed and cargo tank openings are closed and secured for sea.

4.3.5 The oil transfer documents shall be completed, communications checked and the readiness of both oil tankers established, whereupon the ships shall unmoor in accordance with the plan.

Section 5: Unmooring

Special care needs to be taken during unmooring operations. The operation can be complicated by the unpredictability of how the unmooring vessels will respond to the prevailing environmental conditions once mooring lines have been let go and the unmooring vessels attempt to get clear of one another.
Unmooring whilst one vessel remains at anchor can be complicated by wind and tide (or current) coming from different directions or by yawing motions of the anchored vessel. The operation should be supervised 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.

5.1 Unmooring Operations

5.1.1 Unmooring procedure

Unmooring, whether at anchor or underway, must be carefully planned and in accordance with ICS/OCIMF STS Guide (Petroleum) recommendations.
Unmooring, with one vessel at anchor and without tugs, can potentially be one of the more difficult manoeuvres. One aspect of the operation that should be considered is that when departing from an anchored vessel, shortening up the anchor chain on the anchored vessel will reduce the swing radius. A reduction in swing radius may have an impact on the movement of the anchored vessel when the other vessel lets go her moorings. Shortening up anchor chain on the anchored vessel may also result in unforeseen yawing movement being manifested by the anchored vessel. Accordingly, if the movement of the vessel at anchor is within acceptable limits it may be prudent to avoid shortening up the anchor chain until the other vessel has let go and gone clear.

Unmooring whilst both vessels are underway provides the STS Team with the opportunity to determine an optimum heading to steer prior to commencing the operation.

5.1.2 Unmooring Checks

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

- the cargo transfer side of the ship shall be cleared of obstructions including derricks or cranes,
- the method of disengagement and of letting go mooring lines shall be agreed,
- fenders, including their towing and securing lines, shall be checked to be in good order,
- winches and windlasses shall be ready for immediate use,
- rope messengers and rope stoppers shall be ready at all mooring stations,
- fire axes or other suitable cutting equipment shall be available at each mooring station,
- communications shall be confirmed between ships,
- communications shall be established with mooring personnel,
- mooring personnel shall be instructed to let go mooring lines only when directed,
- shipping traffic in the vicinity shall be checked; and
- Check-List 5 of Appendix B shall be completed.

5.1.3 Unmooring Plan

Upon completion of Checklist 5, unmooring can usually commence.
It is vitally important to plan a an effective unmooring sequence and ensure that it's detail is shared with the Ship Management Teams on both vessels for cascading down to the unmooring gangs.
The unmooring sequence shall ensure that the release of the final mooring rope(s) from the poop deck can be performed in a safe and timely manner to ensure that the propeller can be turned as soon as practicable to provide directional control.

5.1.4 Procedure for Un-berthing

Special care needs to be taken during un-berthing to avoid the two ships coming into contact. The primary objective is to open the bows of the two vessels engaged in the STS transfer and maintain a "wedge" of water between them as they separate, which results in the vessels' sterns becoming closer to one another. In order

to ensure that the distance between the sterns of each vessel is controlled, it is advisable to slack two headlines easily whilst keeping the aft springs secure.
When departing at anchor without the assistance of tugs, if the vessels do not readily separate, it is prudent to stop the unmooring operation, then heave the anchor and conduct an underway departure.

5.1.5 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 bitts.

If such specialised equipment is provided by the STS Service Provider, suitable instructions regarding their use shall be provided by the STS Superintendent.

Section 6: Suspension of operations

6.1 Both oil tankers shall be prepared to immediately discontinue the STS transfer operation, and to unmoor and depart if necessary. The operation shall be suspended when:

.1 movement of the oil tankers alongside reaches the maximum permissible and risks placing excessive strain on the moorings,

.2 under adverse weather and/or sea conditions,

.3 either oil tanker experiences a power failure,

.4 there is a failure of the main communication system between the oil tankers and there are no proper standby communications,

.5 any escape of oil into the sea 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 oil tanker's deck piping,

.9 overflow of oil onto the deck occurs caused by over-filling of a cargo tank,

.10 any faults or damage threatening the escape of oil are discovered; and

.11 there is a significant, unexplained difference between the quantities of cargo delivered and received.

6.2 Operations may be resumed only after the weather and seas have abated or appropriate remedial action has been taken.

Part B – Ship specific Plans

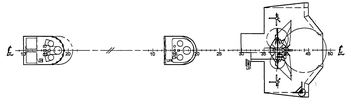
Copies of the following Plans are included with the Ship To Ship Transfer Operations Plan:

- General Arrangement Plan: Drawing No PF 101.10 (FINISHED DWG) Date 04 Oct 2005
- Anchor Handling and Mooring Arrangement: Drawing No DB005.10/20 (FINISHED DWG) Date 2004.03.02
- Capacity Plan With Deadweight Scale: Drawing No PF302.10 (FINISHED DWG) Date 13 January 2006.
- NOTE: This drawing applies to a sister ship - BRITISH KESTREL (IMO 9297357) Samsung Hull No 1531

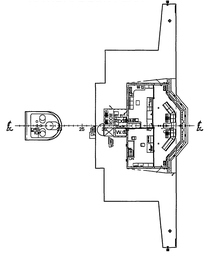
  Confirmation is required that the Capacity Plan With Deadweight Scale (FINISHED DWG) for BRITISH CYGNET (IMO 9297345) is available on board the vessel

GENERAL ARRANGEMENT

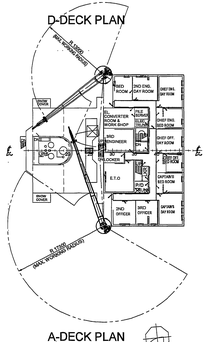
W/H TOP PLAN



NAV/BRI DECK PLAN

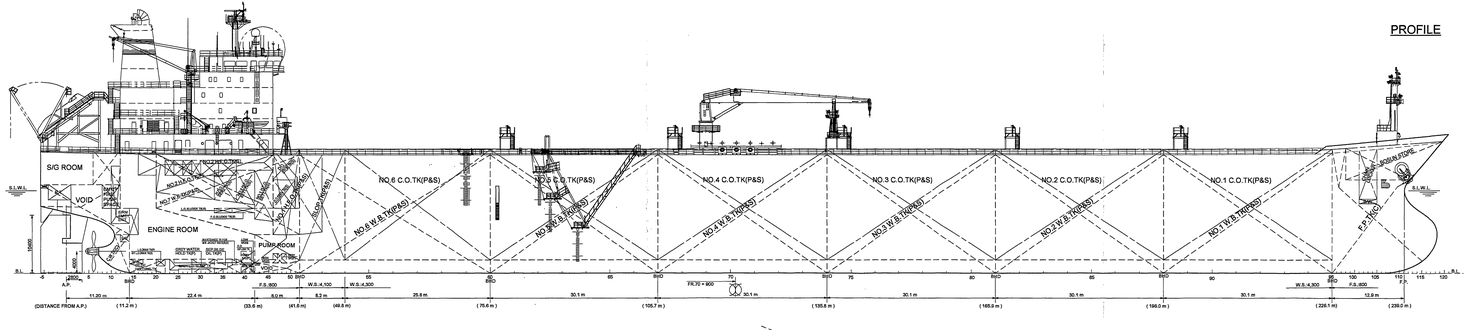


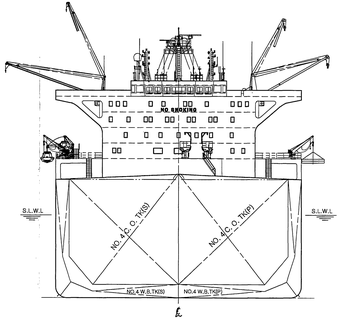
D-DECK PLAN



C-DECK PLAN

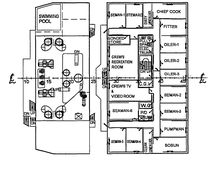
PROFILE



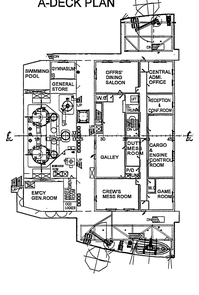


MIDSHIP SECTION

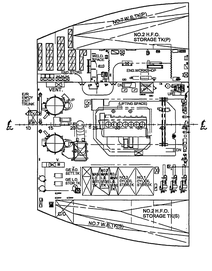
B-DECK PLAN



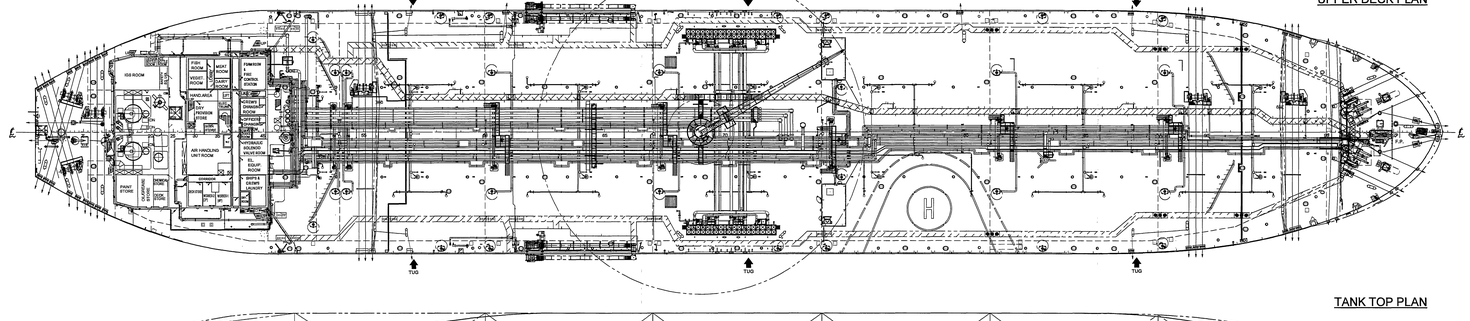
A-DECK PLAN



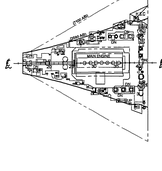
2ND DECK PLAN



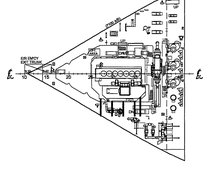
UPPER DECK PLAN



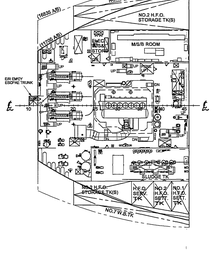
FLOOR PLAN



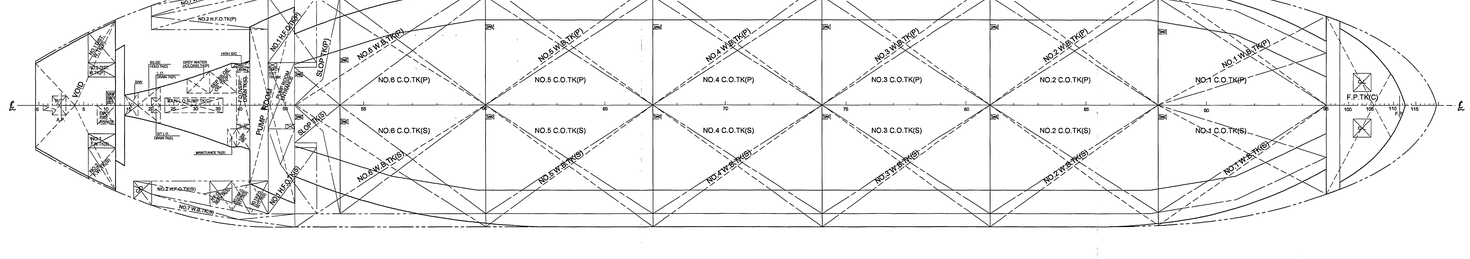
4TH DECK PLAN



3RD DECK PLAN



TANK TOP PLAN



PRINCIPAL DIMENSIONS

LENGTH O. A.	251.508 m
LENGTH B. P.	239.000 m
BREADTH (MOULDED)	43.800 m
DEPTH (MOULDED)	21.300 m
DESIGNED DRAUGHT(MOULDED)	13.600 m
SCANTILING DRAUGHT(MOULDED)	15.000 m

FINISHED DWG

Hull No	1530
IMO No	9297345

Department : 220 General Design	Ship Type 113,000 DWT CRUDE OIL TANKER
	Class. LR
Hull no. 1530	Ship name : BRITISH CYGNET
Approved by : W.H. CHO	Document Title : GENERAL ARRANGEMENT
Checked by : J. PARK	
Prepared by : J.W. BAEK (T.3294)	
Date : 4 Oct., 2005	Buyer Document no.
	Rev. No. A
SAMSUNG HEAVY IND., CO.,LTD. GEOJE SHIPYARD, KOREA	Builder Document no. PP101.10
	Scale: 1/100 Unit: mm
	Consolidated No.
	SER.NO.

R60000243948B005

GY - 02

PLAN HISTORY				
NO	ALT. MARK	DATE	DESCRIPTION	CONF.BY
1		'04-03-02	PREPARED BY HULL OUTFITTING DESIGN PART.2 ACC. TO CHANGED LINES FOR ICE CLASS 1A.	

FOR ANCHORING/MOORING & EM'CY TOWING

SYMBOL	EQUIPMENT	SPECIFICATION (PURPOSE)	QUANTITY PER SHIP				REMARKS
			FORE	MID.	AFT.	TOTAL	
W1 W2	ELECTRO HYD. DRIVEN (HIGH PRESSURE TYPE) WINDLASS COMBINED WITH WINCH	42.9TON X 12M/MIN.+ 20.0TON X 15M/MIN.	2	-	-	2	MOORING DRUM CAPACITY EACH 250M LONG & 34MM DIA. OF IWRC 6X37 GAL'V.
M1~M6	ELECTRO HYD. DRIVEN (HIGH PRESSURE TYPE) MOORING WINCH.	20.0TON X 15M/MIN.	-	3	3	6	
BL1	BOLLARD	ø500(SWL: 85 TON)	3	6	6	15	FOR MOORING
BL2	BOLLARD	ø350(SWL: 45 TON)	-	4	-	4	FOR TUG
MC1	MOORING CHOCK	600 X 450(SWL: 200 TON)	2	-	-	2	FOR EM'CY TOWING (FITTED TO THE BULWARK WITH BRACKETS)
MC2	MOORING CHOCK	400 X 250(SWL: 85 TON)	10	-	-	10	FOR MOORING (FITTED TO THE BULWARK WITH BRACKETS)
MC3	MOORING CHOCK	400 X 250(SWL: 85 TON)	-	18	18	36	FOR MOORING (FITTED TO THE DECK WITH FOUNDATION)
MC4	MOORING CHOCK	400 X 250(SWL: 45 TON)	-	4	-	4	FOR TUG
MR	STEEL WIRE MOORING ROPE	ø34MM X 250M LONG(IWRC 6X37 GAL'V)WITH TAIL ROPE(ø85 X 11 LONG LYLON & A TONGSBERG MOORING LINK)	4	6	6	16	MBL : 85 TON (OWNER SUPPLY)
AC	ANCHOR	11,025 KG/EA HIGH HOLDING POWER	2	-	-	2	
CC	ANCHOR CHAIN CABLE	GRADE3 ø95MM X 742.5M (27 SHOTS)	2	-	-	2	P : 13 SHOTS S : 14 SHOTS
CS	CHAIN STOPPER WITH ANCHOR STOPPER	ROLLER DOG TYPE FOR ø95MM CHAIN CABLE	2	-	-	2	
BC	BOW CHAIN STOPPER FOR SINGLE POINT MOORING	TUNGUE TYPE(SWL: 200 TON)	2	-	-	2	
FW	FIRE WIRE ROPE WITH AIR MOTOR DRIVEN REEL	ø38MM X 60M G.S.W.R	-	2	-	2	
FC	CHAFING CHAIN	ø76 X 8M FOR EM'CY TOWING	1	-	-	1	
HG	ROPE GUIDE	100A SGP	-	3	-	3	
SR	STAND ROLLER	ø350(SWL: 47 TON)	5	-	1	6	
TE	ESCORTING AND PULL-BACK SYSTEM (SWL: 200 TON)	1-SAFETY BITT AND 1-FAIRLEAD (SUPPLIED BY SOUTHERN MARINE AS)	-	-	1	1	
STS	BOLLARD	ø550(SWL: 85 TON)	-	2	-	2	
	MOORING CHOCK	500 X 400(SWL: 85 TON)	-	2	-	2	
ETS	EM'CY TOWING SYSTEM (SWL: 200 TON)	FWD:SMIT BRACKET & CHAFING CHAIN	1	-	-	1	
		AFT:UNIQUE SYSTEM TO BE PROVIDED	-	-	1	1	
CS	CAPSTAN	SWL: 2TON	1	-	-	1	FOR TUG LINE
MANIFOLD FITTINGS							
CB	CRUCIFORM BOLLARD	ø350(SWL: 25 TON)	-	4	-	4	ACCORDING TO OCIMF
BL3	BOLLARD	ø300(SWL: 25 TON)	-	4	-	4	
MC5	MOORING CHOCK	400 X 250(SWL: 40 TON)	-	6	-	6	
PE	PAD EYE	SWL: 15 TON	-	22	-	22	

NOTES

1. PORT & STARBOARD ARE SYMMETRICAL UNLESS OTHERWISE NOTED.
2. REFER TO "DETAIL OF HULL OUTFIT.(DF009.70) FOR THE DETAIL OF MOORING FITTINGS.
3. REFERENCE DWG.:
   1) CONSTRUCTION PROFILE & DECK PLAN(SB003.10)
   2) FORE END CONST.(SF071.10)
   3) SHELL EXPANSION(SB007.10)
   4) DETAIL OF HULL OUTFIT.(DF009.70)
   5) DECK MACHINERY MAKER DWG.
   6) SHIP'S LINES
4. DETAIL POSITIONS SHALL BE REFER TO ARR'T DWG. FOR EACH PART.
   1) OUTF. ARR'T ON UPPER DECK(DF363.10)
   2) OUTF. ARR'T ON FORE DECK(DF371.10)
   3) OUTF. ARR'T ON AFT. DECK(DF311.10)
5. EQUIPMENT NO.: 4,825.358
6. DETAIL OF BELL MOUTH/BOLSTER SHAPE SHALL BE DECIDED AFTER CARRY OUT OF MOCK UP TEST.
7. SAFETY GUARD RAIL SHALL BE PROVIDED AROUND HAWSE PIPE ON F'CLE DECK.
8. STEEL COVER SHALL BE FITTED AT THE TOP OF HAWSE PIPE.
9. CHAIN PIPE COVER SHALL BE PROVIDED WITH CANVAS COVER.

FINISHED DWG

DEPT.NO.: 411	CLASS: LR	SCALE:AS SHOWN	DATE:2004.03.02.
MANAGER J.S.PARK	TITLE : 113,000 DWT CRUDE OIL TANKER		
S.W.YOON	SHIP NAME:BRITISH CYGNET		OWNER: BP
CHECKED J.H.KIM	**ANCHOR HANDLING & MOORING ARRANGEMENT**		
DRAWN J.S.LEE TEL:3447			
HULL NO.: 1530	DWG.NO.	DB005.10/20	

SAMSUNG HEAVY INDUSTRIES CO.

SER.NO. OY - 02

EECE-4N-0-01-0012-B-02-02

R000002441756554

(SIZE : 840 X 2100)

CAPACITY PLAN WITH DWT SCALE

TANK SUMMARY TABLE

CARGO OIL TANKS

COMPARTMENT	LOCATION (FR. NO.)	CAPACITIES 100% FULL (M³)	CAPACITIES 95% FULL (M³)	98% FULL L.C.G. FROM A.P.(M)	98% FULL V.C.G. ABOVE B.L.(M)	MAX. MT OF INERTIA (M⁴)
NO.1 C. O. TK (P)	88 - 95	8986.5	8512.8	209.344	12.264	11093
NO.1 C. O. TK (S)	88 - 95	8986.5	8512.8	209.344	12.264	11093
NO.2 C. O. TK (P)	81 - 88	11225.4	10664.0	180.942	12.181	15801
NO.2 C. O. TK (S)	81 - 88	11225.4	10664.0	180.942	12.181	15801
NO.3 C. O. TK (P)	74 - 81	11231.3	10910.7	150.850	12.161	16630
NO.3 C. O. TK (S)	74 - 81	11231.3	10910.7	150.850	12.161	16630
NO.4 C. O. TK (P)	67 - 74	11231.3	10910.7	120.750	12.161	16630
NO.4 C. O. TK (S)	67 - 74	11231.3	10910.7	120.750	12.161	16630
NO.5 C. O. TK (P)	60 - 67	11231.3	10910.7	90.650	12.161	16630
NO.5 C. O. TK (S)	60 - 67	11231.3	10910.7	90.650	12.161	16630
NO.6 C. O. TK (P)	54 - 60	9066.7	8885.4	62.962	12.436	15969
NO.6 C. O. TK (S)	54 - 60	9066.7	8885.4	62.962	12.436	15969
SLOP TANK (P)	52 - 54	1894.3	1856.4	46.462	12.778	3483
SLOP TANK (S)	52 - 54	1894.3	1856.4	46.462	12.778	3483
TOTAL		127533.6	124983.0			

WATER BALLAST TANKS

S.G : 1.025

COMPARTMENT	LOCATION (FR. NO.)	CAPACITIES 100% FULL (M³)	CAPACITIES 99% FULL (M³)	99% FULL L.C.G. FROM A.P.(M)	99% FULL V.C.G. ABOVE B.L.(M)	MAX. MT OF INERTIA (M⁴)
F. P. TK (C)	95 - AE	4035.0	3994.7	231.399	9.467	9956
NO.1 W. B. TK (P)	88 - 95	3446.5	3412.0	211.604	7.936	14636
NO.1 W. B. TK (S)	88 - 95	3446.5	3412.0	211.604	7.936	14636
NO.2 W. B. TK (P)	81 - 88	3131.4	3100.1	180.926	5.808	25395
NO.2 W. B. TK (S)	81 - 88	3131.4	3100.1	180.926	5.808	25395
NO.3 W. B. TK (P)	74 - 81	3177.8	3146.0	150.853	5.778	25951
NO.3 W. B. TK (S)	74 - 81	3177.8	3146.0	150.853	5.778	25951
NO.4 W. B. TK (P)	67 - 74	3177.8	3146.0	120.753	5.779	25951
NO.4 W. B. TK (S)	67 - 74	3177.8	3146.0	120.753	5.779	26341
NO.5 W. B. TK (P)	60 - 67	3125.4	3094.2	90.790	5.862	25328
NO.5 W. B. TK (S)	60 - 67	3125.4	3094.2	90.790	5.862	25328
NO.6 W. B. TK (P)	52 - 60	3534.2	3498.9	58.037	6.857	16264
NO.6 W. B. TK (S)	52 - 60	3534.2	3498.9	58.037	6.857	16264
NO.7 W. B. TK (P)	20 - 52	1070.7	1060.0	30.825	14.159	475
NO.7 W. B. TK (S)	20 - 52	1082.1	1071.3	30.875	14.116	463
TOTAL		45373.8	44920.4			

FRESH WATER TANKS

S.G : 1.000

COMPARTMENT	LOCATION (FR. NO.)	CAPACITIES 100% FULL (M³)	CAPACITIES 99% FULL (M³)	99% FULL L.C.G. FROM A.P.(M)	99% FULL V.C.G. ABOVE B.L.(M)	MAX. MT OF INERTIA (M⁴)
NO. 1 D.BT. W. TK (P)	6 - 12	180.7	178.9	7.200	16.940	123
NO. 2 D.BT. W. TK (P)	6 - 12	72.2	71.5	7.200	16.940	123
NO. 1 F. W. TK (S)	6 - 12	722.2	714.9	7.200	16.940	123
NO. 2 F. W. TK (S)	6 - 12	180.7	178.9	7.200	16.940	123
TOTAL		505.7	500.6			

FUEL OIL TANKS

S.G : 0.980

COMPARTMENT	LOCATION (FR. NO.)	CAPACITIES 100% FULL (M³)	CAPACITIES 95% FULL (M³)	95% FULL L.C.G. FROM A.P.(M)	95% FULL V.C.G. ABOVE B.L.(M)	MAX. MT OF INERTIA (M⁴)
NO. 1 H.F.O.STOR. TK (P)	46 - 53	1193.1	1133.5	41.304	15.209	1234
NO. 1 H.F.O.STOR. TK (S)	46 - 53	1269.9	1205.5	41.172	14.823	1234
NO.2 H.F.O.STOR. TK (P)	20 - 46	664.8	631.6	28.539	17.458	205
NO. 2 H.F.O.STOR. TK (S)	16 - 46	416.5	395.7	25.400	18.842	217
H.F.O. SERV. TK (S)	33 - 46	82.3	78.2	28.487	16.099	39
NO. 1 H.F.O.SETT. TK (S)	42 - 46	93.2	88.5	35.200	15.629	55
NO. 2 H.F.O.SETT. TK (S)	38 - 42	81.7	77.6	32.050	15.885	47
TOTAL		3800.5	3610.8			

DIESEL OIL TANKS

S.G : 0.900

COMPARTMENT	LOCATION (FR. NO.)	CAPACITIES 100% FULL (M³)	CAPACITIES 95% FULL (M³)	95% FULL L.C.G. FROM A.P.(M)	95% FULL V.C.G. ABOVE B.L.(M)	MAX. MT OF INERTIA (M⁴)
D. O. STOR. TK (S)	46 - 52	130.9	124.4	39.311	17.297	15
D. O. SERV. TK (S)	46 - 51	34.4	33.7	38.800	14.142	2
TOTAL		165.3	157.0			

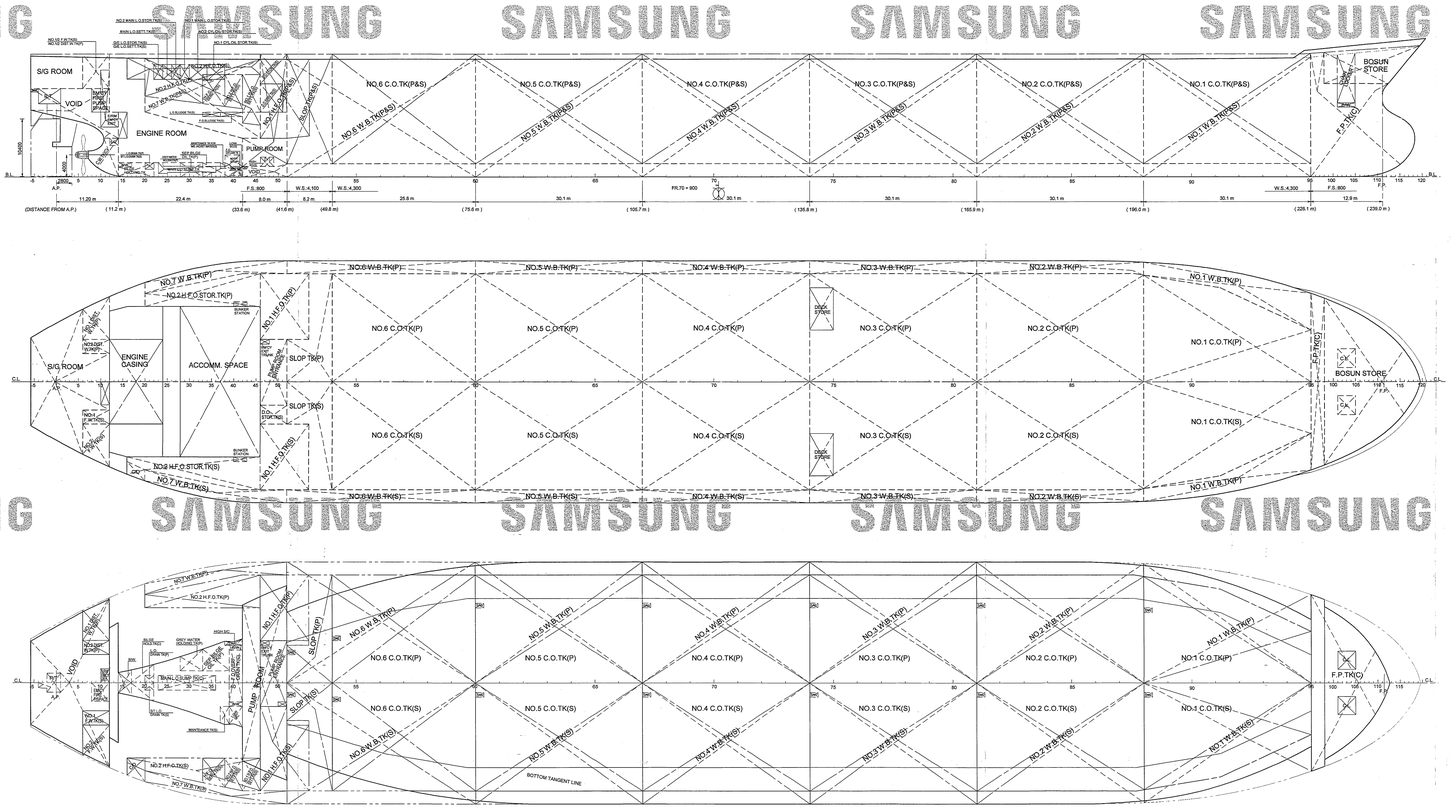
LUBRICATING OIL TANKS

S.G : 0.900

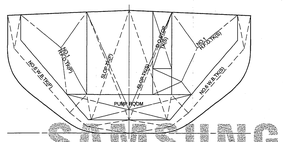
COMPARTMENT	LOCATION (FR. NO.)	CAPACITIES 100% FULL (M³)	CAPACITIES 95% FULL (M³)	95% FULL L.C.G. FROM A.P.(M)	95% FULL V.C.G. ABOVE B.L.(M)	MAX. MT OF INERTIA (M⁴)
NO. 1 CYL. O.STOR.TK (S)	34 - 36	45.3	43.0	28.793	18.955	35
NO. 2 CYL. O.STOR.TK (S)	30 - 34	45.3	43.0	25.607	18.955	35
NO. 1 MAIN L.O.STOR.TK(S)	28 - 30	22.5	21.4	23.200	18.955	17
NO. 2 MAIN L.O.STOR.TK(S)	26 - 28	16.8	15.9	21.600	18.955	7
MAIN L.O.SETT. TK (S)	24 - 28	35.2	26.8	20.335	18.955	24
S/G L.O.STOR. TK (S)	22 - 24	15.0	14.3	18.400	18.955	5
S/G L.O.SETT. TK (S)	22 - 24	7.5	7.1	18.400	18.955	1
MAIN L.O.SUMP. TK (C)	23 - 36	32.2	30.6	23.479	1.358	16
TOTAL		212.8	202.1			

MISCELLANEOUS TANKS

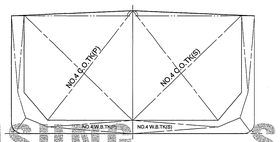
COMPARTMENT	LOCATION (FR. NO.)	CAPACITIES 100% FULL (M³)	100% FULL L.C.G. FROM A.P.(M)	100% FULL V.C.G. ABOVE B.L.(M)	MAX. MT OF INERTIA (M⁴)
SHUE HOLDING TK (C)	14 - 22	51.8	14.854	1.331	58
SEP.SHUE OIL TK (P)	33 - 39	39.1	28.932	1.529	37
GREY WATER HOLDING TK (P)	28 - 33	20.7	24.571	1.618	12
F.O.OVERFLOW TK (C)	39 - 42	44.8	32.384	0.994	268
L.O.DRAIN TK (P)	20 - 22	2.8	16.800	1.990	0
S/T L.O.DRAIN TK (S)	20 - 22	2.8	16.800	1.990	0
MAINTENANCE TK (S)	37 - 39	4.0	30.370	2.081	3
F.O.SLUDGE TK (S)	37 - 42	6.0	31.600	11.326	2
L.O.SLUDGE TK (S)	33 - 37	4.0	28.000	11.326	1
C.W.TK (C)	9 - 14	44.3	9.528	3.160	9
E/R B.W (WT) (C)	14 - 17	7.7	12.446	2.193	14
E/R B.W (DBG) (P)	39 - 42	2.0	32.431	1.665	1
E/R B.W (DBG) (S)	39 - 42	1.3	32.322	1.634	0
TOTAL		229.6			



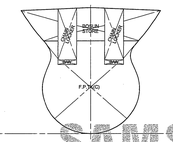
FR.52



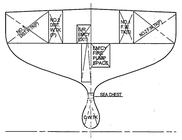
MIDSHIP SECTION



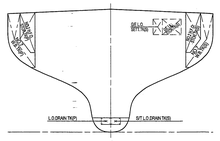
FR.105



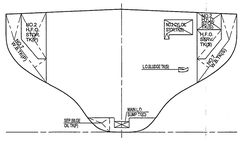
FR.12



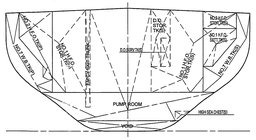
FR.22



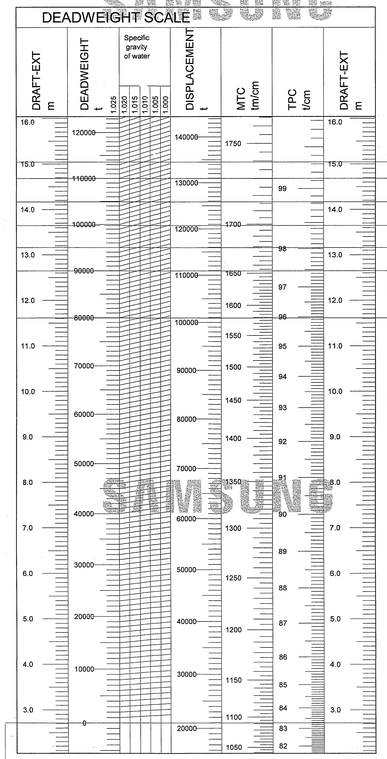
FR.33



FR.46



DEADWEIGHT SCALE



LIGHTSHIP DATA

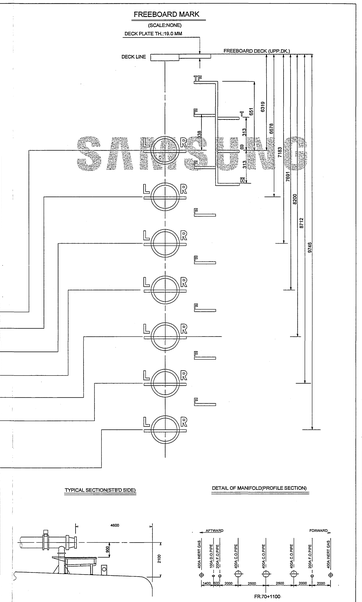
LIGHTWEIGHT = 20949.4 M.T
dwg. = 2.713 M
L.C.G (FROM A.P) = 109.229 M
V.C.G (ABOVE B.L) = 12.198 M

MAIN FREEBOARD, DRAFT & DWT TABLE

FREEBOARD	FREEBOARD (M)	DRAFT (EXTREM) (M)	DEADWEIGHT (M.T)	DISPLACEMENT (M.T)
TROPICAL FRESH WATER	5.668	15.691	116587.40	137536.80
FRESH WATER	5.981	15.378	113548.43	134497.83
TROPICAL	6.006	15.353	116662.29	137611.69
SUMMER	6.319	15.040	113552.90	134502.30
WINTER	6.632	14.727	110448.05	131397.45

ADDITIONAL FREEBOARD, DRAFT & DWT TABLE

FREEBOARD		FREEBOARD (M)	DRAFT (EXTREM) (M)	DEADWEIGHT (M.T)	DISPLACEMENT (M.T)
FRESH WATER	F	6.348	15.011	109996.14	130945.54
SUMMER WATER	S	6.678	14.681	109922.25	130941.65
FRESH WATER	F	6.864	14.495	105001.70	125951.10
SUMMER WATER	S	7.183	14.176	104998.95	125948.35
FRESH WATER	F	7.384	13.975	99992.77	120942.16
SUMMER WATER	S	7.691	13.668	99989.52	120938.91
FRESH WATER	F	7.904	13.455	94996.44	115945.84
SUMMER WATER	S	8.200	13.159	94992.76	115942.16
FRESH WATER	F	8.427	12.932	89996.80	110946.20
SUMMER WATER	S	8.712	12.647	89992.49	110941.89
FRESH WATER	F	9.483	11.876	80002.03	100951.43
SUMMER WATER	S	9.746	11.613	79998.98	100948.38

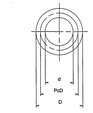


FLANGES FOR PIPE AND HOSE CONNECTIONS				
ALL FLANGES ANSI 150 RF	OD	PCD		BOLTS
CARGO OIL PIPE FLANGES(400A)	527	482.6	420.0	M24
FUEL OIL PIPE FLANGES(200A)	343	298.5	218	M30
DIESEL OIL PIPE FLANGES(100A)	229	190.5	115.4	M16

REDUCTION PIECES			
SYSTEM	NOS	FROM	TO
CARGO	6	16"	16"
CARGO	3	16"	12"
CARGO	3	16"	12"
CARGO	2	16"	8"
F.O.D.O	4	8"	6"
F.O.D.O	2	4"	4"
F.O.D.O	1	8"	4"
F.O.D.O	1	8"	6"
F.O.D.O	1	8"	10"
F.O.D.O	1	8"	12"
LGAS	4	16"	16"
LGAS	2	16"	12"
LGAS	2	16"	10"

ALL FLANGES : ANSI 150 FS

DISTANCE BETWEEN CENTER OF MANIFOLD FLANGES	: 200 MM
DISTANCE FROM DECK TO CENTER OF MANIFOLD FLANGES	: 2100 MM
DISTANCE FROM MANIFOLD FLANGES TO SHIPS SIDE	: 4000 MM
DISTANCE FROM CENTER OF MANIFOLD TO F.P	: 115000 MM
DISTANCE FROM CENTER OF MANIFOLD TO A.P	: 115700 MM



PLAN HISTORY					
Rev.	Date	Reason for Issue	Prepared by	Checked by	Approved by
	13 Jan. 2006	Prepared by General Design Department	J. M. Baek	G.H. Kang	W. H. Cho

PRINCIPAL DIMENSIONS

LENGTH O. A.	251.508 m
LENGTH B. P.	239.000 m
BREADTH (MOULDED)	43.800 m
DEPTH (MOULDED)	21.300 m
DESIGNED DRAUGHT (MOULDED)	13.600 m
SCANTLING DRAUGHT (MOULDED)	15.000 m

FINISHED DWG

Registration; Isle of Man	1531 / 9297357
Hull No.	IMO No.

Department; 220 General Design	Ship Type; 113,000 DWT Crude Oil Tanker / Class.; LR
Hull No.; 1531	Ship Name; BRITISH KESTREL
Approved by : W.H. Cho	Document Title; CAPACITY PLAN WITH DWT SCALE
Checked by : G.H. Kang	
Prepared by : J.M. Baek (T.3294)	Buyer's Document No.;
SAMSUNG HEAVY IND. CO., LTD. GEOJE SHIPYARD, KOREA	Builder's Document No.; P#302-10 / Rev. No.;
	Scale; 1/200 / Unit; mm / Consolidated No.; GY-03

DWG SIZE (840*1500)

Appendix A – Ship interest contacts

The ship's master shall report any emergency by telex or telephone, for all shipping emergencies, worldwide, using the following contact details:

Telex: (Country Code UK 51) 290851

Telephone: +1 630 961 6200 (Notification Centre)

or

Alternate Number: +1 800-321-8642

The Master must also take care to check if any SECONDARY notifications are stipulated on the Voyage Orders in addition to the primary notification described above.

For other key contacts refer to the current 'List of Port Contacts' as per the example shown in Appendix 2 of the Shipboard Oil Pollution Emergency Plan.

Appendix B – Checklists

Ship-To-Ship Transfer **Check-List No 1 - Pre-Fixture Information** (For each ship) (Between ship operator/charterer and STS service provider(Organiser))				
Ship's Name :		IMO No :		
Ship Operator :		Ship Charterer :		
STS Service Provider (Organiser):				
Preferred Contact No : (e.g. INMARSAT)		Ship Operator's Confirmation		Remarks
1.	What is the LOA? What is parallel body length at loaded and ballast draughts?			
2.	Will the transfer be conducted underway and, if so can the ship maintain about five knots for a minimum of two hours?			
3.	Is the ship's manifold arrangement 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 the waterline during the transfer?			
6.	Sufficient manpower will be provided for all stages of the operation?			
7.	Are enclosed fairleads and mooring equipment 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 moorings are wires or high modulus synthetic fibre 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 rope eyes?			
11.	Both sides of the ship are clear of any overhanging projections including bridge wings?			
12.	The transfer area has been agreed?			

For: Discharging ship		Receiving ship	
Name:			
Rank:			
Signature:	Date:		

Ship-To-Ship Transfer Check-List No 2 - Before operations commence				
Discharging Ship's Name:				
Receiving Ship's Name:				
Date of Transfer:				
		Discharging ship Checked	Receiving Ship Checked	Remarks
1.	The two ships been advised by the shipowners that Check List 1 has been completed satisfactorily?			
2.	Personnel comply with the hours of rest requirements of ILO 180, STCW or national regulations as appropriate? (This requirement is to include the Person in Overall Advisory Control)			
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 are 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 has been agreed?			
8.	The ships are upright and at a suitable trim without any overhanging projections?			
9.	Engine(s), steering gear and navigational equipment have been tested and found in good order?			
10.	Ship's boilers and tubes have been cleared of soot and it is understood that during STS operations, tubes must not be blown?			
11.	Engineers have been briefed on engine speed (and speed adjustment) requirements?			
12.	Weather forecasts have been obtained for the transfer area?			
13.	Hose lifting equipment is suitable and ready for use?			
14.	Cargo transfer hoses are properly tested and certified and in apparent good condition?			
15.	Fenders and associated equipment are visually in apparent good order?			
16.	The crew have been briefed on the mooring procedures?			
17.	The contingency plan is agreed?			
15.	Local authorities have been advised about the operation?			
16.	A navigational warning has been broadcast?			
17.	The other ship has been advised that checklist 2 is satisfactorily completed?			

For: Discharging ship		Receiving ship	
Name:			
Rank:			
Signature:	Date:		

Ship-To-Ship Transfer Check-List No 3 - Before run-in and mooring				
Discharging Ship's Name:				
Receiving Ship's Name:				
Date of Transfer:				
		Discharging ship Checked	Receiving Ship Checked	Remarks
1.	Checklist 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 side of berthing have been retracted?			
5.	A proficient helmsman is at the 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 only by changes to revolutions and/or propeller pitch?			(specify)
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.	Mooring personnel are in position?			
15.	Communications are established with mooring personnel?			
16.	The anchor on the opposite side to transfer is ready for dropping?			
17.	The other ship has been advised that checklist 3 is satisfactorily completed?			

For: Discharging ship		Receiving ship	
Name:			
Rank:			
Signature:		Date:	

Ship-To-Ship Transfer Check-List No 4 - Before cargo transfer				
Discharging Ship's Name:				
Receiving Ship's Name:				
Date of Transfer:				
		Discharging ship Checked	Receiving Ship Checked	Remarks
1.	The *ISGOTT* 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 a good position and well secured?			
4.	An inter ship communication system is agreed and established?			
5.	Emergency signals and shutdown procedures are agreed?			
6.	An engine room watch will be maintained throughout transfer and the main engine ready for immediate use?			
7.	Fire axes or suitable cutting equipment is in position at fore and aft mooring stations?			
8.	A bridge watch and / or an anchor watch is established?			
9.	Officers in charge of the cargo 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 other ship?			
12.	The maximum cargo transfer rate is agreed with other ship?			
13.	The topping off rate is agreed with other ship?			
14.	Cargo hoses are well supported and suspended?			
15.	Tools required for rapid disconnection are located at the cargo manifold?			
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 checklist 4 is satisfactorily completed?			

For: Discharging ship		Receiving ship	
Name:			
Rank:			
Signature:	Date:		

Ship-To-Ship Transfer Check-List No 5 - Before unmooring				
Discharging Ship's Name:				
Receiving Ship's Name:				
Date of Transfer:				
		Discharging ship Checked	Receiving Ship Checked	Remarks
1.	Cargo hoses properly drained prior to hose disconnection?			
2.	Cargo hoses or manifolds are blanked?			
3.	The transfer side of the ship clear of obstructions (including hose lifting equipment?			
4.	Secondary fenders are correctly positioned and secured for departure?			
5.	The method of unberthing and of letting go moorings has been agreed with the other ship?			
6.	Fenders including fender pennants, are in good order?			
7.	Power is on for 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?			
12.	Mooring personnel have been instructed to let go only as requested by the manoeuvring ship?			
13.	Navigational warnings have been cancelled, (when clear of the other ship)?			
14.	The other ship been advised that Checklist 5 is satisfactorily completed?			

For: Discharging ship		Receiving ship	
Name:			
Rank:			
Signature:		Date:	

Appendix C – Records of STS operations

Records of STS operations shall be retained onboard for three (3) years and be readily available for inspection by a Party to the Marpol Convention. Such records shall include, but not be limited to:

1. Oil Record Book (record as may be required by chapter 3 and 4 of the revised Marpol Annex 1 (resolution MEPC. 117(52)); requirements for recording bunkering and oil cargo transfer operations in the oil Record Book and any records required by the STS Plan),
2. Safety checklists,
3. Audit checklist (if available),
4. Notification forms,
5. Risk assessment form (if available); and
6. Records of rest and work hour compliance.

Appendix D – Example of instructions for connections of STS hoses

The following instructions shall be followed by ship's personnel to connect the STS Hoses supplied by the STS Service Provider. Ideally this operation should be supervised throughout by the attending STS Superintendent, and shall only be performed by the ship's staff when requested in writing to do so by the STS Service Provider.

If it is possible to do so, ship's staff should endeavour to complete stages 1 thru 5 of the tightening process, leaving the final stage to complete under the supervision of the attending STS Superintendent following his arrival on site.

Preparation

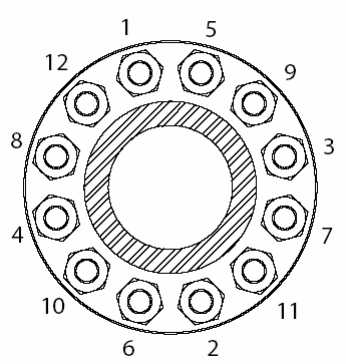
Prior to connection of the two hoses, the flange faces shall be inspected and cleaned to ensure all residues and debris from previous gaskets or fixatives are removed completely. For best results, use a metal flange scraper and an aerosol gasket remover and inspect the flange for damage. Be sure surface finish and flatness are satisfactory. Avoid using a wire brush for cleaning flange surfaces as this could result in surface scoring.

Only the joints, nuts, bolts and torque wrench supplied with these hose sections are to be used for the purpose of hose connection.

Lubricate bolt and nut threads and nut bearing face (where it contacts the flange).

Centre the gasket on the flange. Note: standard ANSI ring gaskets, when cut properly, should centre themselves with the bolts in place.

Flange Diagram showing bolt tightening sequence



Tightening process

After flange assembly and all nuts have been run down by hand with joint in place, start wrench tightening following the sequence of the numbers indicated on the flange diagram above (marking the number on the flange with a crayon aids in keeping track of the tightening process).

During all of the following steps, keep any gap between flanges even all around the circumference, and nuts made up approximately the same amount on each end of the bolt.

1) First time around just snug the nuts with a hand wrench.
2) Second time around tighten the nuts firmly with the same wrench.

Use a torque wrench for the following steps:

3) Third time around apply approximately 25% recommended torque**.
4) Fourth time apply approximately 75% of recommended torque**.
5) Fifth time around, apply 100% of recommended torque**.
6) Continue tightening nuts all around until nuts do not move under 100% recommended torque**.

If possible, re-torque after completion of each transfer operation as most of the short term bolt preload loss occurs within 24 hours after initial tightening.

** The recommended torque value is dependent upon the gasket manufacturer's recommendation and for the gasket supplied is*:*

xxx	***ft lbs / Nm***

Appendix E – Example STS Mooring Equipment Map (Compatibility Data Sheet and Guidelines for data entry)

Refer to *British Cygnet Mooring Map.xls*

NOTE
Please note the EXCEL spreadsheet output attached to the approved STS transfer Operations Plan as a pdf file gives data at the even keel draught of 15.040 m. To calculate data at other draughts and trims access to the spreadsheet referred to above is required.

MAROPS-MOOR-STS-FORM-02

STS Plan Mooring Map - Vessel Particulars

Vessel : British Cygnet **IMO No :** 9297345

Tonnage Band	AFRAMAX		**Summer Deadweight**	113,782	Metric Tonnes	**Description**	**Location**	**No**	**Length**		**Material**	**Dia**		**M.B.L**	
Length Overall	251.508	Metres	**Summer Displacement**	134,502	Metric Tonnes	**Mooring Wires on Drums**	**Forecastle**	4	250	**Metres**	GS	34	**mm**	82	**Metric Tonnes**
Length B.P	239.000	Metres	**Lightship**	**20,721**	Metric Tonnes		**Forward Main Deck**	4	250	**Metres**	GS	34	**mm**	82	**Metric Tonnes**
Extreme Breadth	43.858	Metres	**Summer Draft**	15.040	Metres		**Aft Main Deck**	2	250	**Metres**	GS	34	**mm**	82	**Metric Tonnes**
Moulded Breadth	43.80	Metres	**Freeboard @ Summer dwt**	6.319	Metres		**Poop**	6	250	**Metres**	GS	34	**mm**	82	**Metric Tonnes**
Moulded Depth	21.300	Metres	**Normal Ballast Condition Deadweight**	38,819	Metric Tonnes		**Total**	**16**							
Keel to Masthead	47.14	Metres	**Normal Ballast Condition Displacement**	59,540	Metric Tonnes	**Mooring Wire Tails**	**Forecastle**	4	11	**Metres**	Euroflex	64	**mm**	104	**Metric Tonnes**
Bow to mid-point manifold (B.C.M)	127.158	Metres	**Lightship (Check)**	**20,721**	Metric Tonnes		**Forward Main Deck**	4	11	**Metres**		64	**mm**	104	**Metric Tonnes**
Stern to mid-point manifold (S.C.M)	124.350	Metres	**FWA**	338	mm		**Aft Main Deck**	2	11	**Metres**		64	**mm**	104	**Metric Tonnes**
Lightship P.B.L	88.06	Metres	**TPC**	99	Tonnes/cm		**Poop**	6	11	**Metres**		64	**mm**	104	**Metric Tonnes**
Lightship Forward P.B.L	61.16	Metres	**Ballast Draft Aft**	8.48	Metres		**Total**	**16**							
Lightship Aft P.B.L	26.90	Metres	**Ballast Draft Forward**	6.00	Metres	**Mooring Ropes on Drums**	**Forecastle**			**Metres**			**mm**		**Metric Tonnes**
Normal Ballast P.B.L	113.83	Metres	**Ballast Draft Mean**	**7.24**	Metres		**Forward Main Deck**			**Metres**			**mm**		**Metric Tonnes**
Normal Ballast Forward P.B.L	61.34	Metres	**Maximum Air-draft Normal Ballast condition**	39.49	Metres		**Aft Main Deck**			**Metres**			**mm**		**Metric Tonnes**
Normal Ballast Aft P.B.L	52.49	Metres	**No of Manifolds Per Side**	3			**Poop**			**Metres**			**mm**		**Metric Tonnes**
P.B.L at Summer Dwt	138.96	Metres	**Distance manifolds to ship's rail**	4600	mm		**Total**	**0**							
Summer dwt Forward P.B.L	61.34	Metres	**Cargo Manifold Nominal Bore**	400	mm	**Other mooring Lines**	**Forecastle**	5	220	**Metres**	Hypamix	56	**mm**	80.4	**Metric Tonnes**
Summer dwt Aft P.B.L	77.62	Metres	**Height of manifold above W/L at summer dwt**	8.42	Metres		**Forward Main Deck**			**Metres**			**mm**		**Metric Tonnes**
Net Registered Tonnage	34,210		**Ht of manifold above W/L in normal ballast condition**	16.31	Metres		**Aft Main Deck**			**Metres**			**mm**		**Metric Tonnes**
Gross Tonnage	63,462		**Height of Manifold Centre above Keel**	23.44	Metres		**Poop**	5	220	**Metres**	Hypamix	56	**mm**	80.4	**Metric Tonnes**
Suez Tonnage	64,843		**Block Coefficient (Cb) @ Full Load Δ**	**0.83346**			**Total**	**10**							
Panama Tonnage	N/A		**Distance stern to Aft Perpendicular**	4.8500	metres										
Number of Hose Crane/Derrick(s)	1		**Distance bow to Forward Perpendicular**	7.6580	metres	**Anchor Cable Particulars**	**Number of Shackles Port Anchor Cable**					13			
SWL of Hose Crane/Derrick	15	Tonnes	Main Engine Minimum Speed	35	RPM		**Number of Shackles Starboard Anchor Cable**					14			
Max Outreach of Hose Crane /Derrick outboard of ship's rail	7.30	Metres	Maximum Duration at Minimum RPM	1	Hours		**Cable Diameter**					95	mm		
			Correlating Propellor Speed assuming zero slip	5.2	Knots										

MAROPS-MOOR-STS-FORM-02

STS Plan Compatibility Data Sheet

Ship's Name	British Cygnet		Ship's IMO No	9297345
Drafts		Manifold Height above waterline	8.40	metres
Forward	**15.04**	Total Parallel Body Length	138.96	metres
Aft	**15.04**	Forward Parallel Body Length	61.34	metres
Mean	15.04	Aft Parallel Body Length	77.62	metres

Unless otherwise stated all numerical values below refer to distances in metres

Port Fairleads

Identity	Long'nal Distance from stern	Transverse Dist from C/L	Vertical Height above Keel	Fairlead Type	Size (mm)	SWL (Tonnes)	Vertical Height above W/L	Distance from manifold mid point		Additional Information	Draft at Station
								Distance	Fwd or Aft		
P1	0.00	1.75	21.62	Closed Chock	350x250	200.0	6.58	124.35	Aft	Escort Tug	15.04
P2	0.65	8.25	21.88	Closed Chock	400x250	85.0	6.84	123.70	Aft		15.04
P3	1.80	8.90	21.88	Closed Chock	400x250	85.0	6.84	122.55	Aft		15.04
P4	2.80	9.45	21.88	Closed Chock	400x250	85.0	6.84	121.55	Aft		15.04
P5	6.30	11.40	21.88	Closed Chock	400x250	85.0	6.84	118.05	Aft		15.04
P6	7.70	12.00	21.88	Closed Chock	400x250	85.0	6.84	116.65	Aft		15.04
P7	9.00	12.70	21.88	Closed Chock	400x250	85.0	6.84	115.35	Aft		15.04
P8	10.00	13.25	21.88	Closed Chock	400x250	85.0	6.84	114.35	Aft		15.04
P9	11.10	13.75	21.88	Closed Chock	400x250	85.0	6.84	113.25	Aft		15.04
P10	12.25	14.25	21.88	Closed Chock	400x250	85.0	6.84	112.10	Aft		15.04
P11	57.45	21.80	22.18	Closed Chock	400x250	85.0	7.14	66.90	Aft		15.04
P12	58.60	21.80	22.18	Closed Chock	400x250	85.0	7.14	65.75	Aft		15.04
P13	59.85	21.80	22.18	Closed Chock	400x250	85.0	7.14	64.50	Aft		15.04
P14	66.50	21.80	22.18	Closed Chock	400x250	45.0	7.14	57.85	Aft		15.04
P15	83.80	21.80	22.02	Closed Chock	500X400	85.0	6.98	40.55	Aft	STS Aft	15.04
P16	121.60	21.82	22.06	Closed Chock	400x250	40.0	7.02	2.75	Aft	Manifold	15.04
P17	124.10	21.82	22.06	Closed Chock	400x250	25.0	7.02	0.25	Aft	Manifold	15.04
P18	126.60	21.82	22.06	Closed Chock	400x250	25.0	7.02	2.25	Fwd	Manifold	15.04
P19	164.50	21.80	22.02	Closed Chock	500X400	85.0	6.98	40.15	Fwd	STS Forward	15.04
P20	195.15	21.72	21.96	Closed Chock	400x250	45.0	6.92	70.80	Fwd		15.04
P21	207.50	21.10	21.96	Closed Chock	400x250	85.0	6.92	83.15	Fwd		15.04
P22	208.80	20.98	21.96	Closed Chock	400x250	85.0	6.92	84.45	Fwd		15.04
P23	209.85	20.78	21.96	Closed Chock	400x250	85.0	6.92	85.50	Fwd		15.04
P24	225.30	17.72	21.96	Closed Chock	400x250	85.0	6.92	100.95	Fwd		15.04
P25	226.45	17.44	21.96	Closed Chock	400x250	85.0	6.92	102.10	Fwd		15.04
P26	227.50	17.15	21.96	Closed Chock	400x250	85.0	6.92	103.15	Fwd		15.04
P27	231.40	16.00	22.20	Closed Chock	400x250	85.0	7.16	107.05	Fwd		15.04
P28	232.85	15.45	22.50	Closed Chock	400x250	85.0	7.46	108.50	Fwd		15.04
P29	238.45	10.70	23.10	Closed Chock	400x250	85.0	8.06	114.10	Fwd		15.04
P30	243.90	10.05	23.25	Closed Chock	400x250	85.0	8.21	119.55	Fwd		15.04
P31	247.40	6.55	23.55	Closed Chock	400x250	85.0	8.51	123.05	Fwd		15.04
P32	250.90	1.15	24.30	Closed Chock	600X450	200.0	9.26	126.55	Fwd	ETS	15.04

MAROPS-MOOR-STS-FORM-02

STS Plan Compatibility Data Sheet

Ship's Name	British Cygnet	Ship's IMO No	9297345

Starboard Fairleads

Identity	Long'nal Distance from stern	Transverse Dist from C/L	Vertical Height above Keel	Fairlead Type	Size (mm)	SWL (Tonnes)	Vertical Height above W/L	Distance from manifold mid point		Additional Information	Draft at Station
								Distance	Fwd or Aft		
S1	0.00	1.75	21.62	Closed Chock	600X450	200.0	6.58	124.35	Aft	ETS	15.04
S2	0.65	8.25	21.88	Closed Chock	400x250	85.0	6.84	123.70	Aft		15.04
S3	1.80	8.90	21.88	Closed Chock	400x250	85.0	6.84	122.55	Aft		15.04
S4	2.80	9.45	21.88	Closed Chock	400x250	85.0	6.84	121.55	Aft		15.04
S5	6.30	11.40	21.88	Closed Chock	400x250	85.0	6.84	118.05	Aft		15.04
S6	7.70	12.00	21.88	Closed Chock	400x250	85.0	6.84	116.65	Aft		15.04
S7	9.00	12.70	21.88	Closed Chock	400x250	85.0	6.84	115.35	Aft		15.04
S8	10.00	13.25	21.88	Closed Chock	400x250	85.0	6.84	114.35	Aft		15.04
S9	11.10	13.75	21.88	Closed Chock	400x250	85.0	6.84	113.25	Aft		15.04
S10	12.25	14.25	21.88	Closed Chock	400x250	85.0	6.84	112.10	Aft		15.04
S11	57.45	21.80	22.18	Closed Chock	400x250	85.0	7.14	66.90	Aft		15.04
S12	58.60	21.80	22.18	Closed Chock	400x250	85.0	7.14	65.75	Aft		15.04
S13	59.85	21.80	22.18	Closed Chock	400x250	85.0	7.14	64.50	Aft		15.04
S14	66.50	21.80	22.18	Closed Chock	400x250	45.0	7.14	57.85	Aft		15.04
S15	121.60	21.82	22.06	Closed Chock	400x250	40.0	7.02	2.75	Aft	Manifold	15.04
S16	124.10	21.82	22.06	Closed Chock	400x250	25.0	7.02	0.25	Aft	Manifold	15.04
S17	126.60	21.82	22.06	Closed Chock	400x250	25.0	7.02	2.25	Fwd	Manifold	15.04
S18	195.15	21.72	21.96	Closed Chock	400x250	45.0	6.92	70.80	Fwd		15.04
S19	207.50	21.10	21.96	Closed Chock	400x250	85.0	6.92	83.15	Fwd		15.04
S20	208.80	20.98	21.96	Closed Chock	400x250	85.0	6.92	84.45	Fwd		15.04
S21	209.85	20.78	21.96	Closed Chock	400x250	85.0	6.92	85.50	Fwd		15.04
S22	225.30	17.72	21.96	Closed Chock	400x250	85.0	6.92	100.95	Fwd		15.04
S23	226.45	17.44	21.96	Closed Chock	400x250	85.0	6.92	102.10	Fwd		15.04
S24	227.50	17.15	21.96	Closed Chock	400x250	85.0	6.92	103.15	Fwd		15.04
S25	231.40	16.00	22.20	Closed Chock	400x250	85.0	7.16	107.05	Fwd		15.04
S26	232.85	15.45	22.50	Closed Chock	400x250	85.0	7.46	108.50	Fwd		15.04
S27	238.45	10.70	23.10	Closed Chock	400x250	85.0	8.06	114.10	Fwd		15.04
S28	243.90	10.05	23.25	Closed Chock	400x250	85.0	8.21	119.55	Fwd		15.04
S29	247.40	6.55	23.55	Closed Chock	400x250	85.0	8.51	123.05	Fwd		15.04
S30	250.90	1.15	24.30	Closed Chock	600X450	200.0	9.26	126.55	Fwd	ETS	15.04

MAROPS-MOOR-STS-FORM-02

STS Plan Compatibility Data Sheet

Ship's Name	British Cygnet	Ship's IMO No	9297345

Port Bollards

Identity	Long'nal Distance from stern	Nearest Fairlead (No)	Distance from fairlead	Bollard Type	Size (mm)	SWL (Tonnes)	Addittional Information
Pa	2.00	P2	2.20	Double Bollards	500	85.0	Tug
Pb	6.00	P5	1.55	Double Bollards	500	85.0	
Pc	11.60	P9	3.15	Double Bollards	500	85.0	
Pd	60.50	P13	4.00	Double Bollards	500	85.0	Tug
Pe	67.00	P14	3.00	Double Bollards	350	45.0	Tug
Pf	93.00	P15	3.90	Double Bollards	550	85.0	STS
Pg	115.25	P16	7.30	Double Bollards	300	25.0	Hose Handling
Ph	123.45	P16	2.40	Single Cruciform Bollard	350	25.0	
Pi	125.90	P17	2.40	Single Cruciform Bollard	350	25.0	Hose Handling
Pj	134.10	P18	7.30	Double Bollards	300	25.0	Hose Handling
Pk	164.30	P19	3.90	Double Bollards	550	85.0	
Pl	194.65	P20	3.00	Double Bollards	350	45.0	Tug
Pm	203.90	P21	3.70	Double Bollards	500	85.0	
Pn	224.95	P24	3.50	Double Bollards	500	85.0	
Po	239.45	P29	3.50	Double Bollards	500	85.0	
Pp	246.00	P32	5.00	Double Bollards	500	85.0	Tug

MAROPS-MOOR-STS-FORM-02

STS Plan Compatibility Data Sheet

Ship's Name	British Cygnet	Ship's IMO No	9297345

Starboard Bollards

Identity	Long'nal Distance from stern	Nearest Fairlead (No)	Distance from fairlead	Bollard Type	Size (mm)	SWL (Tonnes)	Addittional Information
Sa	2.00	S2	2.20	Double Bollards	500	85.0	
Sb	6.00	S5	1.55	Double Bollards	500	85.0	
Sc	11.60	S9	3.15	Double Bollards	500	85.0	
Sd	60.50	S13	4.00	Double Bollards	500	85.0	Tug
Se	67.00	S14	3.00	Double Bollards	350	45.0	Tug
Sf	115.25	S15	7.30	Double Bollards	300	25.0	Hose handling
Sg	123.45	S16	2.40	Single Cruciform Bollard	350	25.0	Hose handling
Sh	125.90	S16	2.40	Single Cruciform Bollard	350	25.0	Hose handling
Si	134.10	S17	7.30	Double Bollards	300	25.0	Hose handling
Sj	194.65	S18	3.00	Double Bollards	350	45.0	Tug
Sk	203.90	S19	3.70	Double Bollards	500	85.0	
Sl	224.95	S22	3.50	Double Bollards	500	85.0	
Sm	239.45	S27	3.50	Double Bollards	500	85.0	

MAROPS-MOOR-STS-FORM-02

STS Plan Compatibility Data Sheet

Ship's Name	British Cygnet	Ship's IMO No	9297345

Structural Appendages

Item	Long'nal Distance from stern	Transverse Dist from C/L	Ht of underside above Keel	Description	Height	Ht of topside above Keel	Vertical Height above W/L	Distance from manifold mid point		Additional Information	Draft at Station
								Distance	Fwd or Aft		
PBwa	39.10	21.90	36.30	Port Bridge Wing Aft	1.1	37.40	21.26	85.25	Aft		15.04
PBWf	41.50	21.90	36.30	Port Bridge Wing Fd	1.1	37.40	21.26	82.85	Aft		15.04
SBWa	39.10	21.90	36.30	Stbd Bridge Wing Aft	1.1	37.40	21.26	85.25	Aft		15.04
SBWf	41.50	21.90	36.30	Stbd Bridge Wing Fd	1.1	37.40	21.26	82.85	Aft		15.04

STS Plan Mooring Map - Guidelines for data entry

1 Introduction

The STS Plan Mooring Map has been developed as a tool to facilitate pre-operational verification regarding the compatibility of two vessels scheduled to conduct an STS operation.

In order to determine such compatibility the STS Plan Mooring Map captures key dimensional and mooring equipment related data for the named vessel. This enables concerned parties to compare the data captured for both vessels that are scheduled to conduct an STS operation to verify their compatibility to do so.

1.1 Applicability

The STS Mooring Map has been developed for tanker owners and operators and STS Resource Providers who have a vested interest in ensuring the operational integrity and safety of STS Operations conducted utilising their assets and/or for which they have accountability.

2 Scope

The STS Mooring Map is an element of the STS Plan developed in accordance with the standards describe in MARPOL Annex I, as amended by Resolution MEPC.186(59), Chapter 8: *Prevention of Pollution during Transfer of Oil Cargo between Oil Tankers at Sea, Regulations 40, 41, 42.*

3 General Guidelines

The data entry fields in both the particulars and map sheets are unprotected and have been configured to reproduce text in blue. Heading and formulated fields are protected and have been configured to reproduce data in black text.

3.1 Particulars Sheet

The data in the 'Particulars' sheet of the STS Plan Mooring Map can be found in the SIRE Vessel's Particulars Questionnaire. Primarily such data is of a dimensional nature and is self explanatory by virtue of their individual heading descriptions.

3.2 Map Sheet

The data in the 'Map' sheet of the STS Plan Mooring Map should be taken from the vessel's Mooring Arrangement Plans.

The conventions for location mooring equipment items are as follows:

- Longitudinal co-ordinates
  Measured from the aftermost extremity of the ship's structure towards the vessel's bow.
- Transverse co-ordinates
  Measured from the Vessel's Centreline towards the ship's side referred to in the specific table heading, or in the case of the 'Structural Appendages' table, as per the description.
- Vertical co-ordinates
  Measured from the Vessel's Keel upwards.

The Table Headings are as follows:

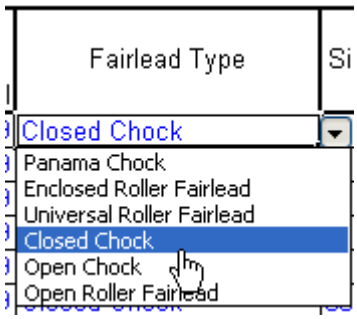
(i) Port Fairleads
(ii) Starboard Fairleads
(iii) Port Bollards
(iv) Starboard Bollards
(v) Structural Appendages

Details that should be included in the Structural Appendages table are items that overhang or are vertically above or proximate to the vertical taken from the vessel's sheer strake at the specific location in question. Examples of these may include bridge wings, lifeboats and aft stores crane gantries.

4 Descriptions for fairleads and bollards

4.1 Fairleads

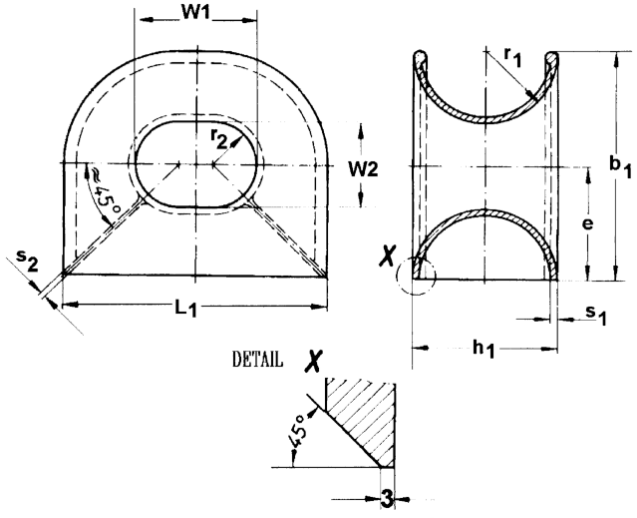
Data entry for the Fairlead Type is facilitated by selection of the appropriate fairlead description from a drop down box. An example is shown hereunder:



The dimensions for each type of fairlead can be determined as follows:

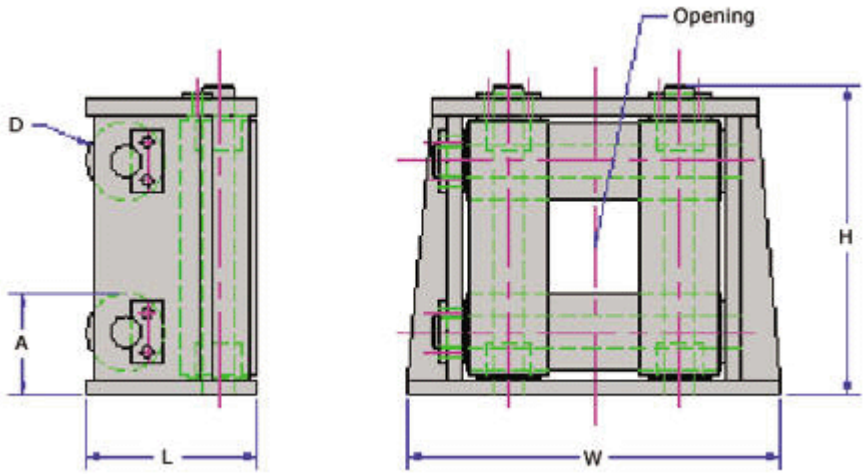
Panama Chock & Closed Chock

Size in mm taken from W1 x W2 as per the diagram below:



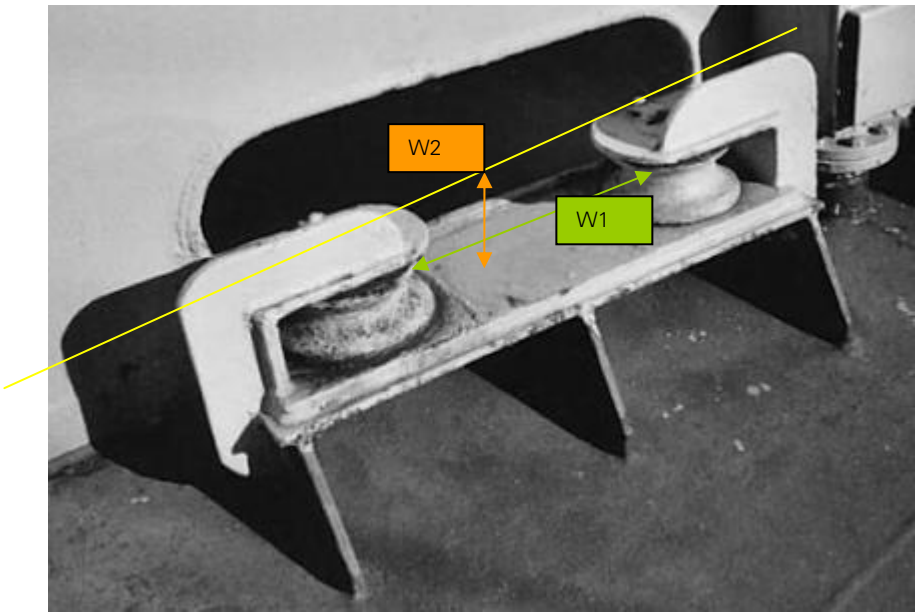
Enclosed or Universal Roller Fairlead

Size in mm taken from W x H as per the diagram below:



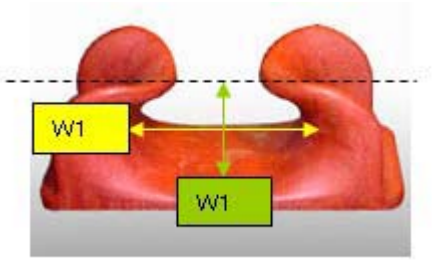
Open Roller Fairleads

Size in mm taken from W1 x W2 as per the image below:



Open Chock

Size in mm taken from W1 x W2 as per the image below:



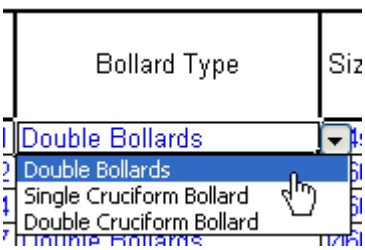
Fairlead Numbering system

Whilst there is no fixed system for numbering the fairleads, naming each fairlead with its own unique alphanumeric identity assists the user to avoid any ambiguity. Furthermore it assists in the determination of the optimum pairing of bollards with their most appropriate fairleads for the purpose of effective mooring.

For example, prefix the bollards on the Port Side with the letter P and number them from aft to forward. Similarly, fairleads on the starboard side could be prefixed with the letter S and numbered aft to forward. For fairleads on the Centreline, these could be prefixed by C/L numbered aft to forward.

4.2 Bitts and Bollards

Data entry for the Bollard Type is facilitated by selection of the appropriate Bollard description fro m a drop down box. An example is shown hereunder:



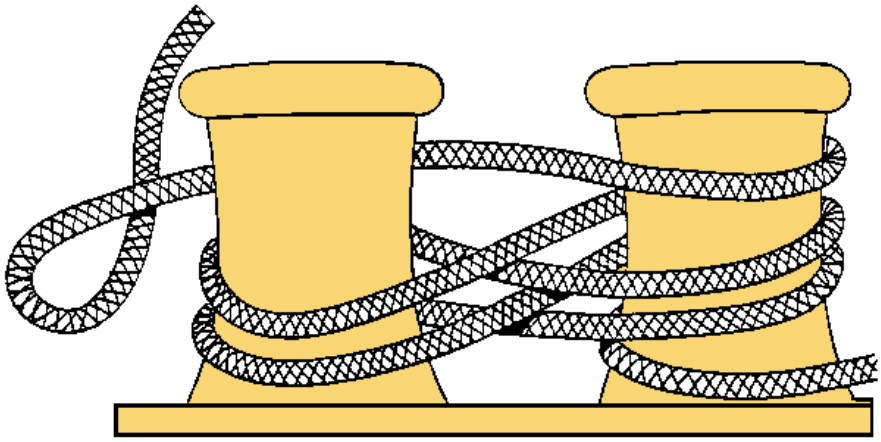
STS Plan Mooring Map - Guidelines for data entry

Bollard dimensions

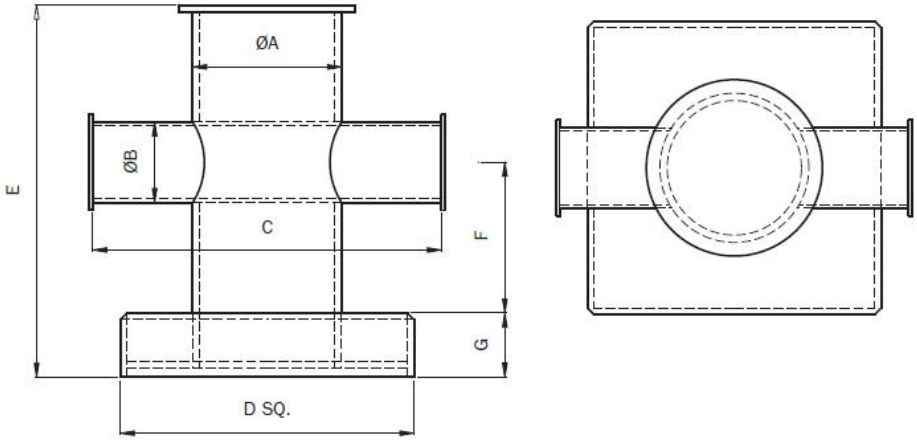
Bollard size (mm) refers to the diameter of the bollard or bitt pins.

Bollard Types are as follows:

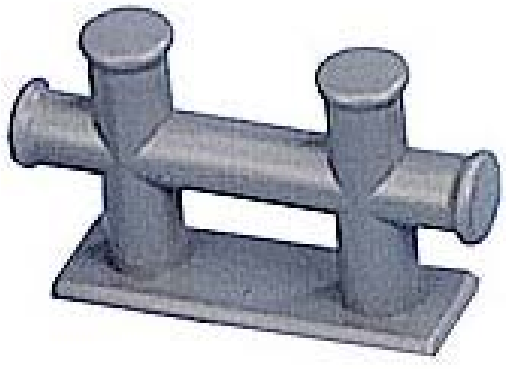
Double Bollards



Single Cruciform Bollard



Double Cruciform Bollard



STS Plan Mooring Map - Guidelines for data entry

Bollard Numbering system

Whilst there is no fixed system for numbering the bollards, naming each one with its own unique alphanumeric identity assists the user assists the user to avoid any ambiguity.

For example, prefix the bollards on the Port Side with the letter P and alphabetically order them from aft to forward with lower case lettering. Similarly, bollards on the starboard side could be prefixed with the letter S and alphabetically ordered using lower case letters. For bollards on the Centreline, these could be prefixed by C/L and alphabetically ordered using lower case letters.

In order to identify optimum pairing between bollards and fairleads a data entry field is available for recording the identity number of the nearest fairlead for each set of bollards or bitts. A further data entry field is available for capturing the distance form each set of bollard or bitts to its nearest fairlead.

Appendix F – Contact Addresses of Responsible National Authorities (MSC-MEPC.6/Circ.X)

Refer to Appendix 1 of the Shipboard Oil Pollution Emergency Plan, which will include the latest copy of the list.

Note: The latest revised list of Operational Contact Points is available on the internet at http:www.imo.org and the Company's Document Management System (Docmap).

Appendix G – Glossary of terms

Listed below are commonly used terms associated with STS operations. Some of the terms may not be included in content of this document but have been included to greater clarity with regard to potential ambiguities regarding STS related terminology.

Term	Description
At Sea	Where the term 'at sea' is used it is intended to indicate offshore waters or partially sheltered waters outside of port limits.
Ballast	The term 'ballast 'covers water ballast carried in ships' tanks.
Barge	Barges can be self propelled, towed or pushed, and used to carry or store liquid hydrocarbons, chemicals and liquefied gases in bulk, as well as other liquids in bulk, including those that do not pose any significant risk to human health or to the environment. There is no universally recognized definition of a barge. Oil Companies International Marine Forum (OCIMF) Ship Inspection Report Exchange (SIRE) system defines barges to be vessels less than 5,000 dwt (or 500 grt for chemical vessels). In some regions (e.g., the United States) barges may be defined by local regulations and a region may therefore have "barges" over 5,000 dwt, on Inland Waterways and in seagoing service. Other regions may instead use a load capacity measurement of metric tonnes or cargo space measurement in cubic meters, to determine if a vessel is a barge. Dumb barges (including tank barges) are considered to be non-powered (not self propelled) vessels that are towed or pushed by another vessel. They may be employed in Inland Waterways or at sea outside port limits.
Boord/Boord or Board to Board	Description used for STS operations conducted in European ports. Usually used to describe an STS operation involving one or more barges.
Closed Operation	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 cargo 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.
Daughter Ship	The smaller of two ships involved in an STS operation. In a standard lightering operation, this ship will be invariably one of the receiving ships, whereas in a reverse lightering operation it will be one of the discharging ships.
Deadweight	Weight correlating to ship's total lifting capacity. Includes all cargo, ballast, fuel, water, stores but excludes the light ship weight. May be found for any draught from ship's tables.
Dedicated lightering ship	A dedicated lightering ship is a ship that has been designed or modified to perform multiple STS operations. These ships are usually fitted with adequate primary and secondary fenders, which upon completion of an STS Transfer are capable of being lifted and stowed in onboard cradles or suspended in davits. More often than not they have their own outfit of oil transfer hoses and are generally capable of performing STS operations without external assistance such as support craft.
Discharging ship	The ship containing cargo for transfer to a receiving ship, which may also be referred to as the Ship To Be Lightered (STBL)
Displacement	Ship's total weight including all cargo, ballast, fuel, water, stores and light ship weight. May be found for any draught from ship's tables.
Double Banked STS Operation	Occasionally referred to as 'double banking', this describes an STS operation that is conducted whilst one ship (usually the larger of the two) is alongside a berth, dolphins or moored to buoys within Port Limits.
Floating Storage	This is the description for an operation involving use of an oil tanker for a prolonged period to either anchor or drift at a pre-determined location. Ultimately the ship will either receive orders to proceed into a nominated port to discharge her cargo or conduct an STS into a lightering ship.
Lightering Co-ordinator	Refer to description for 'STS Superintendent' in the STS Glossary.
Lightering Master	Refer to description for 'STS Superintendent' in the STS Glossary.

Lightering Operation	Generic term for any Ship To Ship cargo transfer operation. Primarily this term is used to describe an STS operation which is being performed for the purpose of reducing the draft of an importing ship to facilitate a discharge operation at a berth which does not have sufficient water alongside to safely handle the ship at her laden arrival draft.
Lightering Ship	A ship scheduled to load from a Ship To Be Lightered
Manoeuvring	For the purpose of the guide, a ship is said to be manoeuvring when she is either: • making her final approach to another ship for the purpose of mooring alongside the other to perform an STS operation; or • separating from another ship following an unmooring operation until both ships are safely clear of each other.
Manoeuvring Ship	During manoeuvring and mooring, the ship that approaches the constant heading ship is referred to as the manoeuvring ship.
Mooring Master	Refer to description for 'STS Superintendent' in the STS Glossary.
Mother Ship	The larger of two ships involved in an STS operation. In a standard lightering operation, this ship will be invariably the discharging ship, whereas in a reverse lightering operation it will be the receiving ship.
Organisers	Organisers are shore-based operators responsible for arranging the STS operation. The Organiser may be an STS Service Provider.
Person in Overall Advisory Control (POAC)	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 Fender	Primary fenders are large cylindrical fenders capable of absorbing the impact energy involved with berthing and sufficiently wide to provide adequate 'standoff' between the hulls of the two ships should they roll whilst alongside one another. These fenders are normally pneumatic and pressurised to either 50 KPa or 80KPa gauge pressure.
Receiving Ship	The ship to which cargo is transferred by a discharging ship. The receiving ship may also be referred to as a lightering ship.
Reverse Lightering	An operation which involves discharge of one or more smaller ships into a larger ship. In this scenario the receiving ship is actually the mother ship. Primarily this term is used to describe an STS operation which is being performed for the purpose of loading an exporting ship in deeper water at a location where available loading berths do not have sufficient water alongside to safely handle the ship at her laden departure draft.
Safe Working Load (SWL)	Safe Working Load or SWL is the operating limit to which lifting and mooring equipment is tested for day-to-day use. Equipment should never be used beyond its SWL.
Secondary fenders	These are fenders used to prevent contact between the extremities of the ships beyond their Parallel Body Length. They also 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 at most benefit during mooring and unmooring operations. They are usually foam filled cylindrical section fenders.
Ship to Ship (STS) Transfer Operation	An operation where crude oil, petroleum products, LPG, LNG or liquid chemicals are transferred between 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 covers the approach, manoeuvre, berthing, mooring, hose connection, cargo transfer, hose disconnection, unmooring and departure manoeuvre. The operation is otherwise referred to as transhipment.
Ship To Be Lightered (STBL)	A vessel scheduled to conduct a discharge operation to one or more lightering vessels.
Standoff	The horizontal distance maintained between the parallel body lengths of both ships provided by the primary fenders when conducting an STS.
STS Contractor	Refer to description for 'STS Service Provider' in the STS Glossary.
STS Resource Provider	
STS Service Provider	An organisation that specialises in providing services for the safe control of STS operations. The service provider may also supply the essential manpower and equipment required to perform the STS operation including pneumatic fenders, oil transfer hoses, support craft and an STS Superintendent. In certain locations, the service provider also provides the lightering ship(s). The service provider may also be referred to as an STS Contractor or STS Resource

	Provider.
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. Usually employed by an STS Service provider, he may also be known as the Lightering Master, Mooring Master or Lightering Co-ordinator.
STS Transfer Area	A Transfer Area is an area within which an STS Transfer Operation customarily takes place. Transfer Areas should be selected in safe sea areas. In coastal areas they will be agreed with nearby coastal authorities and, as appropriate, in accordance with specific port or national regulations. Can be described otherwise as a Transfer or Transhipment Area.
Transfer Area	Refer to description for 'STS Transfer Area' in STS Glossary.
Transfer at Anchor	The expression describes an operation where a cargo transfer is carried out between ships when they are moored alongside one another whilst one of the ships is riding to her anchor. The operation is an alternative to underway transfer.
Transhipment Area	Refer to description for 'STS Transfer Area' in STS Glossary.
Transhipment	Generic term for any Ship To Ship cargo transfer operation.
Underway Transfer	By definition under the COLREGS a ship is deemed to be underway when she is not at anchor, made fast to the shore or aground. She may be either steaming or drifting freely with the current and weather. An Underway Transfer is the description for an STS which is conducted between two ships which are underway.

Appendix H – Traditional Transhipment Areas

The table below is included as List '3' in Part 'D' of the Preamble of the annually revised Worldwide Tanker Nominal Freight Scale (Worldscale) publication.
It shows most of those places and their approximate locations that are presently designated by the 'Worldscale' Associations as being "trans-shipment areas" (TSAs') This list is arranged by geographical regions.
The 'Worldscale' Associations define a trans-shipment area as a place at which cargo is transferred that is outside the limits of a port and where there are no mooring facilities.
The list does NOT include every Transhipment Area that may be currently be in use on either a temporary or permanent basis, but does capture most TSAs' of which chartering departments may be aware.

*TSA Name /**Geographical Region***	*Approx. Position*	*Proximate location*
Arabian Gulf		
Offshore Mesaieed	25 16N 51 46E	Offshore Qatar
Gulf of Oman		
Offshore Fujairah	25 15N 56 40E	Gulf of Oman
Offshore Khor Fakkan	25 35N 56 40E	Gulf of Oman
Red Sea/Gulf of Suez		
Offshore Ain Sukhna	29 46N 32 36E	Gulf of Suez
Offshore Jeddah	21 23N 39 06E	Red Sea
Caribbean Area		
Offshore Curacao	12 10N 69 10W	Netherlands Antilles
Offshore Freeport (Bahamas)	26 10N 78 30W	Bahamas
Offshore Great Isaac Island	26 15N 79 05W	Bahamas
U.S. Gulf		
Gulfmex No. 1	28 00N 89 30W	Offshore Mississippi
Offshore Corpus Christi No. 1	27 28N 96 49W	Offshore Texas
Offshore Corpus Christi No. 2	27 48N 95 31W	Offshore Texas
Offshore Freeport (Texas)	28 45N 95 03W	Offshore Texas
Offshore Galveston No. 1	28 27N 94 30W	Offshore Texas
Offshore Galveston No. 2	28 40N 94 08W	Offshore Texas
Offshore Pascagoula No. 1	29 27N 88 13W	Offshore Mississippi
South Sabine Point No. 1	28 30N 93 40W	Offshore Sabine, Texas
South Sabine Point No. 2	28 37N 93 22W	Offshore Sabine, Texas
South West Point	28 27N 90 42W	Offshore Louisiana
U.S.A. - East Coast		
Big Stone Beach	38 59N 75 12W	Delaware Bay
Jamestown Anchorage	41 31N 71 21W	Narragansett Bay
Offshore Ambrose Light	40 12N 72 00W	Offshore New York
Offshore Delaware No. 1	38 30N 74 30W	Offshore Delaware
Offshore Delaware No. 2	38 20N 73 45W	Offshore Delaware
U.S.A - West Coast		
Santa Catalina Gulf	32 56N 118 00W	Offshore Los Angeles/San Diego
South America - East Coast		
Alpha Zone	35 06S 56 00W	River Plate
Bravo Zone	35 32S 56 33W	River Plate
Cabo San Antonio/Charlie Zone	36 15S 56 30W	River Plate
Delta Zone	35 04S 55 11W	River Plate
Golfo San Matias	41 58S 65 00W	Offshore Argentina
La Plata Roads/Zona Comun	34 45S 57 47W	River Plate
Talcahuana Bay	36 40S 73 01 W	Offshore Chile

Far East		
Offshore Kaohsiung	22 32N 120 13E	West Coast of Taiwan
Offshore Karimun Besar	1 04N 103 30E	Singapore Strait
Offshore Singapore No. 1	1 14N 103 33E	Singapore Strait
Offshore Singapore No. 2	1 40N 104 30E	Singapore Strait
India		
Offshore Bombay	19 00N 72 25E	West Coast of India
Offshore Cochin	10 00N 76 00E	West Coast of India
Offshore Sikka	22 34N 69 42E	Gulf of Kutch
Sandheads	20 52N 88 20E	Offshore Haldia
Mediterranean		
Alicante Bay	38 30N 01 00E	Offshore Alicante, Spain
Offshore Malta	35 54N 14 46E	Hurd Bank
West Africa		
Offshore Dakar	14 15N 17 25E	Cap Vert
Zaire Estuary	06 04S 12 17E	River Zaire
Northern Europe		
Lyme Bay	50 31N 03 09W	Offshore Portland (UK)
Scapa Flow	58 55N 03 02W	Orkney Islands
Seine Bay	49 36N 01 07W	Offshore Havre
Southwold	52 16 N 01 57E	Offshore East Coast U.K.