

# **A RISK ASSESSMENT METHODOLOGY AS A TOOL FOR SCREENING OF SHIP TO SHIP (STS) TRANSFER OPERATIONS.**

Alexandros Glykas, Department of Shipping trade and Transport,  
University of the Aegean, [aglykas@aegean.gr](mailto:aglykas@aegean.gr)

Stelios Perissakis, Laboratory for Ship and Marine Hydrodynamics,  
National Technical University of Athens, [stelios@central.ntua.gr](mailto:stelios@central.ntua.gr)

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## **ABSTRACT**

“Ship to Ship transfer operation” (STS), denote the transshipment of cargo between seagoing tanker ships. This practice is common for a number of reasons (operational and trading) and serves the optimization of the distribution process from the source to the end-consumers.

After the implementation of IMO resolution MEPC 186(59) (2009), tanker vessels take the full operational responsibility of the Ship to Ship transfer operations. In this respect, procedures and policies, associated with safety and environmental protection are reviewed and summarized in the new STS plan, approved by the Flag administrations.

The screening process in STS operations is the procedure undertaken from each participating ship and/or their operators, which concludes to the acceptance or rejection of the other ship. During this process a number of factors are taken into account and due diligence should be exercised.

Under these circumstances, and in line with the due diligence concept, the screening process should evaluate the risk factors of the operation, which are associated with the condition of the ships and the STS equipment, the experience of the crew, weather conditions and the local geographical restrictions. In the proposed methodology, all this factors are taken into account under the umbrella of a methodology and managers adopted policies. The use of the former performance of the participants in former STS operations is also included in the risk assessment.

The elements (mechanisms) involved in the STS operations are associated with the following:

- Vessel technical preparedness.
- STS equipment.
- Human element.
- Selection of the STS area.
- Weather conditions.

The paper prepared for ECONSHIP 2011 aims to present a methodology for developing a risk assessment for screening purposes and proactive evaluation of STS Operations, on the basis of evaluation of ship characteristics and past performance.

## 1. INTRODUCTION

The term “Ship to ship transfer operation” (STS), denotes the transshipment of oil or oil petroleum products between seagoing tankers. This practice began to be frequent since the decade of 60,'s when the dimensions and particularly the draft of the new large tankers (VLCCs and ULCCs) did not allowed them to call at specific terminals and therefore discharged their cargo into smaller and more flexible tankers. This process, known as “lightering”, continues nowadays to be common not only for overcoming terminal approaching restrictions, but also for optimization of the worldwide distribution process of the oil and its products from the source to the end-consumers.



*Figure 1.1 Underway STS operation*

Charterers and Cargo Owners usually decide to organize an STS in a specific location between two ships. At this point, all the parties (charterers, cargo owners, shipowners and masters) should check the feasibility and safety of this operation, according to the specific situation and involved elements. If Shipowners /managers and masters are persuaded for the safe planning of the operation, this may start.

The arrangement includes the selection and supply of the equipment which can be either provided by the ships, or by a specialized company (STS service provider). A Person in Overall Advisory Control (POAC) should also be designated, in order to assist masters during the STS operation. POAC can be one of the ships masters, or a qualified person provided by the STS service provider. Ships compatibility and crew ability and synthesis should also be ensured at this stage. Local geographical, weather and legal restrictions and characteristics should also be taken into account.

Supplementary to the aforementioned participants, other indirectly involved parties influence the operation. Those parties are local administration authorities and insurers.

Local administration authorities (coastal authorities), according to Article 56 of UNCLOS, have the right and the responsibility for the environmental protection inside entire EEZ and consequently have to monitor and supervise the STS operations inside this area. For this reason coastal authorities may have prepared an Emergency Contingency Plan and may also issued local regulations. Thus coastal authorities have to be timely informed and their approval needs to be prior obtained.

Insurers are also affecting the STS operations, as they require some minimum quality standards in order to cover their clients on a due diligence and accepted seamanship basis.

In practice, the transshipment of oil is a high-risk undertaking as it poses risks to large-scale consequences. This stems mainly from the nature of oil products, but also by the fact that the ships involved are exposed to weather conditions with limited maneuverability. So for the safe conduct of this operation the sea area is chosen with care and weather conditions are taken seriously into account. Of course, the required specialized equipment, the suitability and compliance of ships as well as the experience of the crew are also decisive factors.

Experience gained from those operations has proved that STS transfers are safe provided that suitable equipment is used and proper procedures and policies are followed. Furthermore as mentioned at OCIMF/ICS (2006), STS has been proven over a significant period to be able to be conducted safely and without incident, **where sound management is applied to all aspects of the operation.**

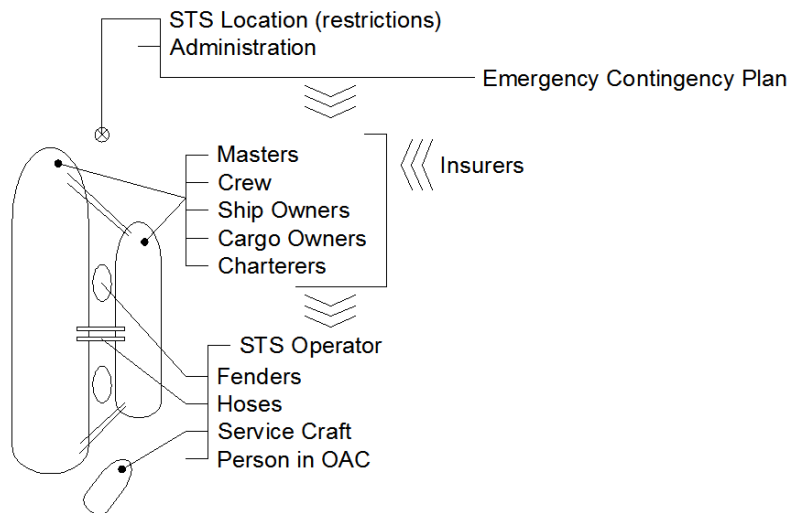


Figure 1.2 Schematic relations among STS parties

The elements (mechanisms) involved in the STS operations as shown at figure 1.2 are associated with the following:

- The vessel technical preparedness,
- The STS equipment selection (fender, hoses, etc),
- The human element (Crew training, STS service provider, STS Master, etc),
- The selection of the STS area (local authorities legislation and restriction, etc)
- The sea and weather conditions
- The due diligence procedures with respect to the adapted procedures and policies

## 2. IMO RESOLUTION AND THE STS PLAN

With respect to the adopted resolution IMO MEPC 186(59) (2009), STS operations are now being regulated. As from 1st January 2011, when the STS PLAN procedures and adopted policies will become mandatory, from the first annual survey of vessels, STS operations will officially become part of the normal operations included in SMS (safety

management system). Ships are liable to ensure the safe operation of STS transfers and managers have to act with due care by proving that proper due diligence is exercised.

The objective of the STS operations plan is to describe the STS procedures along with the potential risks and ensure a safe operation as far as possible. Thus in companion with the main STS procedures the STS operations plan includes procedures for:

- Selection, storage and Inspection of STS equipment
- Performing a risk assessment for the STS Operation by utilizing the forms attached in this Plan.
- Reporting to Local Authorities
- Quality assurance of the STS service provider
- Emergency preparedness
- Crew training
- Retaining records for STS operations

Tanker vessels when engaged in STS operation will comply with the approved by the flag administration STS operations Plan (regulation 41.3) of IMO MEPC 186(59) (2009). Nevertheless the regulation prescribes certain cases where this plan does not apply.

The STS operations plan does not apply as per regulations 40.2, 40.3, 40.4 and 40.5 of IMO MEPC 186(59) (2009), to bunkering operations, transfer operations associated with fixed or floating platforms, transfer operations associated with floating production storage and offloading facilities (FPSOs), STS operations necessary for the purpose of securing the safety of a ship or saving life at sea, and to STS operations, where either of the involved ships is owned or operated by a State and used only on government non-commercial service.

The procedures contained in the STS plans as per STS PLAN (2011) include actions and preparedness measures for STS operations. Any supplementary instructions from charterers, despondent owners or commercial managers may be supplemented to the plan without overriding role. In certain Exclusive Economic Zones (EEZs) or Territorial Waters or Port Limits it may be found that national or local regulations apply. National or local regulations should be followed in addition.

### **3. COMMERCIAL IMPLICATIONS IN STS OPERATIONS AND CHARTER PARTIES**

STS Operations are part of the voyage or time charter parties as per ICS (2007) agreed amongst shipowners and their charterers. It is a common practice for the charterers to nominate participating vessels to already time chartered shipowners in order to obtain their written consent for the acceptance of the participating vessel. However as noted in most charter parties the STS OPERATION final approval is at Masters' discretion and/or subject Master's approval. In all charter parties STS Clauses is noted that STS Operations should take place on the basis of latest OCIMF/ICS guidelines, OCIMF/ICS (2005) as those is the only available recorded industry reference for this type of operations; until the new resolution IMO MEPC 186(59) came into effect.

The adoption of the STS PLAN as a statutory reference and part of company's policies will eventually exceed the legal strength of OCIMF/ICS (2005) guidelines in the charter parties. The critical question raised is that should a ship owner adopts policies in his STS PLAN that are strict and therefore commercial implication may arise, what are the legal

rights of the charterer as per the agreed charter party? For example OCIMF/ICS (2005) do not mention any specific guidelines related to night mooring operations although a ship owner might have adopted a strict policy forbidding night mooring operations during STS. In this case should the charterer arrange night berthing operation, then an implication will arise resulting either in off-hire condition for the chartered vessel or in a raised claim by the ship owner. In this respect, prior a charterer accepting a vessel for time or voyage charter, they should revise and assess the adopted policies as per approved STS Plan and furthermore, the STS Plan should be referenced in the charter parties, thus entitling it in a legal supplement to the agreement between the charterer and owner.

#### **4. DUE DILIGENCE**

The first step towards safety is to ensure, prior the initiation of any action, that all participating parties are able and willing to follow all required and recommended safety rules. Since the responsibility cannot be forwarded by any means to a subcontractor or other participants, ship managers to the best of their knowledge should always perform a thorough check with respect to the qualification and credibility of the participants. This concept is known as due diligence as described at S. Perissakis et al (2010).

##### **4.1. VESSEL SCREENING**

During an STS operation, the chartered vessel is moored alongside another vessel. This situation makes both ships performing as a combined operational scheme thus introducing parameters which in effect make both vessels vulnerable to each other. The prospective STS vessel should be screened in order to ensure that she is safe and suitable for an STS operation with the chartered vessel.

The ship screening process should include the following actions/information:

- Confirmation that the prospective STS vessel has P&I cover in place via a recognized P&I Club.
- Confirmation that the prospective STS vessel is in class with a recognized classification society.
- A completed list of the particulars of the prospective STS vessel should be available.
- Latest SIRE inspection report date.
- Vessel's historical Port State Control (PSC) records
- Confirmation that suitable security arrangements are in place on the participating STS vessel and that she has an approved security plan onboard.
- Declaration that a risk assessment has been undertaken prior to each STS operation.

The screening process should be performed by the ship, or alternatively by the company or a specialized screening company. EQUASIS (<http://www.equasis.org>) is a recognized source for obtaining information with respect to the classification society and the Port State Control (PSC) records. Finally, Vessel Particular form (VPQ or Questionnaire 88) form can be considered as a complete list bearing the necessary ship particulars.

##### **4.2. VESSELS COMPATIBILITY FOR STS OPERATIONS**

After screening process, a vessel compatibility check should always be performed. The participating vessel that will be engaged in a STS Operation with the chartered vessel

should not have any part of the ship projected from the maximum breadth. Furthermore the following issues should also be examined for incompatibilities:

- Mooring arrangement,
- Manifold arrangement,
- Cargo Hoses Cranes

#### **4.3. STS SERVICE PROVIDERS SCREENING/ASSESSMENT**

STS service providers are normally providing all the necessary equipment, and also provide guidance in a number of critical decisions. Thus a screening process of the STS service provider is also required. This process always takes into account the experience of this STS service provider with former STS operations if any. The key points of the screening credibility of the STS service provider include the following:

- Certificate of incorporation
- Certificate of insurance,
- Accreditation from local authorities,
- Quality management policy
- Environmental protection management policy
- The maintenance policy of the STS provided equipment

#### **4.4. PERSON OF THE OVERALL ADVISORY CONTROL SCREENING/ASSESSMENT**

The person in overall advisory control 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 IMO, MEPC (2010) and the latest edition of ICS and OCIMF/ICS (2005). The prior experience with this person should also be taken into account.

#### **4.5. STS EQUIPMENT ASSESSMENT**

All the required tests should be performed as per relevant international standards, according to a schedule maintenance policy and records should be maintained. Records of incidents and repairs should also be maintained for each individual equipment.

Should STS equipments are provided from the STS service provider, the operator should confirm that a relevant policy is also performed. The construction date of the hoses and fenders should comply with associated ISO Standards.

### **5. RISK MANAGEMENT**

STS operations engage a series of events, including the following:

- Approach maneuver,
- Berthing,
- Mooring,
- Hose connection,
- Cargo transfer,
- Hose disconnection, and
- Unmooring.

Lightering spills as well as other hazardous events may occur for a variety of reasons, such as a ruptured hose, a tank overflow, or a vessel collision, many of which may also take place when a vessel is unloading at a dock. The risks unique to STS Operations are associated with vessels coming close together (seafarers are generally trained to keep vessels apart); the breakaway procedure; severe weather; and problems with fenders, hoses, and other equipment. The greatest risk in STS Operations may be from human error, which has been implicated as a cause of 80% of maritime accidents in general as mentioned at Committee on Oil Spill Risks from tank vessel lightering marine board (1998).

Before committing to an STS transfer operation, the parties involved ought to carry out a risk assessment that should include sufficient information to ensure a good understanding of the operation. The risk assessment must cover operational hazards and introduce preventing actions.

The procedure of evaluating the risk effect of the events associated with the STS operations is shown on figure 4.1. Masters of the participating vessels should take every caution in order to understand the significance of the parameters and thereafter adopt procedures to mitigate the risk of an emergency occurrence. Consultation with the Person in Overall advice control should take place prior to the commencement of the operation in this respect.

Operational safety FORMS, as provided in OCIMF/ICS (2005) and furthermore at STS PLAN (2011), depicts one example of a risk management tool.

As a minimum, the risk assessment should:

- Identify the hazards associated with the operation (collision risks in the "vicinity, cargo vapor pressure, H<sub>2</sub>S content etc).
- Assess the risks according to the probability and consequence.
- Identify the means by which to prevent and/or mitigate the hazard.
- Contain procedures for dealing with unanticipated events.

The level of complexity required will depend on the type of operation. For particular transfer area utilizing standard approved STS equipment and ships that are fully operational, the risk assessment should be assessed. 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 should be in accordance with the STS PLAN and should 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 should, where appropriate, conform to internationally recognized standards.

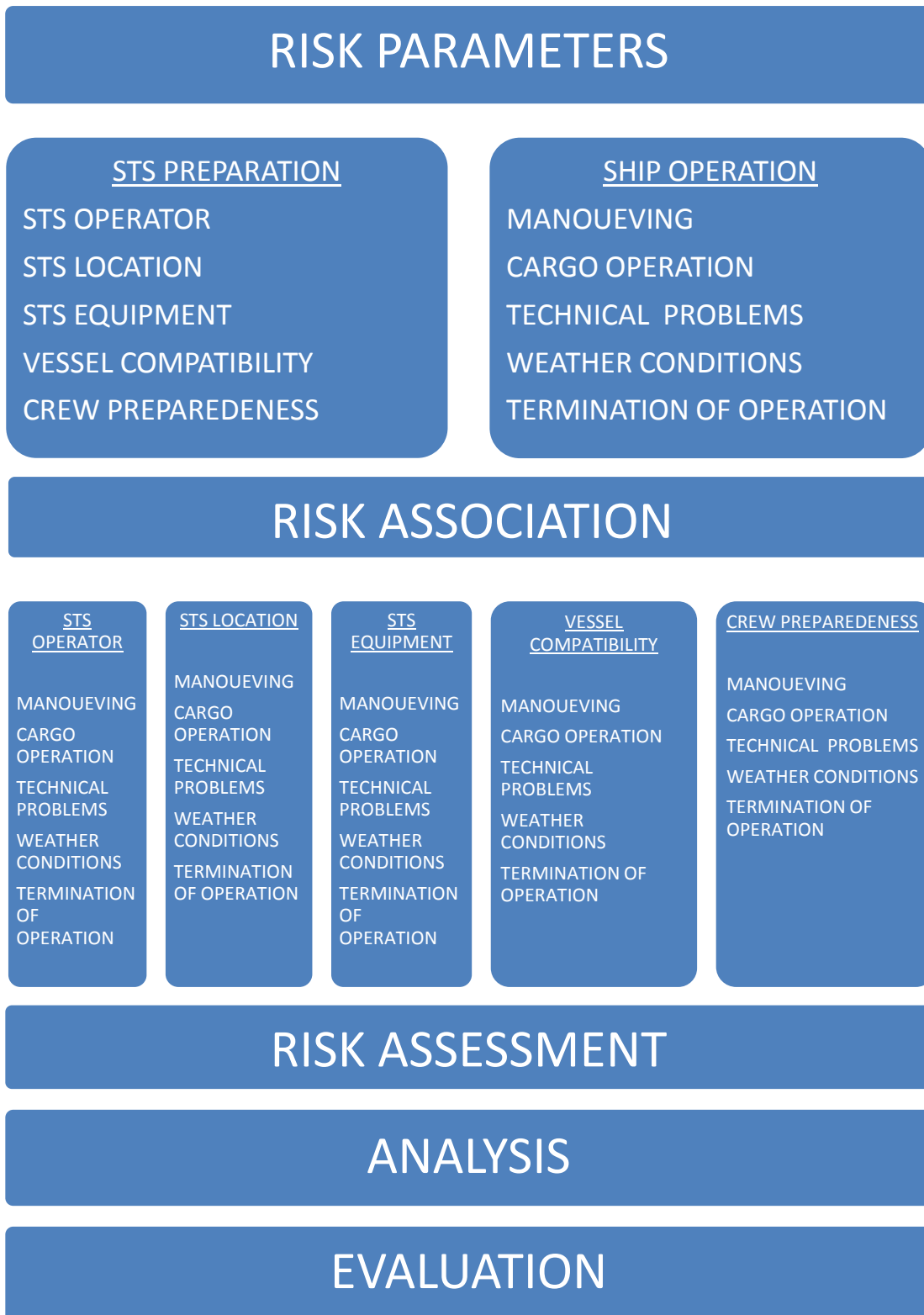


Figure 4.1 Risk Parameters Matrix

## 6. SCREENING

According to OCIMF/ICS (2006), OCIMF/ICS (2006) and relevant national bodies, STS operations are proved through the years, a safe operation, if sound management is



performed. The regulation IMO, MEPC.186(59) (2009), following this “attitude” has introduced the prior notification of 48 hours, retainment of records for 3 years and the introduction of a qualified Person in Overall Advisory Control which shows sound management. **Thus it is important for a company to prove sound management in this respect which will also be vetted during Oil Major’s inspections.**

In this respect Managers, STS PLAN (2011), have decided to establish an impartial methodology for assessing STS Operations and encounter the associated risk by introducing proactive and post risk assessment.

#### **6.1. PROACTIVE SCREENING ADVICE AND RISK ANALYSIS FOR STS OPERATIONS.**

The proactive screening methodology, during the consideration for acceptance, offers the ability of prompt and reliable response towards the reduction of the introduced risk. The proposed methodology, process data from Port State Control, Classification, statutory, insurance and manager’s performance. The assessment may be adopted to company’s policies in order to revert promptly to charterers with their decision, encountered risks along with comments, standing orders and STS Operation limitations to the Master.

The screening report is dynamically developed by STS PLAN (2011) adjusted on the basis of past performance data analysis and industry requirements. The risk assessment included takes into account the following:

- a) The fendering system made available from the STS Service provider. Parameters included in OCIMF/ICS (2005) such as type of STS operation (Reverse lightering, Normal lightering), weather conditions, vessel approaching speed and fender energy absorption characteristics are taken into account. Thus, limitations of provided fendering system are provided to the masters.
- b) The effect of rolling of vessels with respect to swell conditions and vessels’ freeboard. Thus awareness on overloading on mooring lines and avoidance of vessel contact is also provided to the master.
- c) The ship compatibility issues for the participating vessels and necessary proactive measures required in order to perform the STS Operation with safety.
- d) The quality assurance of the STS Service provider as per OCIMF/ICS (2005) guidelines.
- e) The risk level of the nominated ship on the basis of Vessel age, hull type, PSC performance, Flag and Classification grading.
- f) The STS Performance evaluation of the nominated ship according to an established database.

An example of this screening analysis is shown at figure 6.1. Same analysis may take place for more than one candidate participating vessels and the outcome may be presented on a comparison table.

## M/T NOMINATED VESSEL

- **VESSEL HULL TYPE**
- **VESSEL AGE**
- **PREVIOUS STS PERFORMANCE**
- **SHIP COMPATIBILITY**
  - HORIZONTAL SHIFTING OF M/T KRITON SHOULD BE CONSIDERED
  - BOTH SHIPS HAVE ALMOST SAME LOA
  - M/T NOMINATED VESSEL COMPLIES WITH OCIMF RECOMMENDATIONS
  - THERE ARE NOT ENOUGH MOORING LINES
  - THE TOTAL NUMBER OF CLOSED CHOCKS FOR M/T NOMINATED VESSEL ARE LESS THAN 6
  - NOTHING EXTENDS OVER THE SIDES OF M/T NOMINATED VESSEL
- **STATUTORY, CLASS AND P&I RISK**
  - NO RDC COVER MENTIONED IN THE P&I ENTRY CERTIFICATE OF M/T NOMINATED VESSEL
  - THE P&I CLUB IS MEMBER OF THE IG P&I CLUBS
  - THE FLAG IS WHITE LISTED ACCORDING TO PARIS MOU
  - THE PERFORMANCE LEVEL OF CLASSIFICATION SOCIETY IS HIGH
  - THE VESSEL DOES NOT HAVE ANY CONDITION RELATED TO STATUTORY
  - THE VESSEL DOES NOT HAVE ANY CONDITIONS RELATED TO CLASS
  - STS PERFORMANCE OF M/T NOMINATED VESSEL IS NOT AFFECTED BY ANY CONDITIONS
- **VESSEL PSC PERFORMANCE**
  - M/T NOMINATED VESSEL AGE vs No. OF DETENTIONS
  - M/T NOMINATED VESSEL HAS NO PSC DETENTION DURING THE LAST 36 MONTHS
  - RATIO PSC DEFICIENCIES/INSPECTIONS IS MORE THAN 40% DURING THE LAST 36 MONTHS
  - RATIO BETWEEN ISM DEFICIENCIES/PSC INSPECTIONS IS LESS THAN 6%
- **MANAGERS PSC PERFORMANCE**
  - THE RATIO PSC DETENTIONS/INSPECTIONS IS LESS THAN 5%
  - MANAGERS DETENTION INDICATOR

## GRADING SCALE

- GOOD
- AVERAGE
- BELOW AVERAGE
- NOT APPLICABLE

*Figure 6.1. Analysis of screening outcome for a participating vessel*

## 6.2. PROCESS OF STS ASSESSMENT DATA.

This methodology is based on an information system for recording and evaluating the performance of Participant vessels as well as STS Service providers and POAC's. After the completion of each STS operation masters evaluate the performance of the participating vessels by utilizing a data collection form similar to the one shown at figure 6.2.1.

### STS EQUIPMENT DATA

NUMBER OF PRIMARY FENDERS ?	<input checked="" type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input checked="" type="checkbox"/> 5 <input checked="" type="checkbox"/> 5+
SIZE OF PRIMARY FENDERS ?	<input checked="" type="checkbox"/> 500 x 1000 <input checked="" type="checkbox"/> 600 x 1000 <input checked="" type="checkbox"/> 700 x 1500 <input checked="" type="checkbox"/> 1000 x 1500 <input checked="" type="checkbox"/> 1000 x 2000 <input checked="" type="checkbox"/> 1200 x 2000 <input checked="" type="checkbox"/> 1350 x 2500 <input checked="" type="checkbox"/> 1500 x 3000 <input checked="" type="checkbox"/> 1700 x 3000 <input checked="" type="checkbox"/> 2000 x 3500 <input checked="" type="checkbox"/> 2500 x 4000 <input checked="" type="checkbox"/> 2500 x 5500 <input checked="" type="checkbox"/> 3300 x 4500 <input checked="" type="checkbox"/> 3300 x 6500 <input checked="" type="checkbox"/> 3300 x 10600 <input checked="" type="checkbox"/> 4500 x 9000 <input checked="" type="checkbox"/> 4500 x 12000
TYPE OF PRIMARY FENDERS	<input checked="" type="checkbox"/> PNEUMATIC 50kPa <input checked="" type="checkbox"/> FOAM <input checked="" type="checkbox"/> OTHER <input checked="" type="checkbox"/> PNEUMATIC 80kPa
LENGTH OF CARGO TRANSFER HOSES ?	22,00

### INCIDENT DETAILS

DID YOU EXPERIENCE ANY INCIDENTS ?	<input checked="" type="checkbox"/> YES <input checked="" type="checkbox"/> NO
VESSEL COLLISION	<input type="checkbox"/>
STEERING FAILURE	<input type="checkbox"/>
DAMAGE BY TUG OR SUPPLY/SERVICE BOAT	<input type="checkbox"/>
FIRE	<input type="checkbox"/>
FENDER BREAKDOWN	<input checked="" type="checkbox"/>
TRANSFER HOSE BREAKDOWN	<input type="checkbox"/>
MOORING LINES BREAKDOWN	<input type="checkbox"/>
OIL SPILL ON DECK	<input checked="" type="checkbox"/>
OIL POLLUTION AT SEA	<input type="checkbox"/>
PERSONNEL INJURIES DURING TRANSFER BY CRANES AND BASKET	<input checked="" type="checkbox"/>
OTHER PERSONNEL INJURIES	<input type="checkbox"/>
FAIL OF COMMUNICATIONS	<input type="checkbox"/>
VESSEL BLACKOUT	<input type="checkbox"/>
M/E FAILURE	<input type="checkbox"/>
DID ANY OF POAC ADVISES CONTRIBUTED IN ANY OF THE ABOVE INCIDENTS ?	<input checked="" type="checkbox"/> YES <input checked="" type="checkbox"/> NO
DID YOU EXPERIENCE ANY "NEAR MISSES" ?	<input checked="" type="checkbox"/> YES <input checked="" type="checkbox"/> NO

### PARTICIPATING VESSEL ASSESSMENT

<b>DID YOU FIND THE PARTICIPATING VESSEL AND HER CREW <u>IN GOOD ORDER</u> WITH RESPECT TO THE FOLLOWING:</b>	
MANOEUVRABILITY	<input checked="" type="checkbox"/> YES <input checked="" type="checkbox"/> NO
MOORING LINES	<input checked="" type="checkbox"/> YES <input checked="" type="checkbox"/> NO
CHOCKS / FAIRLEADERS / WINDLASSES	<input checked="" type="checkbox"/> YES <input checked="" type="checkbox"/> NO
MANIFOLD ARRANGEMENT	<input checked="" type="checkbox"/> YES <input checked="" type="checkbox"/> NO
CREW PERFORMANCE	<input checked="" type="checkbox"/> YES <input checked="" type="checkbox"/> NO
ENGINE PERFORMANCE	<input checked="" type="checkbox"/> YES <input checked="" type="checkbox"/> NO

Figure 6.2.1 Assessment data collection form

Assessment reports can be logged automatically into a dedicated database with the aim of:

- a) Keeping statistical data and evaluate the level of competence of assessed elements.

- b) Supporting screening process by providing past experience data.
- c) Record and create statistics associated to the incident data.
- d) Establishing Key Performance Indicators (KPI's) that will enable managers to define and therefore assess the STS incident risk and maintain high safety standards.

A summary/ example of the statistics maintained by a shipping company with respect to the conducted STS Operations are shown on table 6.2.2. Currently there is no international public framework supported by any organization such as EQUASIS that may unify the performance of participating vessels under a common information system.

SUMMARY							
Months(2011)		Total STS		Incidents			
January		21		1			
February		23		3			
March		41		0			
April		38		2			
May		42		2			
Total		165		8			

Fleet Analysis				
Ref	Vessel	STS	INCIDENTS	OPERATIONS / MONTH
1	VESSEL 1	13	4	2.2
2	VESSEL 2	19	2	3.2
3	VESSEL 3	49	0	8.2
4	VESSEL 4	7	0	1.2
5	VESSEL 5	4	2	0.7
6	VESSEL 6	2	0	0.3
7	VESSEL 7	4	0	0.7
8	VESSEL 8	34	0	5.7
9	VESSEL 9	1	0	0.2
10	VESSEL 10	1	0	0.2
11	VESSEL 11	31	0	5.2

Incident Details	
VESSEL COLLISION	0%
STERRING FAILURE	0%
DAMAGE BY TUG OR SUPPLY / SERVICE BOAT	0%
FIRE	0%
FENDER BREAKDOWN	0%
HOSE BREAKDOWN	0%
MOORING LINES BREAKDOWN	37.5%
OIL SPILL ON DECK	0%
OIL POLLUTION AT SEA	0%
PERSONNEL INJURIES DURING TRANSFER BY CRANES AND BASKET	0%
OTHER PERSONNEL INJURIES	0%
FAIL OF COMMUNICATIONS	12.5%
VESSEL BLACKOUT	12.5%
M/E FAILURE	0%

Assessment of fleet vessels by other managers							
Ref	Vessel	Manoeuvring	Mooring Lines	Chocks /Fairleaders / Windlasses	Manifold Arrangement.	Crew Perf.	Engine Perf.
1	VESSEL 1	100%	100%	100%	100%	100%	100%
2	VESSEL 2	100%	100%	100%	100%	100%	100%
3	VESSEL 3	100%	100%	100%	100%	100%	100%

Table 6.2.2. Analysis of Post STS assessment for participating vessel

## **7. CONCLUSIONS**

Transferring crude oil or petroleum products between two vessels that are under way, anchored, or drifting on the open ocean may seem risky. And yet, according to shipping companies and maritime accident statistics, this common practice is safe, as long as certain conditions are met. The objective of IMO, MEPC.186(59) (2009) and the introduced STS plan, is to describe the STS procedures, along with the potential risks and, ensure a safe operation as far as possible. However the new resolution will introduce commercial implications if current charter party clauses will not account for the policies of each STS plan.

The introduction of a risk management methodology incorporating parameters on a proactive as well post analysis for STS Operations is a positive action towards exercise of due diligence as well as recording the accumulated experience from seafarers. In this way management companies will develop an effective way of accounting the introduced risks.

Experience and industry practice has shown that shipowners have awareness and understand the encountered risks and commercial need of STS operations not only for ship operators but also for charterers, oil majors and traders. They endeavor in maintaining a high reputation profile by enhancing their screening procedures and policies with state of the art information management systems as well as assessment of past STS Operations.

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6. Ionia Ship Management
7. Grace Ship Management

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