ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΕΙΡΑΙΩΣ

ΤΜΗΜΑ ΝΑΥΤΙΛΙΑΚΩΝ ΣΠΟΥΔΩΝ

ΠΡΟΓΡΑΜΜΑ ΜΕΤΑΠΤΥΧΙΑΚΩΝ ΣΠΟΥΔΩΝ στην ΝΑΥΤΙΛΙΑ

TANKER VETTING PROCESS AS A QUALITY INDICATION FACTOR IN THE SHIPPING INDUSTRY

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Διπλωματική Εργασία

που υποβλήθηκε στο Τμήμα Ναυτιλιακών Σπουδών του Πανεπιστημίου Πειραιώς ως μέρος των απαιτήσεων για την απόκτηση του Μεταπτυχιακού Διπλώματος Ειδίκευσης στην Ναυτιλία

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ABSTRACT

"Vetting" is the commonest definition used to describe the oil and chemical companies' process of selecting tankers for their cargoes. This is a process which recently tends to be harmonized but has not been described or treated to any greater extent in literature, especially not from an operator's point of view.

The first stage of vetting process is a physical inspection of the vessel. The inspection report is entered into an electronic database (OCIMF) but does not yield a result of pass or fail. Rather, this report is used as one integral part of the selection process. The other parts of this process refer to an overall review of the historical data of the tanker in question, including also completion of oil company's questionnaires, as well as the evaluation of the tanker Operator as an entity. Operator's performance in safety matters, being examined via TMSA audits by the Oil Companies plays a major role in the final decision of selection.

The vetting as a vessel selection process has earned its place in the industry as a safety net which collects and reviews all the information gathered from the other safety nets; Flag State Control, classification, Port State Control and others. As such, it has become a valuable addition to the regimes of incident prevention as well as a most effective manner in which to raise the quality level of tankers.

A case study will be presented in order to describe the tools that Vetting Department of a tanker Management Company uses to keep the highest standards onboard and ashore; so that they will always offer incident- free transportations and environmental protection. A connection with the TMSA Element 12 and Company's Safety Management System is considered as the most trustworthy and efficient way to maintain a continuous and consistent improvement.

Keywords: SIRE Inspection – TMSA- OCIMF

Η «Επιθεώρηση» είναι η συνηθέστερη λέξη που χρησιμοποιείται για να περιγράψει τη διαδικασία αξιολόγησης που ακολουθείται απο τις εταιρίες πετρελαίου και χημικών φορτίων για την επιλογή δεξαμενόπλοιων για το φορτίο τους. Πρόκειται για μια διαδικασία, που πρόσφατα τείνει να εναρμονιστεί και να ομογενοποιηθεί, αλλά δεν έχει περιγραφεί ή καταγραφεί επαρκώς στη βιβλιογραφία, ειδικά σε ο,τι αφορά την πλευρά της εταιρίας διαχείρισης δεξαμενόπλοιων.

Το πρώτο στάδιο της διαδικασίας εξέτασης είναι η φυσική επιθεώρηση του πλοίου. Η έκθεση επιθεώρησης εισάγεται σε μία ηλεκτρονική βάση δεδομένων (OCIMF), αλλά δεν αποδίδει αποτέλεσμα επιτυχίας ή αποτυχίας. Αντίθετα, η έκθεση αυτή χρησιμοποιείται ως αναπόσπαστο μέρος της ευρύτερης επιθεώρησης ως διαδικασίας επιλογής. Τα άλλα μέρη αυτής της διαδικασίας αναφέρονται σε μια συνολική ανασκόπηση των ιστορικών δεδομένων του εν λόγω δεξαμενόπλοιου, συμπεριλαμβανομένης και της συμπλήρωσης των ερωτηματολογίων της πετρελαϊκής εταιρείας, καθώς και της αξιολόγησης του εταιρίας διαχείρισης του πετρελαιοφόρου ως ξεχωριστή οντότητα. Οι επιδόσεις της εταιρίας διαχείρισης σε θέματα ασφαλείας, οι οποίες εξετάζονται μέσω αυτό-ελέγχων TMSA από τις εταιρείες πετρελαίου, διαδραματίζουν σημαντικό ρόλο στην τελική απόφαση επιλογής.

Η επιθεώρηση ως διαδικασία επιλογής πετρελαιοφόρων έχει κερδίσει τη θέση της στον κλάδο ως ένα δίχτυ ασφαλείας το οποίο συλλέγει και ελέγχει όλες τις πληροφορίες που συλλέγονται από τα άλλα δίχτυα ασφαλείας. Έλεγχοι που προέρχονται απο τη σημαία του κράτους, τον νηογνώμονα, των λιμενικών αρχών και άλλων. Ως εκ τούτου, η ύπαρξη της επιθεώρησης έχει γίνει μια πολύτιμη προσθήκη στα καθεστώτα πρόληψης των ατυχημάτων καθώς και ένας αποτελεσματικότερος τρόπος για να αυξηθεί το επίπεδο ποιότητας και ασφάλειας των δεξαμενόπλοιων.

Θα παρουσιαστεί μια μελέτη περίπτωσης, προκειμένου να περιγραφούν τα εργαλεία που χρησιμοποιεί το Τμήμα Επιθεωρήσεων της Εταιρείας Διαχείρισης Δεξαμενόπλοιων για την τήρηση των υψηλότερων προδιαγραφών ασφάλειας τόσο στο πλοίο όσο και στην ξηρά. έτσι ώστε να προσφέρουν πάντα ασφαλείς μεταφορές και ταυτόχορνα προστασία του περιβάλλοντος. Η σύνδεση του TMSA – Πεδίο 12 και των διαδικασιών της Εταιρείας διαχείρισης θεωρείται ο πιο αξιόπιστος και αποτελεσματικός τρόπος για να διατηρηθεί μια συνεχής και συνεπής βελτίωση.

Λέξεις Κλειδιά: SIRE Inspection- TMSA- OCIMF

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INTRODUCTION

The Shipping Industry of the oil transportation is a business that has an inherently high level of risk and despite its objective is to move cargo from one place to another safely and cost effectively, this is something that cannot always be achieved. The only way to mitigate the risk is to identify it, to measure and to manage it properly. [1]

Ship Owners and Operators willing to identify and manage risks in daily operations should define and predict the hazards and then- by using the relevant tools- to manage risks; always taking into account the cost/ benefit assessment. Except of the Ship Operators, Oil Companies, Port State and Flag Authorities, P &I clubs follow the same exercise from their own perspective with the same goal; identifying and mitigating the risk. [1]

Thus, it is clearly stated and noted that each party and all shareholders, within today's strongly competitive and commercially impacted world, have concentrated their interest in the ways of Risk mitigation. Effective Risk Management means not only safe operations but also efficient cost control of the overall process by which the Oil Majors, charterers and Port State Authorities review and manage risk when assessing a ship for future business; this is called "Vetting". [1]

Vetting is the overall process of managing marine risk, utilizing tools and processes to provide information of vessels and companies, which are being considered for business. Vetting- by definition- refers both to a physical inspection (SIRE) and a screening process. Both options have been well defined and structured by OCIMF- as regards the physical inspections- and Charterers/ Terminal requirements as regards the screening process. Each Ship Operator that wants to have a leading role in the Industry should maintain and follow a Safety Management System which includes procedures, guidelines and tools to ensure the overall compliance with Oil Companies requirements onboard its vessels and ashore.

In an increasingly worldwide fleet, vetting process offers to the Charterers the ability to choose for their business the vessel and the tanker Operator, who match better or are closer to their Safety standards; always baring in mind the most cost effective selection. OCIMF by maintaining the SIRE programme can assure Charterers -in no doubt- that better informed

vetting decisions are leading to improvements in the quality of ships, accelerating its continuing drive for safer ships and cleaner seas. [1]

While in the early days of vetting, the main objective was to ensure that chartered tankers arrived at their destination with the cargo intact, many other quality concerns have been developed since then and became apparent nowadays. Mr. Tim Knowles refers indicatively to some enhanced objectives:

- Safety of human life
- Prevention of marine pollution
- Safety of marine life
- Protection of the environment, assets, Charterer's reputation
- Satisfaction of the charterer's shareholders' investments [2]

From the Charterer's point of view, vetting objective is to evaluate their exposure to the risk of an incident or poor performance when using a third party tanker. There is a variety of risk assessment systems, with some being more complex with scientific approach and others involving only an individual to make an often subjective decision. In either case, the output of the overview of available data will result in acceptance or rejection of the tanker in question.

This thesis aims to be descriptive and informative. The perspective is mainly to recognize and to define the importance of the vetting assessment use and impact in the selection of a tanker within the shipping industry. My working position in the Vetting Departments of two of the most important Ship management Companies the last years, enabled me to write my thesis from that point of view. So by writing this thesis, the scope is to demonstrate how a Vetting Department should act in order to ensure Charterers that their cargo is transported with the safest tanker in a environment friendly and cost effective way.

Except of the own experience used for this thesis, publications and websites of the Industry parties have been accessed to complete the knowledge to be shared. At the final chapter, there is a case study on a Greek tanker operator, aiming to introduce how the TMSA best practice guidance can be applied in the Management Review meetings for the vetting department. A brief analysis of the required targets and KPIs is presented as well.

CHAPTER 1: VETTING PROCESS AS A RISK ASSESSMENT TOOL

1.1 SIRE inspections (Ship Inspection Report Programme)

In 1993, OCIMF launched the Ship Inspection Report Programme (SIRE) for the first time, which is considered one of the most important safety initiatives to be introduced. The SIRE programme goals to be a unique tanker risk assessment tool of value to Charterers, Ship and Terminal Operators and government bodies concerned with ship safety. [1]

The SIRE system within OCIMF database includes extended and up-to-date information about tankers and barges. [4] In the latest edition of Intertanko Guide to the Vetting Process, it is noted that the SIRE has focused tanker industry awareness on the importance of meeting satisfactory tanker quality and ship safety standards. Since its introduction, the SIRE programme has received industry-wide acceptance and participation by both OCIMF Members, Programme recipients and by Ship Operators.

Physical inspections (SIRE) are a part of the vetting process and should not be misinterpreted as the vetting itself. They offer an actual and live view of the condition of the vessel and her crew by the time of the inspection, which however is not enough on its own for a Charterer to make a decision and choose which vessel is more suitable for a future business. The scope of the physical inspection is mainly to check and ensure:

- the seaworthy condition of the vessel and
- the familiarity of her Officers and Crew with the Company's procedures and Industry's Safety standards

Depending on which Oil /company inspects the vessel, additional safety requirements may be applied and crosschecked while onboard. However, in order to eliminate the great variety of the several Oil Companies requirements, OCIMF provides to its members the assurance that the majority of the newest and highest standards of safety will be reviewed by the inspector. Thus, all Oil Companies -being members of OCIMF- have agreed on a determined format of vessel's checklist so that vetting inspectors are obliged to follow and complete during their inspections (VIQ). The VIQ booklet (Vessel Inspection Questionnaire) has been prepared by

groups consisted of Operators, Oil Companies and experienced inspectors in order to be as detailed as possible, covering all the areas of concern of a vessel.

1.1.1 Getting prepared for a SIRE inspection

The onboard inspection can only be successful if the tanker is well prepared for the inspection. The inspector who is to carry out the inspection will start to collect impressions from even before the time he takes his first step onto the gangway and will continue to do so until he takes the last step off the gangway when leaving the tanker after completing the inspection.

The great majority of the inspectors are former seafarers, whose experience enables them to assess a tanker. The inspectors undertake the inspection looking for objective criteria by which themselves and the Oil company will be able to judge the tanker. The inspector him- or herself has to be accredited by OCIMF but OCIMF does not conduct inspections. The inspectors are either hired by the companies themselves or by a third party vetting service, but the name of the inspector is not listed in the SIRE report.

It should be also ensured that the inspection is scheduled at a convenient time for the vessel, so it does not conflict with other inspections or similar matters. A pre-vetting inspection should be completed by the ship's crew and that any deficiencies have been reported to the head office and corrected.

The inspector while being on-board will ask to review also vessel's Particular questionnaire (VPQ), which should be at all times updated with current vessel's status and information. Ship Operator is the one who updates the online VPQ and a copy should always be available onboard. The VPQ contains many questions -divided per chapters- that deal with customary on-board documents and ship's particulars of permanent or semi-permanent nature. This information will reduce the inspector's time onboard as well as it will save time for a more essential inspection in other ship's compartments, such as deck and engine room. Except of the above necessity, a well updated VPQ document will also assist both Oil Companies and Ship Operators vetting departments to reduce time during vessel's assessment, which always needs to complete several separate technical questionnaires for single voyages/ individual charterers.

It is also recommended to have all the papers (copies of vessel's certificates and plans, copies of Officers' certification documents, Oil Record books, cargo and bridge log book) collected and available to be handed to the inspector.

1.1.2 The process of the inspection route onboard

It is well admitted that a SIRE inspection begins by the very first view of the vessel, while the inspector approaches her. Fact which is self-explanatory since the inspector is requested to review, among others, the General Condition and Appearance (VIQ Chapter 12). A well maintained vessel- no matter what her age is- offers always a good impression to the inspector. Then, the next major key for a successful inspection outcome is the security control on the gangway. No charterer or Port State Control authorities will ever rely on a vessel, which shows gaps on her security control area.

VIQ Chapter 2- Certification and Documentation is the first in row to be checked by the inspector. Only provided that vessel's certificates are valid and in good order, the inspection continues with the rest VIQ chapters. The inspector has the right to make questions to the Officers and crew in order to check their knowledge and ability to manage certain situations. Deck and Bridge areas follow the inspection route and then engine and steering gear room are the final stages. At the end, a closing meeting takes place with the Master's and Officers' participation, where all the noted observations are discussed and recorded. The Master is allowed to make written comments on the observations; a practice which is not preferable by the most of the Operators.

VIQ is divided into 13 chapters, which should be all reviewed by the inspector during his stay onboard, which is usually about 9-10 hours:

Chapter 1 -General Information

Chapter 2 -Certification and Documentation

Chapter 3 -Crew Management

Chapter 4 -Navigation

Chapter 5 -Safety Management

Chapter 6 -Pollution Prevention

Chapter 7 -Structural Condition

Chapter 8 -Cargo and Ballast Systems - Petroleum

Chapter 8 -Cargo and Ballast Systems - Chemicals

Chapter 8 -Cargo and Ballast Systems - LPG

Chapter 8 -Cargo and Ballast Systems LNG

Chapter 9 -Mooring

Chapter 10 -Communications

Chapter 11 -Engine and Steering Compartments

Chapter 12 -General Appearance and Condition

Chapter 13 -Ice Operations

Questions are answered "yes", "no", "not seen" or "not applicable". For "no" or "not applicable" the inspector has to make comments- counted as observations- but may make comments in other cases as well.

Box	Response	Guidelines
Y	Yes	Tick "Yes" if, in the inspector's professional judgment assisted by the guidance (if provided), a positive response can be made to the question. If, in the inspector's judgment the Yes response requires to be amplified with further positive comments, the inspector may record such comments in the Comments box. Inspectors should keep in mind, that unless an unusual situation needs to be positively described, then a "Yes" response without comment is adequate.
N	No (counts as observation)	An Observation by the inspector is noted with a "No" or "Not Seen" response. Where the question specifically calls for inspector comment irrespective of how the response box is checked, such comments are required to be recorded in the "Comments" section that accompanies the question.
N/S	Not Seen	Tick "Not Seen" if the issue addressed by a question has not been seen or checked by the inspector. The reason why the topic or issue was not seen must be recorded in the Observations box.
N/A	Not Applicable	Tick "Not Applicable" if the subject matter covered by the question is not applicable to the vessel being inspected. In some cases, the "Not Applicable" response is made automatically within the software and is subject to the type of vessel being inspected. In other cases, a "Not Applicable" response is not provided to the question and only the "Yes",

		"No" or "Not Seen" response options are available. If, in the inspector's judgment the "Not Applicable" response requires to be amplified with further comments, the inspector may record such comments in the Comments box. If, in the inspector's judgment an explanatory comment is necessary, the inspector may make such comment in the "Comments" section accompanying the question provided such comment makes amplification to assist the understanding of a report recipient as to an issue associated with a specific question.
Additional comments		The Additional Comments section at the end of each chapter may be used to record comments in respect of the chapter that are additional to those which the inspector may make when responding to the specific questions.

1.1.3 Uploading of the SIRE report on OCIMF

The inspector has about two days to finalize his report and submit it to OCIMF. Once the inspection report is completed and only after the final review by the persons in charge is completed, the operator is granted with access on it to upload comments and corrective actions of the recorded observations.

The Ship Operator has no more than fourteen (14) days time to respond and state the corrective and preventive actions on each one of the observations. By that time the report gets released on OCIMF database and remains under the vessel's tab for 12 months, enabling to be accessed by all OCIMF members upon request.

Although there are only 14 days for the operator to respond to OCIMF, there is a recent tool launched enabling the Operator to make subsequent comments. This function assists the Operator to follow up the "open observations" and add remarks or supportive evidences, which prove the proper closure of the observation status. On the other hand, if the operator does not take advantage of this tool, it may lead to vessel's negative commercial status, as long as the observation remains "open" in the system.

SIRE reports are kept online and accessible at a nominal cost for a 12 months rolling period, enabling OCIMF members to have a total review of the vessel and her recent historical results of inspections. All the reports that are older than 12 months are archived for 12 months more. OCIMF Members, oil Terminal operators, Oil Companies, port/ canal authorities and Oil traders have access on payable demand into the OCIMF database, whereas Governmental

Bodies, supervising safety and pollution prevention (e.g. Port state control authorities, MoUs etc) access the OCIMF databases free of charge.

Vessel ratings from not suitable to voyage or period accepted are not seen in the system, only internally for the oil company conducting the inspection. In other words, whether a vessel has been accepted or not is not visible to another company using the OCIMF system. Nor can it be discerned from SIRE whether a particular oil company has accepted the vessel.

No SIRE inspection report on the same vessel is allowed to be added, unless 30 days have been elapsed since the last available SIRE report date. This initiative was recently imported due to the fact that many Operators used to re-arrange new SIRE inspections – in case of an unfortunate report- in order to restore vessel's status. A SIRE inspection report is considered as valid, only if it is less than 6 months old. However, if a ship Operator wishes to be on the safe side and act proactively, they should arrange SIRE inspection the latest every 4-5 months. It is an unwritten but significant requirement of the most of the Oil companies to consider a SIRE inspection report as "fresh" only within this range (3-5 months).

1.1.4 Assessment of SIRE inspection report

The inspection status closes with the final evaluation of the report from the inspecting oil Company, whereas also the nominated inspector can read Operator's comments and revert back to the Oil Company with further details and communication. A successful inspection provides the vessel with a clearance for the next voyage or a certain time of period, provided that no major change will affect the vessel and needless to mention that no incident or accident occurs.

However, in the latest shipping community, it is well known that no blank approval can be granted to vessels. They are assessed every time they are offered for a future business with the available information of that day, which means that even a recent successful vetting SIRE inspection will not be the only "ticket to trade" for her next employment. The requested information is not limited to a fresh and positive SIRE inspection report, but includes many more documents and specific technical questionnaires depending on which Oil Company is involved in the potential business.

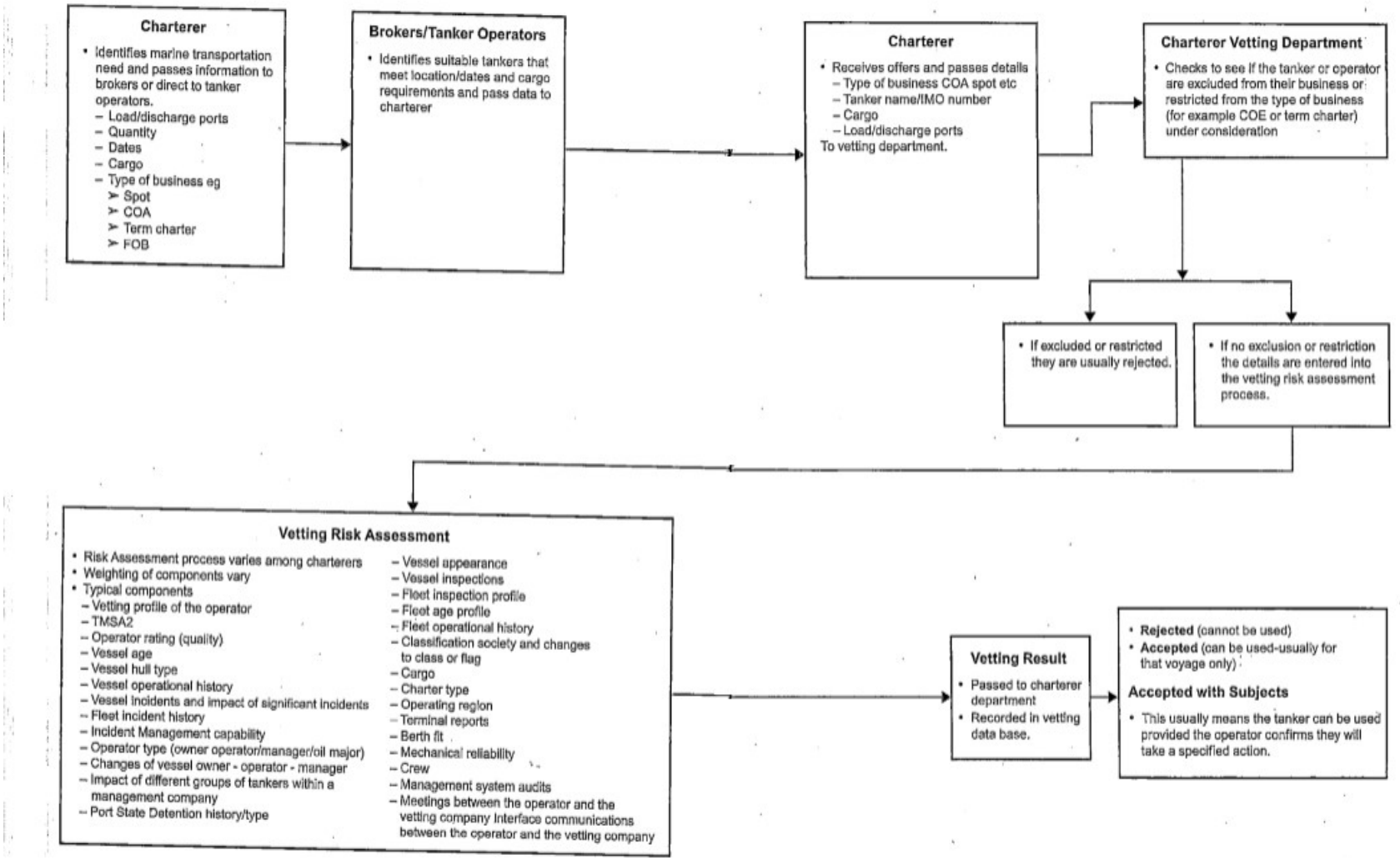
It is necessary to understand that the actual SIRE inspection is only a part of the vetting process and the completed VIQ report does not contain any overall verdict as to the acceptability or otherwise of a vessel. As it is said, the SIRE inspection is simply a snap shot in time. The result of a SIRE inspection, along with the Operator's comments, is used to assist with the actual screening decisions, which are made separately by each Oil Company or other Charterer.

1.2 Screening process of a tanker for a next employment

While the vessel is being offered for her next employment, all interested parties are involved in its clearance; however, the final decision is made by the vetting and commercial department of the Oil Company. Provided that the vessel matches with the Terminal requirements- which mean that it fits in its facilities and no previous negative report has been noted- the screening process begins. The processes used may vary considerably from one Oil Company to another, but all target to the same: to employ the vessel that matches in the best way safety and cost wised to their needs.

As per the following flowchart, Mr. Tim Knowles summarizes the basic stages of a screening process, which are repeated at every case that a need of cargo is raised by the Charterer. As the author states, when a tanker is offered for charter, the collated information is fed into the risk evaluation process and the result is compared to a predefined standard of acceptance.

1.2.1 Step-by-step analysis of the screening process



Picture 1: Flowchart of the Screening Process, Tim Knowles [2]

Stage 1: Charterer identifies marine transportation need and passes information to brokers or direct to tanker operators. Necessary information is:

- load/ discharge ports (or the intention) and estimated dates, lay days
- quantity and type of cargo
- type of business (Time charter-spot etc)

Stage 2: Brokers/ Tanker Operators identify suitable tankers that meet location/ dates and cargo requirements and pass data to charterer. This normally should be handled in a limited working time, but there is no priority rule of the offers.

Stage 3: Charterer receives offers and passes details to vetting departments; which is an internal procedure and is most of the times common for all the Oil Companies.

Stage 4: Charterer Vetting Department checks to see if the tanker or operator are excluded from their business or restricted from the type of business (for example, COE or Term Charter). Again no priority rule of the available offered vessels is granted; the offers are handled on case by case, examining the condition of the vessel and its historical data.

- If the available information of the vessel excludes or restricts her from the potential business, the vessel will be rejected. This depends on her current status, i.e. SIRE inspection report with negative results, negative historical data such a Port State control detention, involvement in an incident. Other factors that may result to exclusion refer to the Operator's profile:
  - overall poor fleet performance
  - failure to supply relevant vetting data
  - involvement in an incident with other fleet vessel, the causes, corrective and preventive actions of which have not been accepted by the charterer
  - ongoing mechanical problems
  - unresolved issues raised by a terminal
  - Tanker Operator's low score of TMSA audit or no TMSA review in the past.

- If none of the above is applied and there is no exclusion or restriction, then the vessel's details and data are entered into the Vetting Risk Assessment process.

Stage 5: Risk Assessment Process varies among Charterers, meaning that the weighting of components also varies. Typical and most common components are:

- *Vetting Profile of the operator*; including offered vessel's status as per OCIMF database and also rest fleet status.
- *TMSA audit results*; in case that the Charterer Oil Company has conducted a TMSA audit to the Operator.
- *Operator rating* (quality); a mixed KPI indicating how effective is the Operator's Safety Management System and the overall performance on OCIMD, PSC databases, Lloyd's List, Equasis platform etc
- *Vessel age*; as younger the vessel, the most competitive it is, however it should not be taken for granted. Factors such as type of ship, type and yard of construction, trading area (weather-ice) may impact on the judgment of the individual vetter of which age is young enough. Vessels above 15 years old are assessed based on stricter criteria.
- *Vessel hull type*; nowadays almost all of the assessable vessels are double hull. If there has been a Special Survey, also the thickness measurement report is requested and evaluated.
- *Vessel Operational History / Vessel incidents and impact of significant incidents*; a vessel that has not been involved in any unpleasant situation is always preferable in contrast to another with negative history. No matter if the crew involved in the incident has been changed and all the corrective actions have been applied, the ship remains linked with the incident, causing impact on its commercial use.
- *Fleet Incident history*; the same exists for the overall performance of the fleet. An operator with recorded incidents will be discriminated. A prudent operator will look for related causes of incidents across their entire fleet, in order to ensure that causes are made known to all staff.
- *Incident Management capability*; Operator's procedures are usually requested for review and, in case of a recorded incident, the full investigation report should always be

available. In significant incidents, a visit to the Charterers may be useful in order to have the details and circumstances of the incident explained.

- *Changes of vessel owner- operator- manager*; play a role in the final decision. If there is a recent change, relevant documentation is requested for review. i.e. Management of change, new Certificates of Class or Document of compliance.
- *Impact of different groups of tankers within a management company*; it may affect the decision if the fleet is not homogenous. Sister vessels to be identified.
- *Port State Control history*; as PSC history follows a vessel until it gets scrap, special attention is paid on this criterion. It goes without saying that a PSC detention has the worst impact throughout not only a vessel's life but also for the Operator's profile.
- *Visual Appearance*; except of the VIQ Chapter 12 that describes the general condition and appearance of the vessel within the SIRE inspection report, Charterers may demand current vessel's photos for their review and records. The appearance of a tanker varies in accordance with her trading area and time elapsed since last Dry dock. A well maintained vessel shows compliance with Company's procedures and Industry requirements.
- *Vessel Inspections*; as mentioned above, OCIMF database records vessel's past SIRE inspections for a 12 months rolling basis. During a screening assessment, charterers may request for additional clarifications on the noted observations or corrective actions status and progress of the vessel. Well addressed and adequately applied corrective actions in time ensure the Charterer regarding Operator's safety management.
- *Fleet inspection Profile*; except of the assessed vessel's profile, Charterers check Operator's profile as per Fleet inspections results, which may determine that:
    - ❖ A specific ship has a poor inspection profile in comparison with the rest of the fleet vessels.
    - ❖ Specific observations are recorded among the fleet vessels
    - ❖ Number of observation per inspection (commonest KPI) is either increasing or degreasing
    - ❖ A group of ships within the fleet performs better or worse than the rest groups of the fleet.
- *Fleet age profile*; younger fleet is considered as an advantage against Operators with an ageing fleet.

- *Classification Society and Changes to Class or Flag*; certain restrictions may be applied at this case. Generally, a change of flag or class by itself does not stand enough to reject a vessel.
- *Cargo*; the type of carrying cargo of a tanker may affect the cause or consequence of an incident, i.e. pollution is heavier if the cargo is fuel oil or crude, rather than cleaner oil. Thus the experience of carrying those kinds of cargoes will influence the choice of vessel.
- *Charterers type*; not every vessel is considered as suitable of a Time Charter and eventually, not all the operators are. The longer the relationship between Operator and charterer is, the easier to get in a Time charter business that is because a T/C requires an evaluation of a long term partnership and so a higher quality threshold is applied.
- *Operating Region*; previous and current trading area affects the choice of vessel for requested employment. Especially if this refers to an operating area with higher requirements of safety appliances.
- *Terminal Reports*; most of the times, this information is received internally by the charterer and in case of negative feedback, Operator's comments and corrective actions are evaluated. The content of these reports is usually focused on safety and performance matters. (for example, crew efficiency in handling cargo and moorings, cooperation of the crew with the Terminal requirements and staff, condition of moorings)
- *Berth Fit*; it is requested mostly by Terminals to ensure that the vessel fits to their facilities and can reach the port safely. (Draught-air draught- dimensions- pumps/ manifold capability etc). Otherwise, the vessel cannot be accepted.
- *Mechanical reliability*; the maintenance management of the Operator and vessel's specifically is a weighting factor for a possible acceptance or not. Relevant data and records are often requested to be evaluated by the Charterer. Ships that have a high incident frequency or repeated mechanical failures will be penalized in the vetting process.
- *Crew*; human factor plays one of the major roles in a vessel's performance. At the stage of a screening process, certain documents can prove Officers and crew experience and capability, as well VIQ Chapter 3- Crew Management of the latest available SIRE inspection reports. A significant factor regarding Crew management is also the

nationalities of the crew; including cultural and language issues which may interfere with the operation of the vessel.

- *Management system audits*; they are held at operator's premises and carried out by the charterer. They become more and more frequent and structured and aim to determine the quality of the Operator's management system.
- *Meetings between the operator and the vetting company*- interface communications in between; as in all business, good and friendly personal contacts and direct communication assist in the progress of the system.

All the above components are more or less used by each of the oil companies, however the determination of which of them influence more the final selection varies from one charterer to the other. The same applies in between the weight of each component. These differences may appear to be surprising or even unreasonable but at the end of the day, each Oil Company aims to the best and safest voyages, so the weighting of each factor reflects their vision and management strategy.

Stage 6: Vetting result is passed to chartering Department and gets recorded in the vetting database. The results may have been made by an individual vetter or even computerized through very detailed programs, which analyze the weight and potential risk of each one of the above scoring factors. The below consists the only vetting assessment results:

- *Accepted*: the vessel can be used- usually for one voyage only
- *Rejected*: the vessel cannot be used
- *Accepted with subjects*: the vessel can be used, provided that the operator confirms acceptance and compliance with specific conditions.

1.2.2 Screening process outcome

What should be underlined is the fact that no blanker approval is granted to any vessel/ operator for a long term period. Each vessel is assessed even with one single day difference of time, provided that she is offered again for a different business. A vessel which is accepted for a specific employment might be unacceptable for another employment, no matter if it regards the same Charterer.

Additionally, as Mr. Tim Knowles notes, *the term "Tanker Vetting" looks at far more than the tanker itself, in fact in some cases the main criteria may be the operator, its fleet performance and other components rather than the condition of the tanker in question.*

Furthermore, it should be noted that the screening process as described above is a very time demanding issue and the Chartering department's commercial decisions have to be made quickly so the vetting process must be designed to meet that demand. To achieve this, the information should be always updated and readily available to be forwarded to the Chartering Department. Being proactive is the only way to achieve the highest possible performance.

1.3 Oil Companies Specific Requirements

Confusion often arises when ships are marketed as having 'oil major approvals' which are stated to be valid for a certain period. In such cases, owners and brokers are often referring to the period of validity of a SIRE inspection carried out by the oil major in question. In reality, an owner cannot be certain that the ship is acceptable because, as well as looking at the ship itself, an oil major will consider the cargo, and the load and discharge ports on a case by case basis. Each of the oil majors will give different weight to the various criteria. The same ship may even be accepted by one of the oil majors and rejected by another on the basis of the same SIRE report.

Therefore, there are different approaches of Oil Companies regarding several major factors and their weighting to complete a tanker operator's assessment. Whilst there are a number of core similarities between the various oil and chemical companies, most have nuances and specific requirements particular to their own requirements for both hardware and software (human based skills and experience). [6]

The volume of data used, the complexity of the available information, the necessity to be reliable to the risk assessment output and the increasing need to be able to use the risk assessment and vetting process as a defence of a decision have been factors in driving a move to computer assisted risk assessment systems. At all cases, this is an in-house system for each oil company and rarely is presented to the operators. There have been made, though, efforts and

actions from OCIMF to combine them in a universe platform, being able to define weights and customize it to oil company's needs.

A computerized system will distribute the risk assessment factors into identifiable components (SIRE inspection results, operator profile rating, fleet performance and age etc), determining which have the greater and the lesser influence. Then an assessment of the likelihood of an incident free voyage will be produced by a mathematical process. The scientific rigor and discipline of such decision analysis offers reliable outcome. Such methods of assessing the potential risk are used not only in many different industries, but also by government organizations. In a large vetting group, processing more than 100.000 vetting requests per year while operating around the world and the clock, the ability to produce results in seconds- being constantly objective rather than subjective- is considered essential.

Except of the mentioned advantage of objective results, it is obvious how timesaving this system is, offering more time to the individuals to address other issues and get further analysis of causes and corrective actions evaluation on recorded observations.

The system is largely automated, in much the same way as 'credit scoring', although the actual decision to accept or reject a ship is usually made by an individual. Owners will be aware that oil majors do not automatically give reasons when they reject a ship, and on occasions where two different oil majors vet a ship simultaneously, owners may receive two different decisions.

Several components are considered as weights for each of the Oil Companies. KPIs such as the quality/ evaluation of SIRE report and the Inspection history of a vessel have been founded as significant by the very beginning of Vetting regime. As the industry gets updated and synchronized, more essential factors play major role in the vessel selection. For example, Oil Companies have implemented specific procedures to evaluate Officers Matrix. Senior Officers onboard should have a specific experience of years in rank or with the operator, so that the vessel is assessable.

Officer Matrix Compliance Analysis	
Requirements For:	
Years with Operator	**Req. Value**
Combined aggregate for Master and C/O shall not be less than 2 years.	2.0 years
Combined aggregate for C/E and 2/E shall not be less than 2 years.	2.0 years
Years in Rank	
Combined aggregate for Master and C/O shall not be less than 3 years.	3.0 years
Combined aggregate for C/E and 2/E shall not be less than 3 years.	3.0 years
Combined aggregate for 2/O and 3/O shall not be less than 1 year.	1.0 years
Combined aggregate for 3/E and 4/E shall not be less than 1 year.	1.0 years
Years on All Types of Tankers	
Combined aggregate for Master and C/O shall not be less than 6 years.	6.0 years
Combined aggregate for C/E and 2/E shall not be less than 6 years.	6.0 years
Combined aggregate for 2/O and 3/O shall not be less than 1 year.	1.0 years
Combined aggregate for 3/E and 4/E shall not be less than 1 year.	1.0 years
Date Joined	
A minimum of 14 days shall lapse between replacement of the Master and C/O	14.0 days
A minimum of 14 days shall lapse between replacement of C/E and 2/E	14.0 days
A minimum of 14 days shall lapse between replacement of 2/O and 3/O	14.0 days
A minimum of 14 days shall lapse between replacement of 3/E and 4/E	14.0 days

Picture 2: Officers Matrix Compliance Requirements for an Oil Major

Age is also a factor that could lead to a rejection, since there are Oil Companies that will not ever accept a vessel more than 20 years old- independently of how well maintained her condition is.

CHAPTER 2: TANKER MANAGEMENT SELF ASSESSMENT (TMSA)

2.1 Historical data and aims of TMSA programme

The OCIMF Tanker Management and Self Assessment (TMSA) programme was firstly introduced in 2004 and was developed to benefit the tanker operators as a tool to help them to assess measure and improve their management systems. Since then two updates have been published, TMSA 2 in 2008 and the latest TMSA3 within 2017, which will be used from 01.01.2018 onwards during TMSA audits. In February 2017, TMSA was integrated into the Ship Inspection Report Programme (SIRE).

TMSA has the stated aim of being a "best practice guide for tanker operators". The third edition has been updated to reflect current legislation, expectations and emerging issues, reflecting feedback both from tanker operators, vetting departments and rest users of TMSA.

The TMSA programme complements IMO Conventions, Codes and Circulars and is intended to promote self-regulation and continuous improvement of the safety merchant shipping. Implementation of the mentioned conventions and codes is included in Operator's SMS covering both ship and shore management process. An effective Safety Management System is also required for companies to achieve excellent performance regarding Health and Safety matters.

The programme encourages tanker operators to assess their safety management systems (SMS) against key performance indicators (KPIs) as a guide and measure of best practice. It provides a minimum expectation (level 1) plus three levels of increasing best practice guidance. Most of the operators have welcomed the programme, as it clearly provides them with an indication of the charterers' expectations and the items they consider in their vetting assessment systems.

Tanker Operators are encouraged to regularly review their TMSA results, which can be used to develop phased improvement plans of their Safety management systems and to be spread and applied on all their fleet vessels. Aligning their own policies and procedures with industry best practice helps companies to improve their performance and attain high standards of safety and pollution prevention.

The key components of a continual improvement cycle are: Plan- Act- Measure- Improve

Picture 3- Key components of continual improvement cycle, *TMSA 3*

Plan: Develop plans that include effective strategies to provide clarity in company policies, objectives, procedures and responsibilities. Set company's goals, vision and mission and align them with strategy.

Act: Meet the company's objectives through consistent and effective implementation of plans. Clear and straight communication of company's policy to all ship and shore personnel is required.

Measure: Proper recording and evaluation of results from the "Act" stage above, along with reporting of any noticed gap between the results and the original plan.

Improve: Recorded gaps of Stage "Improve" define the new targets and actions to be taken. Implementation will lead to improvements of the company's Safety Management System.

The above cycle should be reviewed on a regular basis so that the Management gets informed in order to discuss and decide further steps of improvement.

2.2 Key Performance Indicators and TMSA Elements

In the context of the TMSA, KPIs are measures against which a tanker operator can track its effectiveness in meeting its aims and objectives. Companies use the information contained in TMSA to assess their SMS, ranked in levels 1 to 4, for each of the 13 elements. It is up to the Company's management discretion if they use KPI data as a standalone decision making tool, or in conjunction with any management tools they currently use for improvement.

As the shipping industry is a continuously enhanced and improving system, so the TMSA programme will continue to evolve with new KPIS to be added and best practice guidance updated in future editions.

The TMSA 3 elements are as follows:

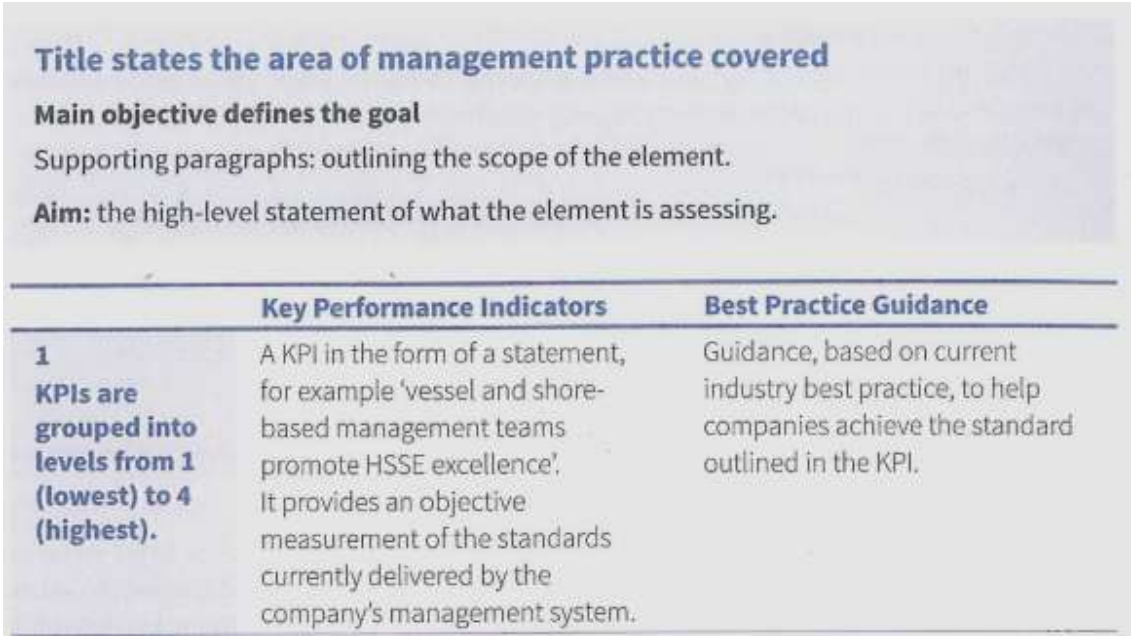
Element 1	Leadership and the Safety Management System
Element 2	Recruitment and Management of shore-Based Personnel
Element 3	Recruitment, Management and Wellbeing of vessel personnel
Element 4	Vessel Reliability and Maintenance including Critical Equipment
Element 5	Navigational Safety
Element 6	Cargo, Ballast, Tank Cleaning, Bunkering, Mooring and Anchoring operations
Element 7	Management of Change
Element 8	Incident Reporting, Investigation and Analysis
Element 9	Safety Management
Element 10	Environmental and Energy Management
Element 11	Emergency Preparedness and Contingency Planning
Element 12	Measurement, Analysis and Improvement
Element 13	Maritime Security

As we can find within TMSA3 publication, new in this third edition are:

- Expanded best practice guidance to complement KPIs
- Revised best practice guidance to remove ambiguity and duplications

- Streamlining and merging of elements to improve consistency and make conducting the self assessment easier
- Removal of the option to mark KPIs as not applicable
- Introduction of updated industry legislative requirements, including the Manila Amendments to the Maritime Labor Convention 2006, the Polar Code and the Ballast Water Management Convention.
- Revised Element 6 and 6A- Cargo, Ballast, Tank Cleaning, Bunkering, Mooring and Anchoring Operations, with additional KPIs and best practice guidance.
- Revised Element 10- Environmental and Energy Management (previously Environmental Management) incorporates the OCIMF Energy and Fuel Management paper that was a supplement to the 2nd edition of TMSA2.
- New Element 13- Maritime Security. [5]

A typical example of the element structure is the following, as retrieved from TMSA 3:



Title states the area of management practice covered

Main objective defines the goal

Supporting paragraphs: outlining the scope of the element.

Aim: the high-level statement of what the element is assessing.

	Key Performance Indicators	Best Practice Guidance
1 KPIs are grouped into levels from 1 (lowest) to 4 (highest).	A KPI in the form of a statement, for example 'vessel and shore-based management teams promote HSSE excellence'. It provides an objective measurement of the standards currently delivered by the company's management system.	Guidance, based on current industry best practice, to help companies achieve the standard outlined in the KPI.

Picture 4: How elements are structured within TMSA 3- sample [5]

2.3 Submission and sharing to OCIMF

Tanker Operator should work through the 13 elements and match their SMS to KPIs within the four levels. The higher the level they match, the closer they stand to the industry best practice guidance. Companies can measure their SMS against included KPIs in each element and decide where they stand as regards the best practice levels. The assessment of the level should be as accurate and actual as possible. Each of the levels which is marked as completed, should be accompanied with documentary evidences. Overestimating the status of a management system counts negatively and may lead to inaccuracies in the report and a TMSA observation during an audit.

The submission of TMSA is electronic via OCIMF website, enabling direct sharing of their level of safety management and performance trends with oil companies. In contrast with the SIRE regime, where all OCIMF members have access on an operator's profile, TMSA enables the operator to control and approve which oil companies have permission to access their data. No other company will be able to see the report and OCIMF do not release any of the data.

The TMSA offers a standard framework for assessment of a company's SMS. It sets outs 13 elements of management practice that are essential for the effective management and operation of vessels. The most essential and significant benefit for a tanker operator is that the TMSA help identifying gaps in current performance and areas where further improvement can be enhanced.

As per industry requirements, companies are advised to review and update information in the TMSA database online once per year. However, this is not the rule, as updates should be promptly made in case of changes to fleet size and composition or significant changes in the management structure and company's SMS.

As regards the transition period to TMSA 3, tanker operators have had more than 6 months to review and comprehend the gap analysis between the previous and forthcoming edition. In the meantime, tanker operators should get prepared for the new submission and even better, to be proactive by making the necessary changes in their procedures within SMS.

2.4 TMSA verification audits and vetting process

TMSA is used by Oil Companies to audit the tanker operator's safety management systems, which also helps bring about a more consistent assessment process. As Mr. Tim Knowles notes, the operator's management capability and performance is, for many, a strong and highly weighted factor in the vetting process. Therefore, although the information regarding the tanker itself remains important, the assessment of the operator may be even more so. Someone could say that TMSA is a "leading indicator" or a predictor of fleet performance.

For an increasing number of vetting organizations, provision of TMSA and verification of same is a requirement prior of any business with this tanker operator. Even more, if the business refers to a long term charter employment, TMSA verification is a validation tool for that profile.

TMSA provides a blueprint for the audit process. The auditor- who is a qualified charterer's personnel- can pick up an element and determine with some accuracy whether or not the operator's self rating is reasonable. The commonest process of auditing a ship management company does not refer to look for establishment what the rating actually is, but instead to check the validity of the level as determined by the operator. This is a timesaving process, making auditor's life easier, as it does not require discipline and rigor by trained auditors. Although the verification comes by chance with pick up occasions, the assessed company should ensure that all documentary evidence is well prepared and available prior the audit.

The expectation is that the results of the conducted TMSA verification remain confidential between the two parties. On completion of verification, any findings are discussed with the assessed company's management and on a later stage; the company keeps the assessing oil company advised with their relevant corrective status. Additionally, the operator may wish to review and update the submitted TMSA report as part of their continual improvement process.

CHAPTER 3: CASE STUDY- VETTING ANALYSIS FROM A TANKER OPERATOR (1st Semester 2017)

In order to summarize all the above, this thesis presents a case study of a detailed Management Review Meeting (MRM) prepared by the Vetting Department of a Greek tanker operator of 63 tanker vessels (of several types). The Tanker Operator will be now called "Company Case", as due to confidentiality of the following sensitive data, actual name of the Management Company and its vessels cannot be disclosed. Though, all numbers and analysis is retrieved by their last MRM for the first semester of 2017.

The Management Review Meetings are held quarterly with the participation of the Managers of each of the Company's departments. They aim to present and recognize where the company stands according to the settled vision and Safety Management system targets. The background tool of making such presentation is the TMSA Elements review in accordance with the targets, as they are set by the Company's procedures. For our case study, TMSA 2 best practice guidance has been used, since the TMSA 3 had not been released yet by the time of this survey.

As regards to Operator's Vetting Department, personnel review specifically and is responsible to update TMSA Element 12, including 12 A- Measurement, Analysis and Improvement (inspections and audits).

The main objective of the Element 12 is to establish a system of effective inspection and audit programs that measure the compliance with the Industry standards and monitor the condition of the fleet vessels. In terms of vessel inspections, the company should ensure that they implement appropriate measurement and feedback processes to focus on and drive continuous improvement. To achieve this, procedures should be in place for shore- based management to carry out frequent inspections to monitor vessel condition, as well as to ensure compliance with rules and regulations. Relevant procedures should be included in Company's SMS, so that the findings and the results of these internal audits to be recorded, to be measured and followed up.

From the Vetting Department point of view, willing to succeed on the continuous improvement, adequate measurement and analysis of relevant KPIs should be prepared and

evaluated. Then, the process includes identification of trends and provisions for promptly closing out any deficiencies that have been recorded. By that means, they use the KPIs to identify weak areas that need attention and to keep all concerned parties (fleet vessels, Persons in charge and Top Management) well advised in order to ensure future compliance with the improvement action planning.

The Safety & Quality department is responsible for the first two stages/ levels of Element 12, who should ensure full compliance with the stated best practice guidance. Thus, for this case study, Stages 3 and 4 will be analyzed, which are under Vetting Department's care.

STAGE	KPI	BEST PRACTICE GUIDANCE
1	**A company-specific format is used for conducting and recording vessel inspections.**	The company has a standard format that is used as a basis for all vessel inspections. The inspection process covers all the areas of the vessel and vessel operations. The questionnaire is captured in a checklist and/or procedures are controlled through the company document control system.
	The company has an inspection plan that covers all vessels in the fleet, with at least two inspections per annum of each vessel.	The inspection process provides company management with a comprehensive overview of fleet at specified intervals.
2	**The format is of a standard that it is at least equivalent to the vessel inspection reports issued by industry bodies such as OCIMF, CDI or EBIS.**	The company adopts an industry-standard format such as OCIMF, CDI and EBIS (European barges) as a basis for its vessel inspection system. Alternatively, the company reviews its own format against industry formats and incorporates best practice.
	The standard format measures the level of compliance with company and regulatory requirements.	The standard format includes appropriate company and regulatory requirements and measures the level of compliance. Comments and observations are recorded.

The next two levels are under the Vetting department responsibility:

STAGE	KPI	BEST PRACTICE GUIDANCE
3	**The company analyses its inspection results and compares them with data from third party inspections (such as the SIRE) and makes comparisons between vessels within the fleet, particularly with any vessels built to a similar design and specification.**	The company regularly compares its own inspection results with the results of inspections conducted by third parties. Where there are consistent anomalies, the company reviews and improves its vessels inspection process. The company also compares inspection results within its own fleet and between its vessel inspectors. The company uses these comparisons to monitor / improve fleet inspection standards.
	The company has a system that clearly demonstrates the status of the recorded deficiencies through to close out.	The results of inspections are recorded and deficiencies tracked to ensure timely close out. Regular checks are made on the status of open items (deficiencies or defects not corrected to the satisfaction of company management). A summary of the status is provided to senior management on a quarterly basis.
4	**Information from the analyses of these inspections is fed into a continuous- improvement process.**	Senior managers review the results from analysis to identify potential weakness in the company management system. Improvement to the management system is fed into the company's continuous-improvement process.
	The results of vessel inspections are analyzed to identify trends and common problems.	The results are collated and presented in a manner that facilitates analysis and may be captured in a computer database.

A common process during Company Case MRMs is to initially present the general results of the SIRE inspections, as an outcome of the total overview of the semester. As previously

mentioned, TMSA best practice guidance requires from tanker Operators to review regularly their targets and results compliance within the period in question. For Company Case, following targets have been set by Company's Safety Management System:

	Targets as per Company Case SMS	Results on 2017
1	To maintain the KPI: average no. of observations per number of SIRE inspection at the level of **not more than 3.5** (for each ship the last 12 months, in a rolling basis and at a fleet level, excluded Ice & Design (6.31, 9.23) related observations.	**Achieved.** The ratio is on positive trend and below 3.0 since 2015. For the 1H-2017 it is 2.18.
2	To maintain the KPI: Average assessed risk per observations recorded at each VIQ chapter at a level of no more than 3.0. The risk is measured from 0 to 5.	**Achieved.** The ratio is lower at all chapters in comparison with 2016 and below 1.2. This is evidence that not only the number of observations is decreasing but also their potential risk.
3	No vessel to be rejected by oil major following a SIRE inspection or screening.	**Achieved.** The improvement of SIRE performance is reflected to the fact that no vessel was negatively assessed from an oil major, following a SIRE inspection, during the Q2-2017.
4	To carry out on a six months basis benchmarking against the INTERTANKO SIRE database and keep the rate of observations per number of inspections for each VIQ chapter lower than the average industry figures.	**Achieved.** The rate of observations per number of inspections is significantly lower at all VIQ chapters and especially on Navigation and Safety Management.

Table 1: Company Case- Targets as per SMS and results in 2017

The most basic KPI for assessing the vetting performance of a tanker operator or a vessel is the number of recorded observations per inspection. It is the first factor for an oil company to evaluate a vessel by reviewing her history of SIRE inspection reports, as being available on OCIMF database. Thus, its measurement is required and moreover, its trend throughout the years. The following figure represents the Company Case profile of SIRE inspection performance since 2013.

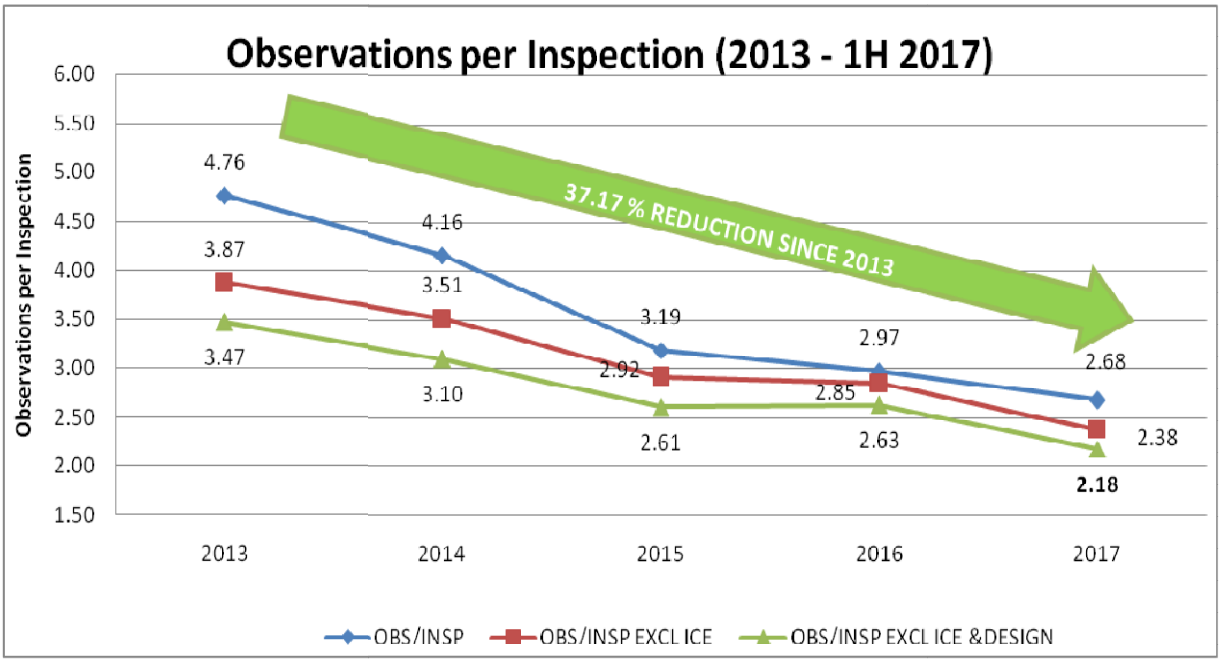


Figure 1: Company Case- Observations per Inspection 2013-2017

As we notice on the above figure, the Company Case measures not only the KPI: Number of Observations per Inspection, but also a purer number of observations excluding the Ice Operations (VIQ Chapter 13) and the Design related ones. This is because no Oil Company or any vetting assessment counts data on these two fields. For the Company Case, the vetting performance as regards SIRE inspections is on a positive trend since 2013 and onwards.

Despite the fact the performance of the Company Case gets improved, a more thorough investigation and analysis should be performed to identify the VIQ Chapters progress on years. There are Chapters in VIQ that are considered as higher risk of the others, such as Chapter 4- Navigation, Chapter 5- Safety Management, Chapter 6- Pollution Prevention, Chapter 8- Cargo and Ballast Systems and Chapter 11- Engine and Steering Compartments. Detailed analysis must be made in all VIQ Chapters and if any negative trend is noticed, further attention should be paid on the particular field.

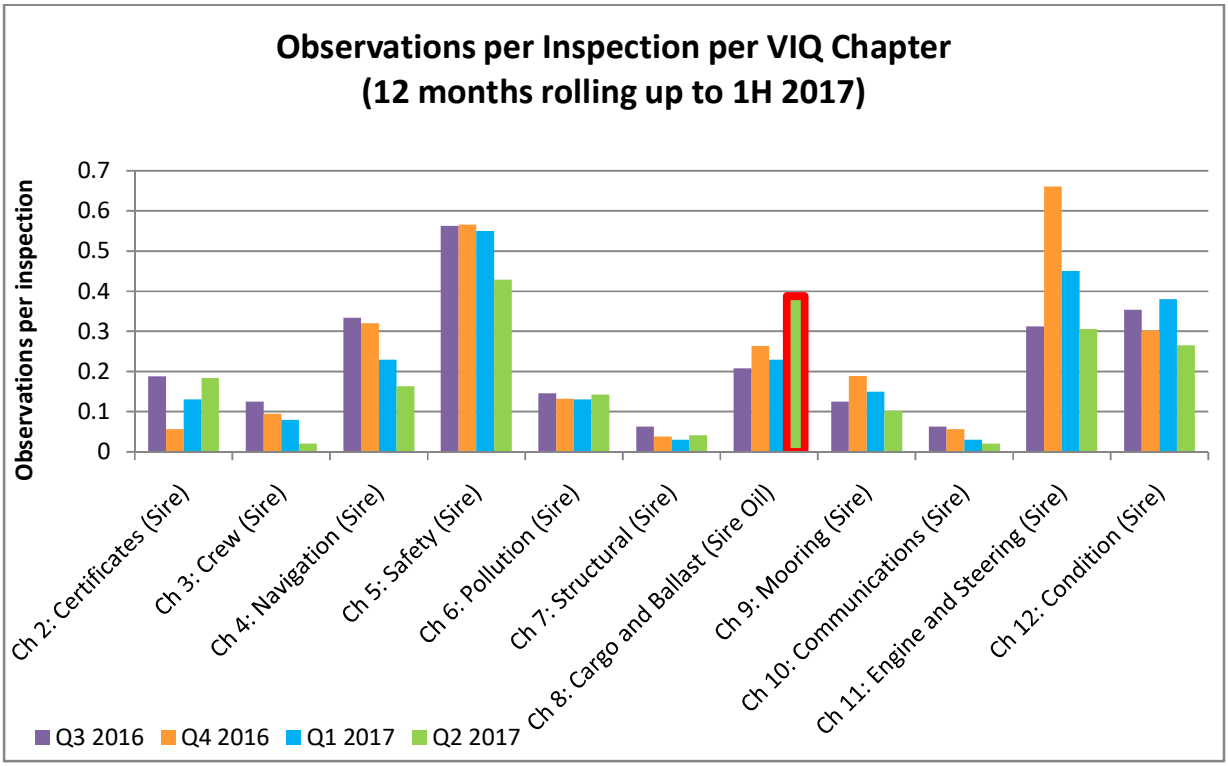
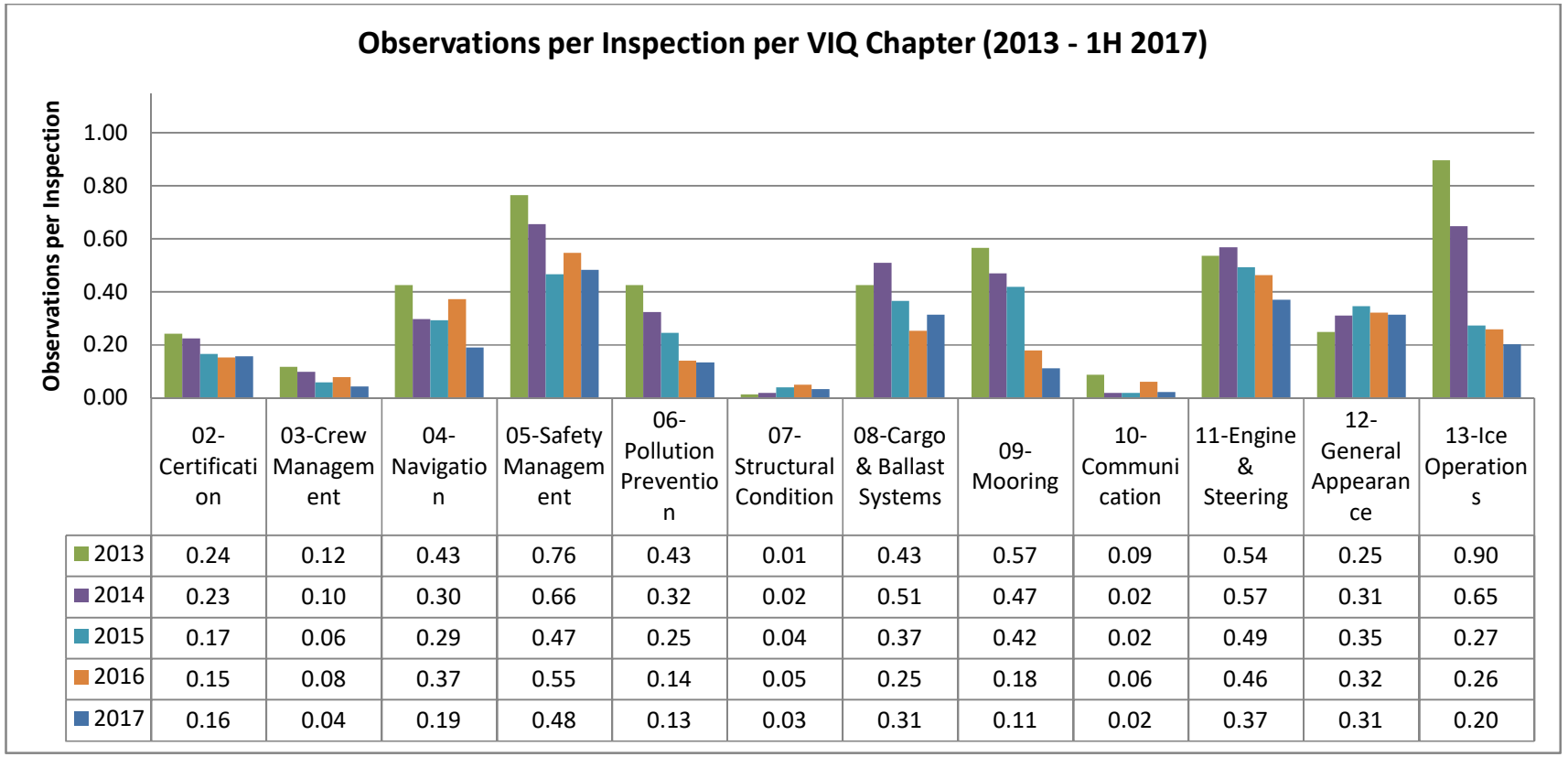


Figure 2: Company Case- Observations per Inspection per VIQ Chapter (12 months rolling)

Item	Outcome	Comments
VIQ Chapter Benchmarking	The obs/insp. ratio was improved at all chapters, except Certification and Cargo & Ballast.	The best performing chapters in comparison with 2016 are Navigation, Safety Management and Engine & Steering. This is very important as observations under the aforesaid chapters, at the most of the times are considered High Risk. The slight increase at Certification is minor and do not create any concerns. The increase at Cargo and Ballast is mainly due to observations related with temperature and pressure sensors.



	02-Certification	03-Crew Management	04-Navigation	05-Safety Management	06-Pollution Prevention	07-Structural Condition	08-Cargo & Ballast Systems	09-Mooring	10-Communication	11-Engine & Steering	12-General Appearance	13-Ice Operations
2013	0.24	0.12	0.43	0.76	0.43	0.01	0.43	0.57	0.09	0.54	0.25	0.90
2014	0.23	0.10	0.30	0.66	0.32	0.02	0.51	0.47	0.02	0.57	0.31	0.65
2015	0.17	0.06	0.29	0.47	0.25	0.04	0.37	0.42	0.02	0.49	0.35	0.27
2016	0.15	0.08	0.37	0.55	0.14	0.05	0.25	0.18	0.06	0.46	0.32	0.26
2017	0.16	0.04	0.19	0.48	0.13	0.03	0.31	0.11	0.02	0.37	0.31	0.20

Figure 3: Company Case- Observations per inspection per VIQ chapter (2013-1H 2017)

Item	Outcome	Comments
Observations per Chapter	For the majority of VIQ chapters, the Fleet Performance has been improved in 2017.	• A minor increase is noted on Chapter 2 (0.15 to 0.16) and Chapter 8 (0.25 to 0.31) • The performance under the rest of the VIQ Chapters has been improved in an average of 30%. • Navigation is in the lowest level (0.19) since 2013. • Safety Management was improved significantly from 0.55 to 0.48 • Engine & Steering was improved significantly and it is in the lowest ratio (0.37) since 2013.

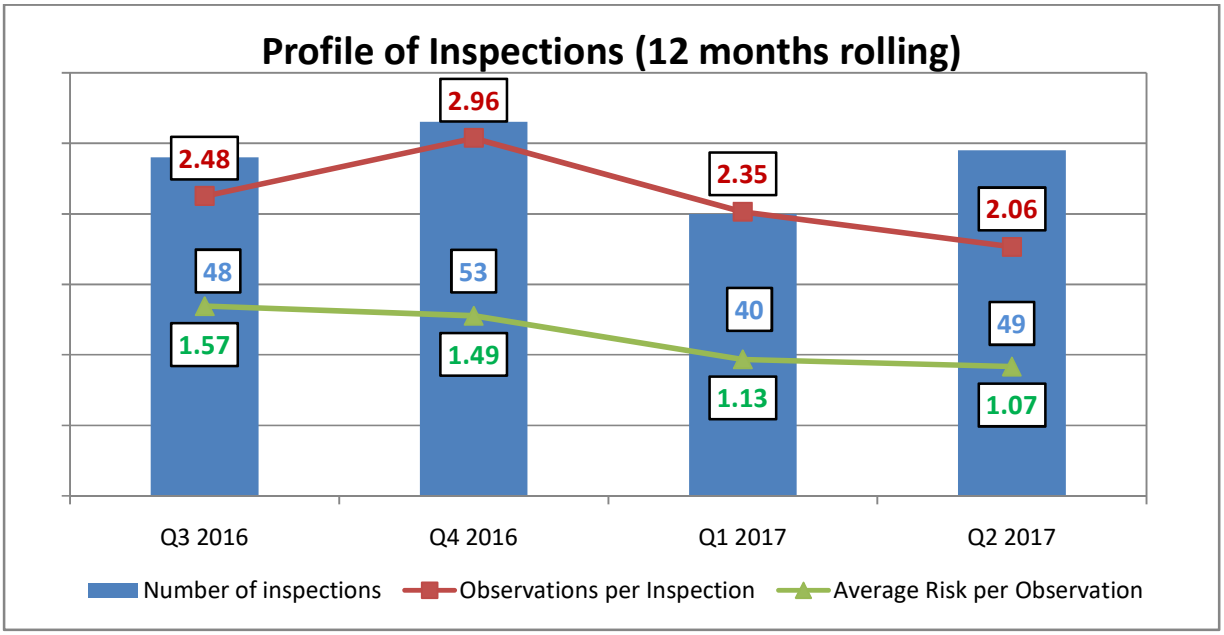


Figure 4: Company Case- Fleet Profile of Inspections (12 months rolling)

Item	Outcome	Comments
Overall Observations per Inspection	The ratio has been maintained below three (3) since 2016.	The performance of Ch.13 has been further improved.
Observations per Inspection (excl. ice & design)	Fleet Performance as regards the obs/insp. ratio has been improved by 17% compared to 2016 ratio and remains on positive trend.	The obs/insp. ratio for the 1H-2017 is 2.18 and remains on positive trend as during Q2-2017 was 2.06.

Number of Inspections	During the 1st half of 2017, 89 SIRE inspections were carried out (the 50% of the total inspections of 2016)	Since 2016, a SIRE inspection at least every 4 months is carried out on all vessels.
Average Risk per Observation	Decreased to 1.07	As previously stated, this is evidence that not only the number but also the risk of the observations is decreasing.

Here we get introduced to another KPI, which is the Assessed Risk per Observation. Except of the number of observations per Inspection, what really matters in the modern Shipping Industry is the quality of the noted observation. This is measured by the KPIs which refer to the risk of the observation. Even if one and only High Risk Observation is recorded in the SIRE inspection, the vessel will be most probably get negatively assessed by Oil Companies and rejected for the potential employment.

Thus, it is a matter of life for the tanker operators to evaluate each one of the recorded observations and then to measure them. Relevant information is forwarded to the entire fleet through Safety Alert reports and Summaries in order to ensure that all vessels are informed about the observation, its causes and the necessary preventive actions to be taken.

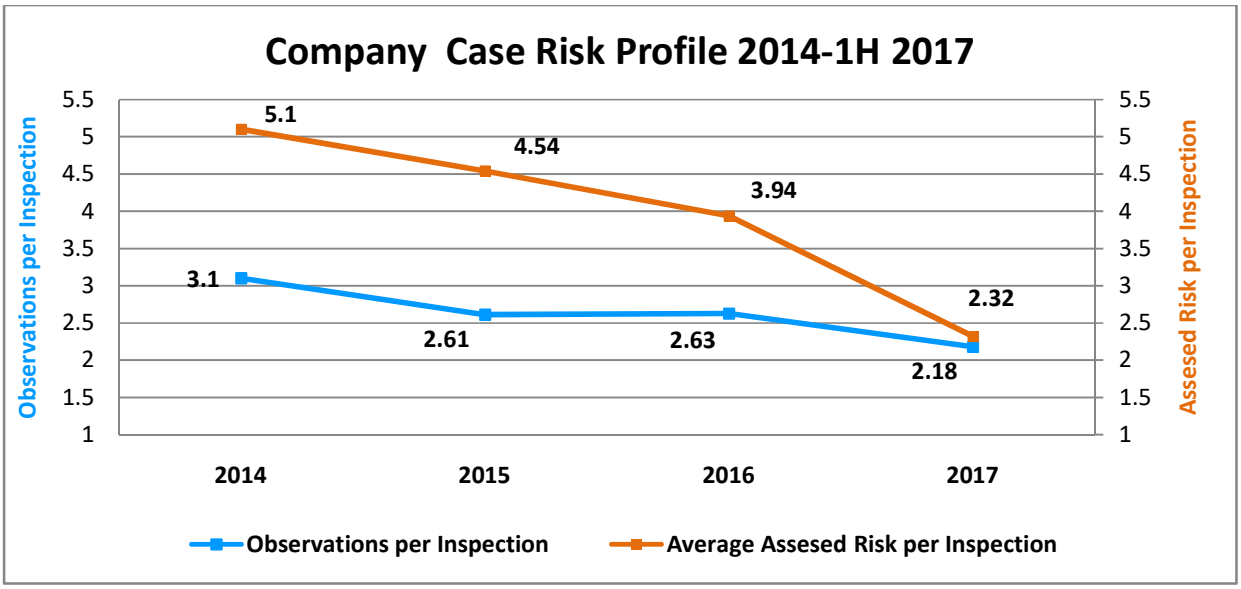


Figure 5: Company Case – Fleet Risk Profile (2014-1H 2017)

Item	Outcome	Comments
Company Case Risk Profile	Average Risk per Inspection has been significantly decreased since 2014	Except the number of observations their potential risk is assessed from the oil companies. During 1H-2017 the performance was improved at both sectors. This was confirmed by BP, Shell and Chevron during our annual visits and office TMSA audits.

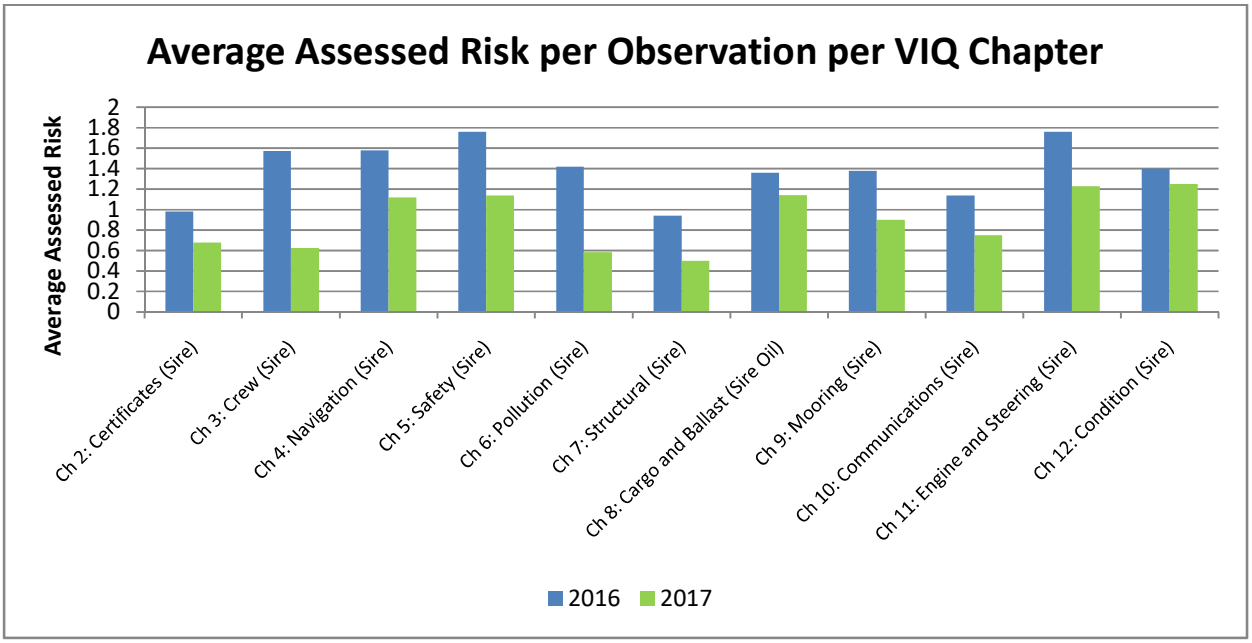


Figure 6: Company Case- Average assessed risk per observation per VIQ chapter (benchmarking 2016-2017)

Item	Outcome	Comments
Average Assessed Risk per Observation	The performance of all chapters was improved since the last year.	The maximum average assessed risk which was recorded is 1.2 at Ch.12 and Ch.5.

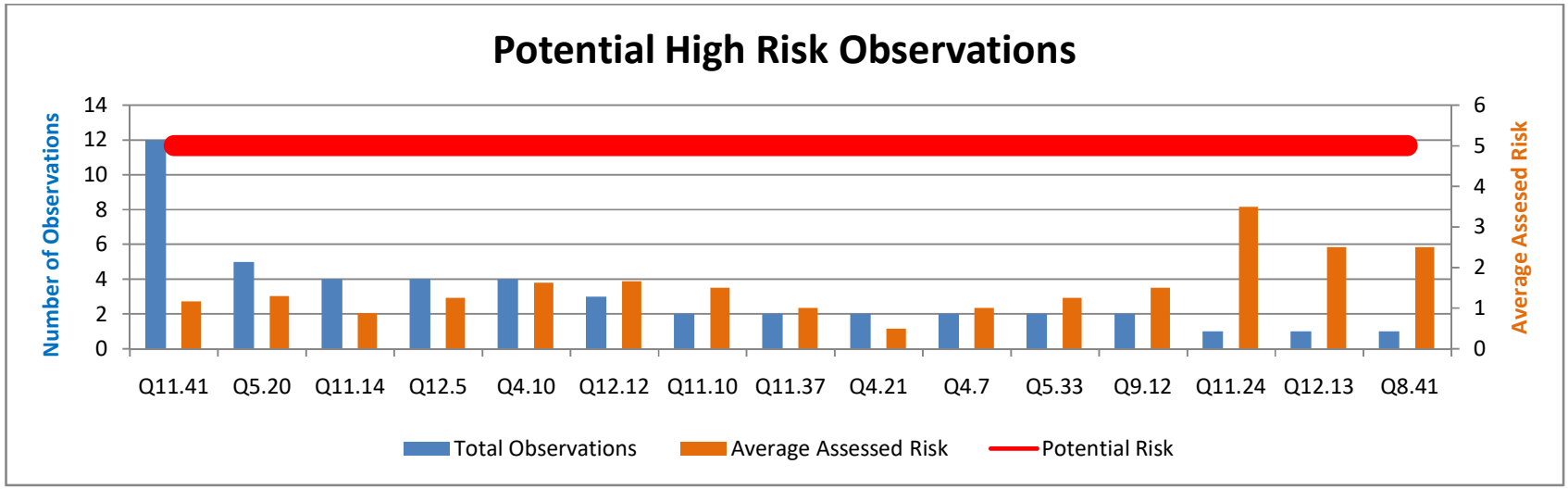


Figure 7: Company Case- Potential high risk recorded observations during 1H 2017

Item	Outcome	Comments
Potential HR observations vs Average Assessed Risk	Average Assessed (final) Risk is maintained in low levels demonstrating that the majority of the recorded observations were of low or medium risk.	All observations are assessed basis on the question risk and the risk of observation taken into account inspector comments. From the above graph it is evident that the actual risk of observations was lower than the initial. The above assessment could be considered valid as all SIRE reports have been assessed positively by oil companies.

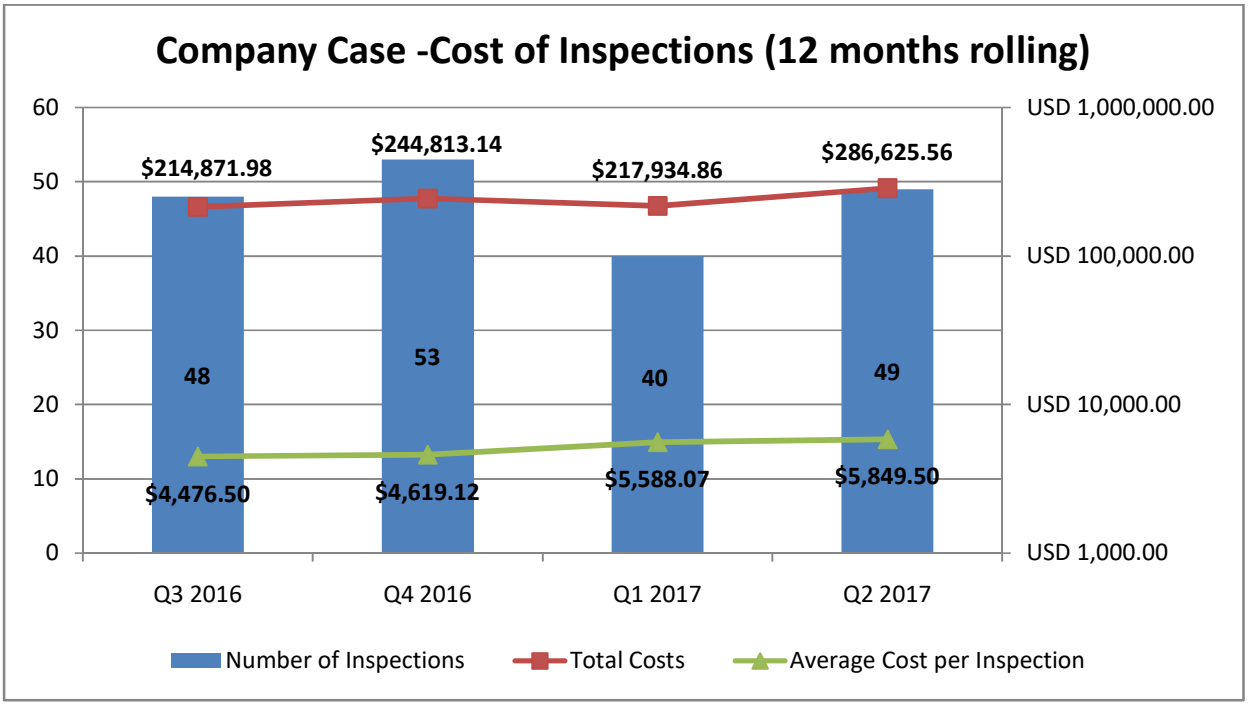


Figure 8: Company Case- Cost of inspections per quarter (Q3 2016 – Q2 2017)

Item	Outcome	Comments
Cost of Inspections	The total cost of inspections has been increased in line with the increased number of inspections.	➢ Despite the total cost is increased, the average cost of inspections is very close to the previous levels. This is evidence that the cost of inspections applied by the oil companies remains on the same levels. ➢ The cost of inspections is being monitored with the view of eliminating the additional charges and arrange the inspection at the most effective manner.

Measuring the cost of inspections is of essential interest, for which all tanker Operators care about. Certainly, Companies should ensure that the highest standards of safety are kept on board their vessels, offering to its fleet a valuable commercial status; however, bearing in mind that this should be achieved only through the most cost effective way.

After the initial general information and KPIs, we make a connection of the MRM results with the best practice guidance, as described in TMSA.

Stage	KPI	BEST PRACTICE GUIDANCE
3a	The company analyses its inspection results and compares them with data from third party inspections (such as the SIRE) and makes comparisons between vessels within the fleet, particularly with any vessels built to a similar design and specification.	The company ***regularly*** compares its own inspection results with the results of inspections conducted by ***third parties***. Where there are ***consistent anomalies***, the company reviews and improves its vessels inspection process. The company also compares inspection results ***within its own fleet*** and ***between its vessel inspectors***. The company uses these comparisons to monitor / improve fleet inspection standards.

Key point analysis

Regularly: such comparisons need to be applied on a large amount of data, thus a semester analysis is more appropriate and within best practice guidance time range, rather than a quarterly one.

Benchmarking with inspections by 3rd parties: it is always a beneficial benchmarking tool to check where your fleet vessel performance stands against other Industry parties.

Consistent anomalies: in case of noted and repeated discrepancies, the management re-considers company's procedures and amends them accordingly. That is a part of the continual improvement cycle. Consistent anomalies could be considered all those observations noted repeatedly by SIRE inspectors and not by internal auditors. It leads to the conclusion that internal auditors are not well trained to identify them or that the structure of their internal audit checklist is not correct and accurate.

Within its own fleet: Benchmarking of performance of sister vessels and in between type of vessels. Common trends to be identified and corrected, as applicable.

Between its vessel inspectors: an internal benchmarking in between shore-based personnel, who carry out internal audits should be made. Results to be used for further training of the auditors.

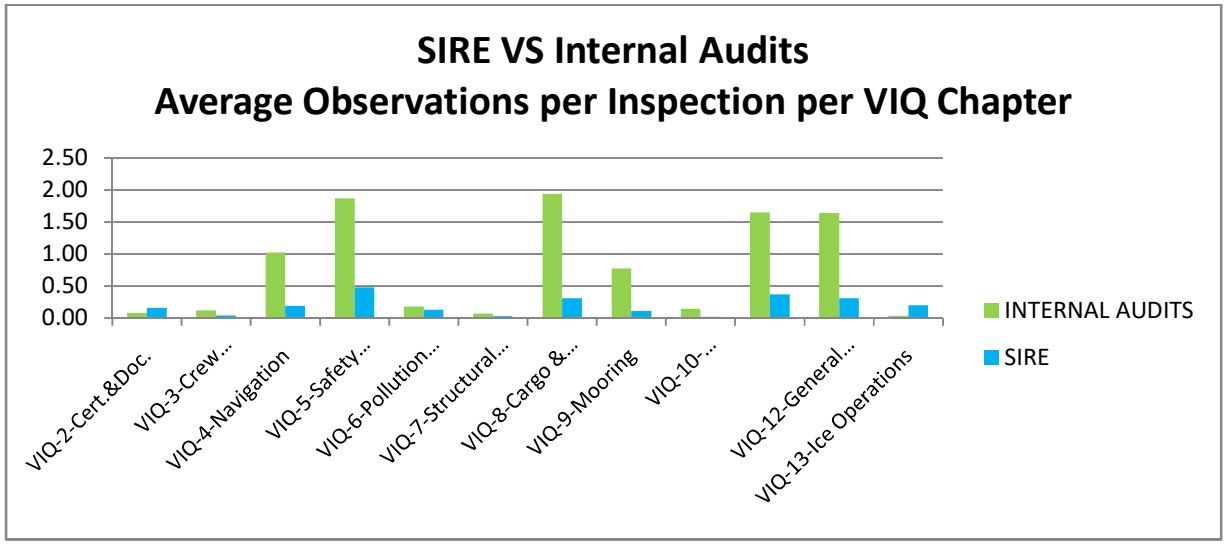


Figure 9: VIQ Chapters benchmarking - SIRE inspections VS Internal Audits 1H 2017

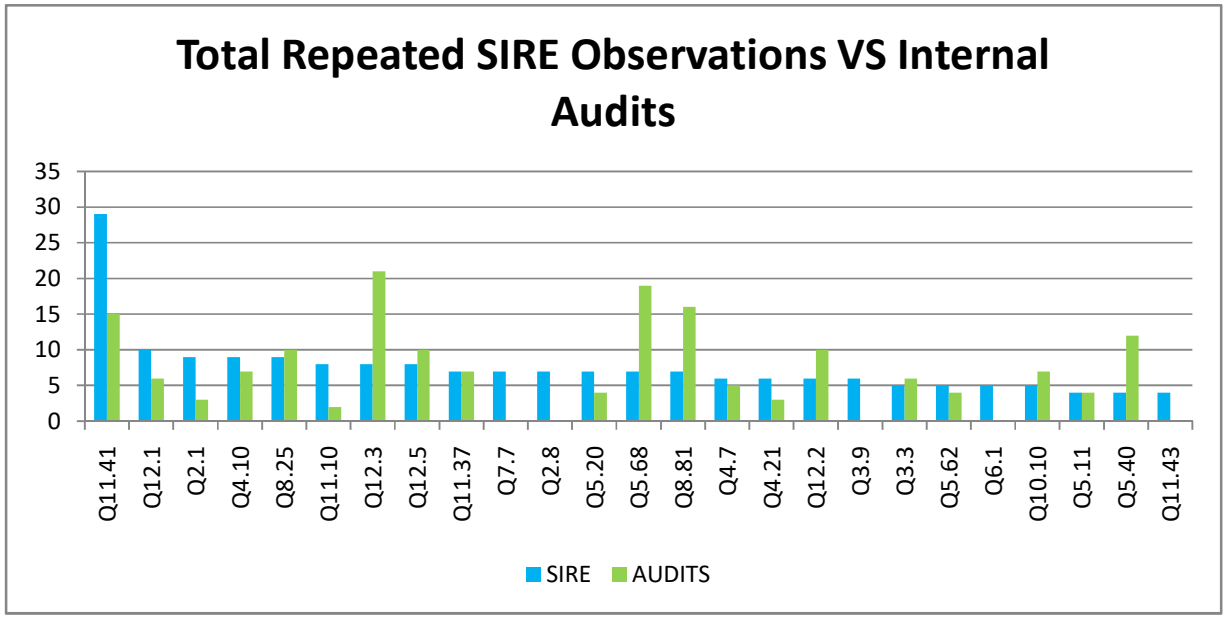


Figure 10: Top repeated SIRE observations VS M/S Internal Audits 1H 2017

Item	Outcome	Comments
Benchmarking with internal auditor's inspections	Internal auditors should enhance their inspections at the following VIQ chapters: • Certification • Navigation • Engine & Steering • General Appearance	During the comparison of TOP repeated observations with internal inspections it is evident that following observations are recorded more times during the external inspections: • 2.1 Certification • 4.10 Navigation Equipment • 11.41 Machinery equipment • 12.1 General appearance

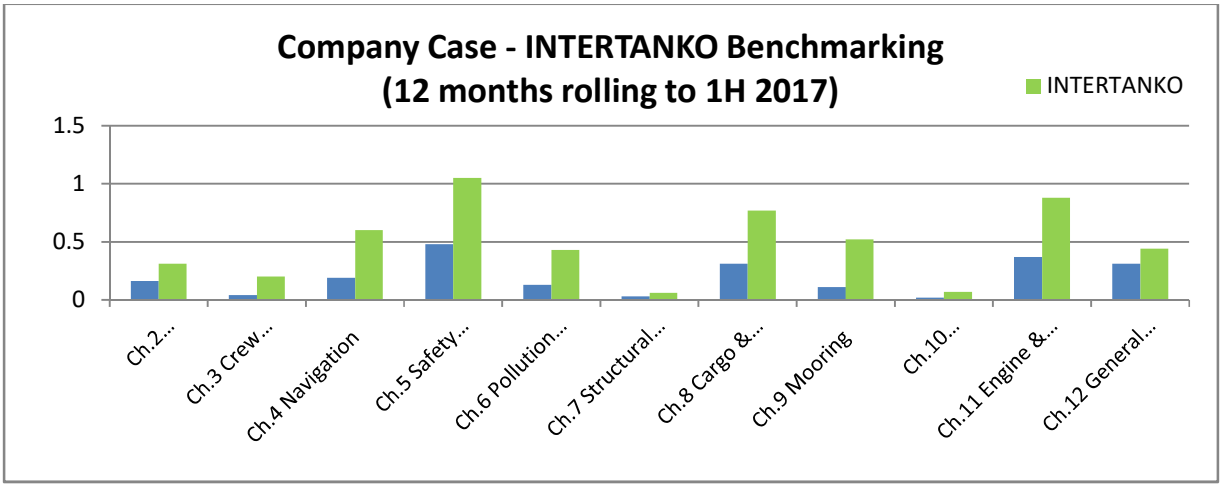


Figure 11: Company Case - Benchmarking with INTERTANKO

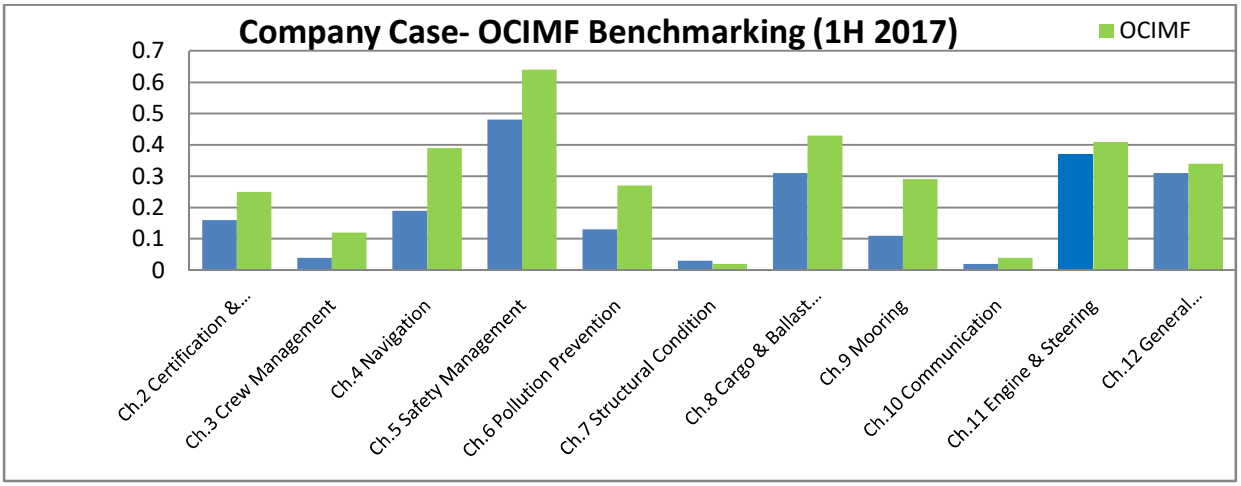


Figure 12: Company Case- Benchmarking with OCIMF (1H 2017)

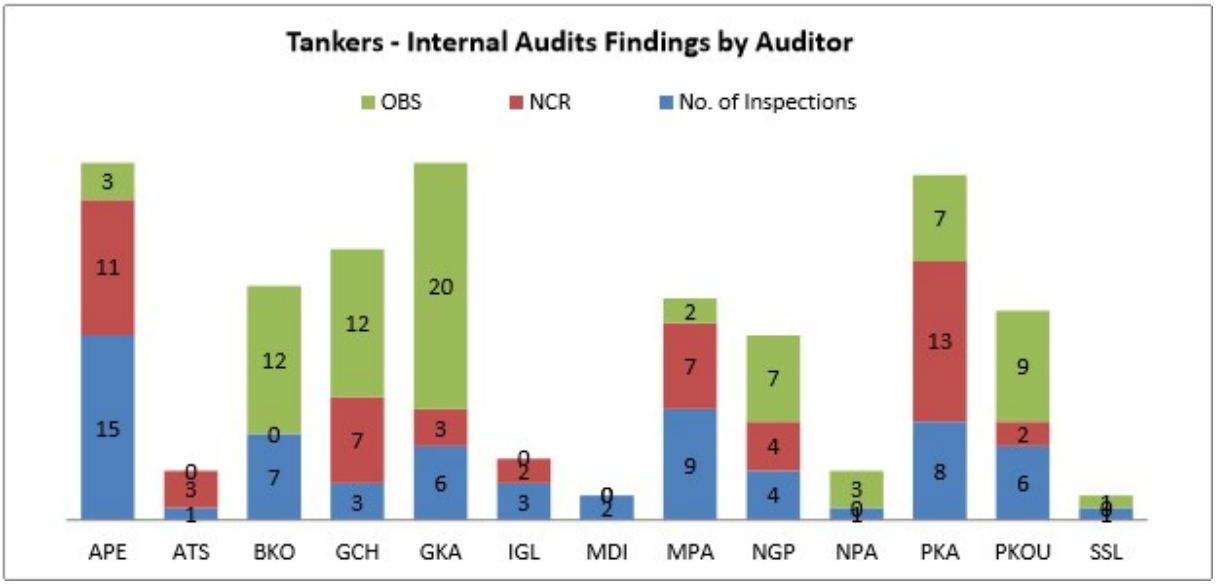


Figure 13: Company Case - Internal Auditors Benchmarking in between (1H 2017)

Company Case has 63 tanker vessels of several size and type, which are divided in separate Fleets (Fleet 1, Fleet 2 and Fleet 3) according to the trading area they serve to. As per TMSA Element 12-Stage 3a, tanker operators should benchmark Fleet wise its performance and try to identify weak areas and causes of weakness for each of them.

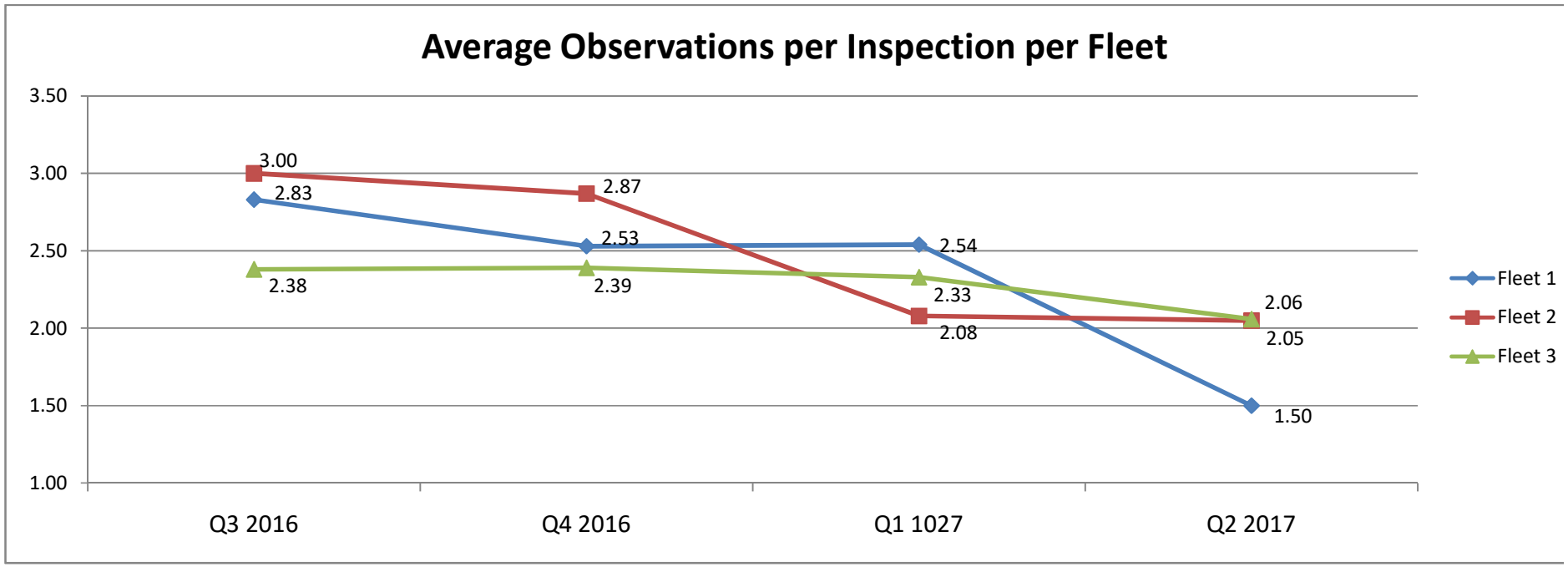
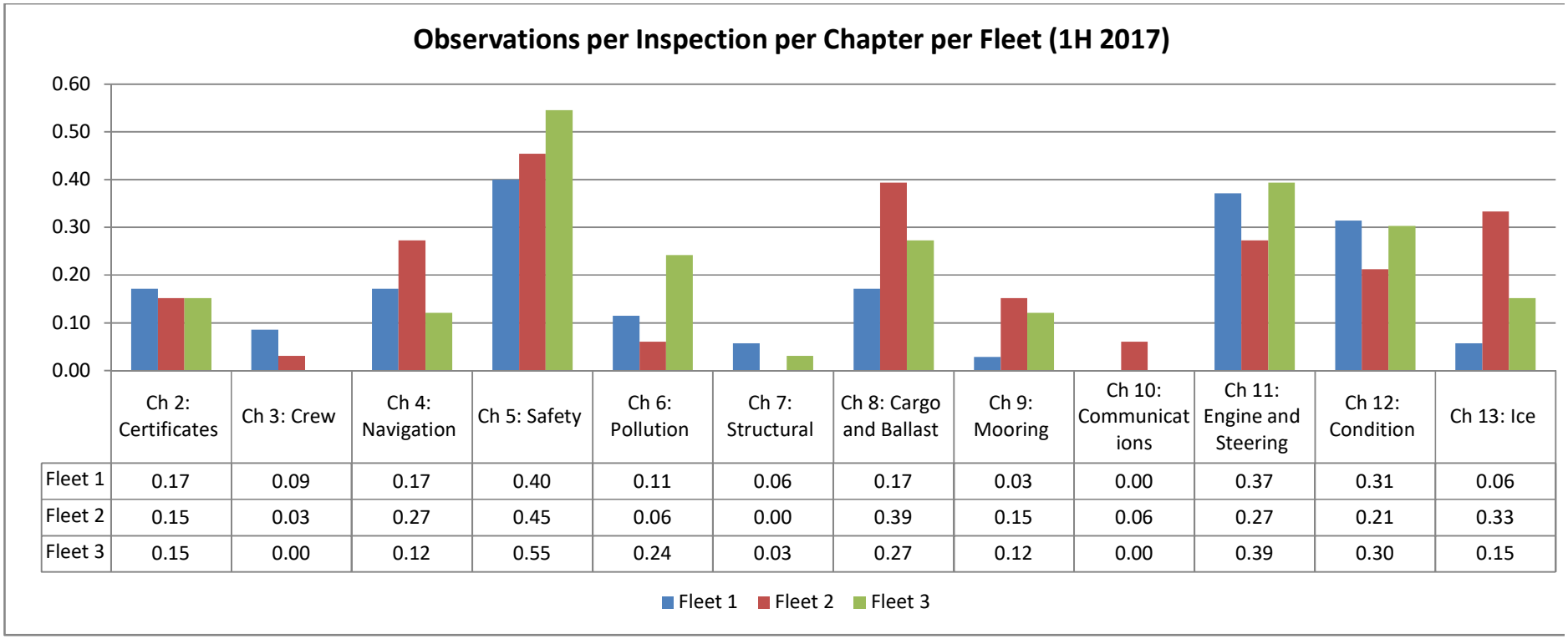


Figure 14: Company Case- Average Observations per Inspection per Fleet (12 months rolling up to 1H 2017)

Item	Outcome	Comments
Obs/Insp. per Fleet	All three Fleets have presented an improvement in ratio observations per inspection.	➢ The performance of Fleet 1 has been significantly improved since the last quarter. ➢ Fleet 2 presents a steady performance with 2.06 observations per inspection ➢ Fleet 3 Performance has been also improved significantly since last quarter.



	Ch 2: Certificates	Ch 3: Crew	Ch 4: Navigation	Ch 5: Safety	Ch 6: Pollution	Ch 7: Structural	Ch 8: Cargo and Ballast	Ch 9: Mooring	Ch 10: Communications	Ch 11: Engine and Steering	Ch 12: Condition	Ch 13: Ice
Fleet 1	0.17	0.09	0.17	0.40	0.11	0.06	0.17	0.03	0.00	0.37	0.31	0.06
Fleet 2	0.15	0.03	0.27	0.45	0.06	0.00	0.39	0.15	0.06	0.27	0.21	0.33
Fleet 3	0.15	0.00	0.12	0.55	0.24	0.03	0.27	0.12	0.00	0.39	0.30	0.15

Figure 15: Company Case- Per Fleet Analysis - Average Observations per Inspection per Chapter (1H 2017)

Item	Outcome	Comments
Obs/Insp. per Fleet	Chapter 5 should be further improved for all three fleets	• Safety Management (Chapter 5) and Engine (Chapter 11) are the chapters where **Fleet 1** should focus to improve. • Safety Management (Chapter 5) and Cargo& Ballast Operations (Chapter 8) are the chapters where **Fleet 2** should focus to improve. As mentioned above, VIQ 8.25 was repeatedly reported for Fleet 2. • **Fleet 3** had the worst performance in Safety Management (Chapter 5);

		whereas in Crew Management (Chapter 3) was no observation recorded during 1H 2017

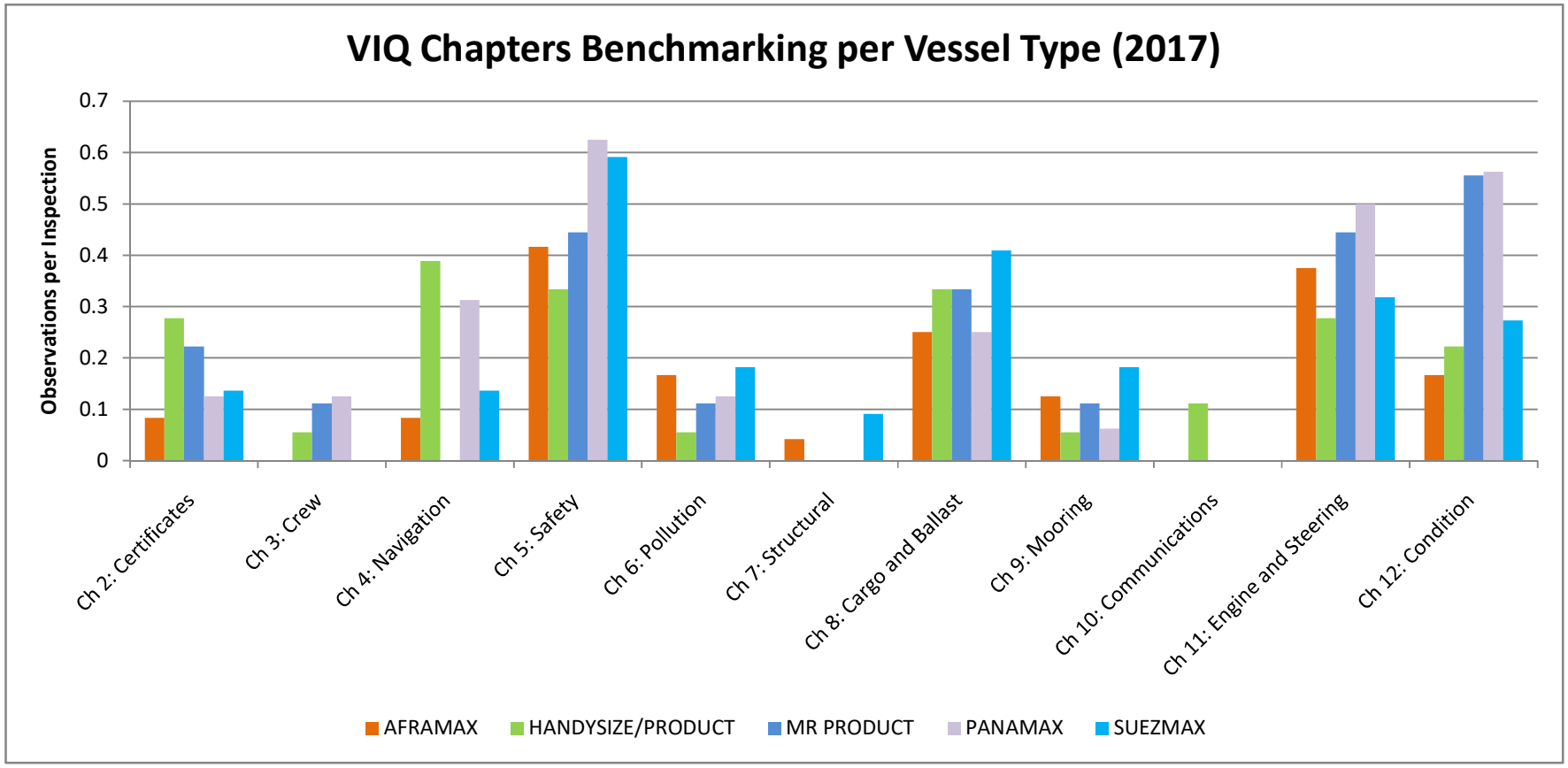


Figure 16: Company Case- VIQ Chapters Benchmarking per Vessel Type (2017)

Item	Outcome	Comments
Obs/Insp per vessel type	A negative trend per vessel type is summarized as following: Aframax: Ch.5, Ch.8 and Ch.11 Handysize: Ch.2 and Ch.4 MR Product: Ch.11 and Ch.12 Panamax: Ch.4, Ch.11 and Ch.12 Suezmax: Ch.5, Ch.8 and Ch.9	**Aframax** Ch.8: The majority of observations refer to Cargo and Ballast Handling and Monitoring Equipment (condition of heating system, remote temperature and pressure sensors and cargo & ballast system valves). No repeated observations were identified in Ch.10. **Handysize** Most of the observations were under VIQ 4.10-1.41 and 12.3, which have been analyzed above and identified as repeated observations. No repeated observations were identified in Ch.9. **MR Product** Ch.12: Four observations have been recorded regarding general Appearance & condition of weather deck. **Panamax** Observations were recorded mainly under Chapters 4, 11 and 12 **Suezmax** A negative trend under Ch.5 and Ch.8 was identified.

For the following figures, color coding indicates the sister vessels within each vessel size fleet, i.e. Vessel 3 and Vessel 9 with blue color are identically sister vessels. This assists to identify the improvement opportunities within, based on their performance on SIRE inspections.

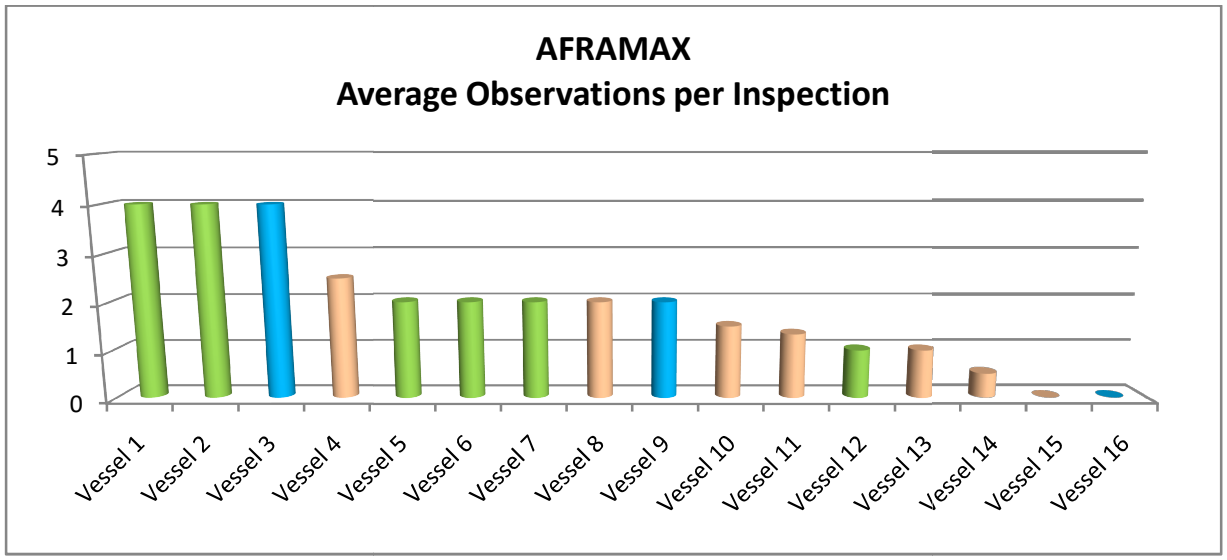


Figure 17: Company Case-Aframax - Observations per Inspection 1H 2017

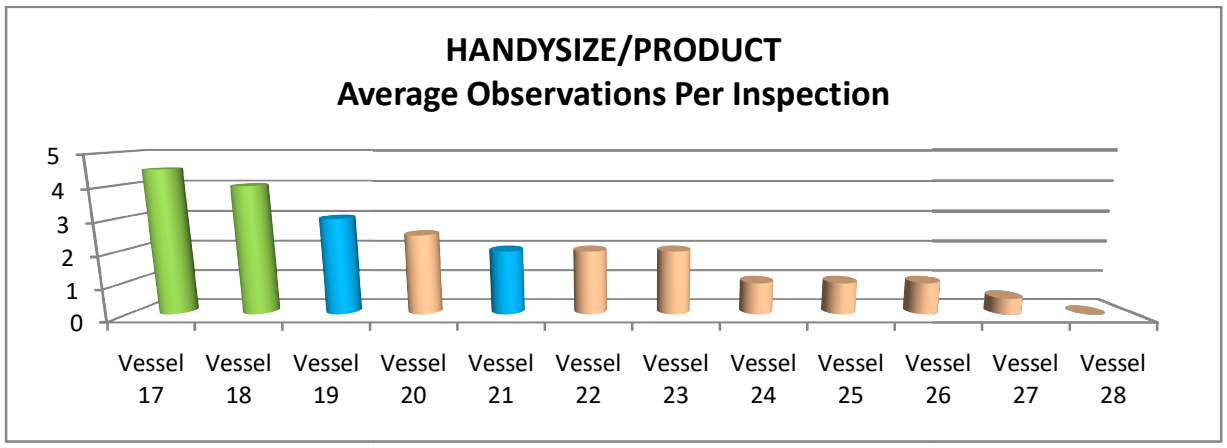


Figure 18: Company Case- Handysize/Product - Observations per Inspection 1H 2017

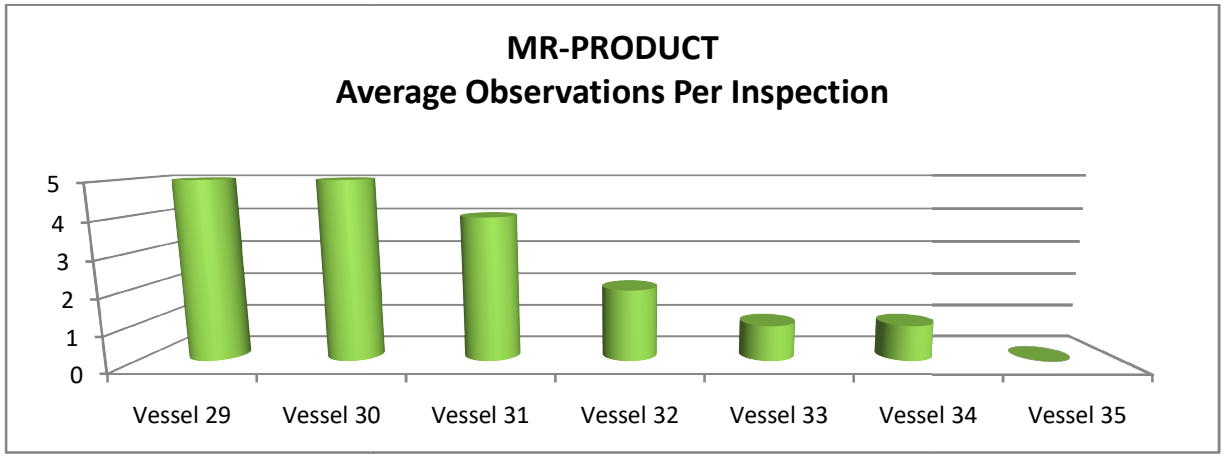


Figure 19: Company Case -MR-Product - Observations per Inspection 1H 2017

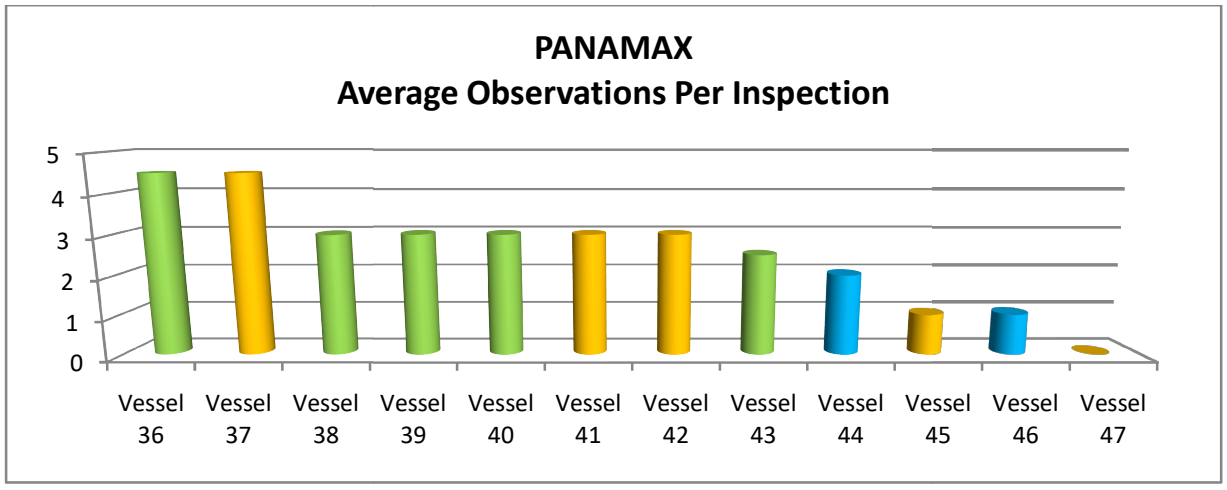


Figure 20: Company Case - Panamax - Observations per Inspection 1H 2017

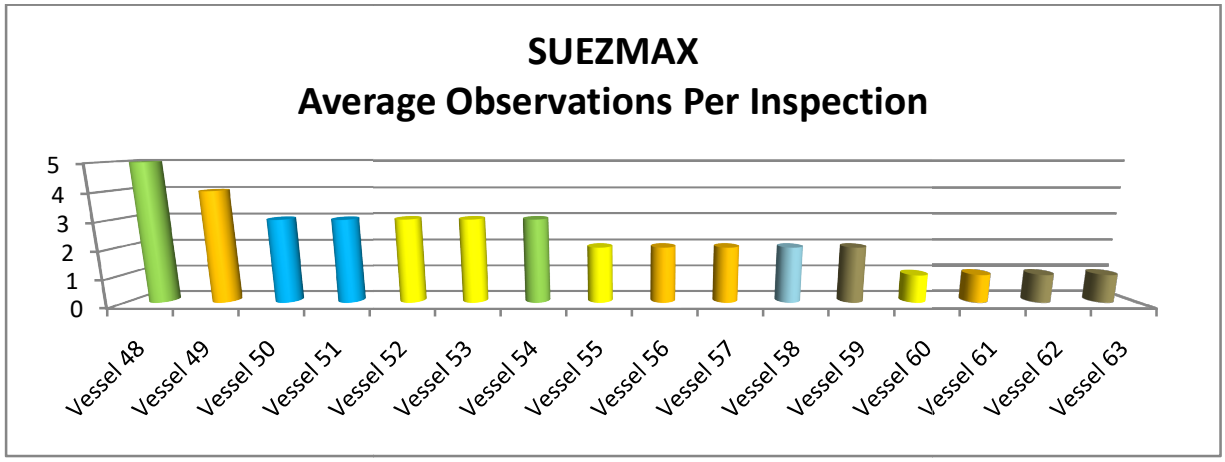


Figure 21: Company Case- Suezmax - Observations per Inspection 1H 2017

STAGE	KPI	BEST PRACTICE GUIDANCE
3b	**The company has a system that clearly demonstrates the status of the recorded deficiencies through to close out.**	The results of inspections are recorded and deficiencies tracked to ensure ***timely close out***. Regular checks are made on the status of open items (deficiencies or defects not corrected to the satisfaction of company management). A summary of the status is ***provided to senior management*** on a quarterly basis.

Key point analysis

Timely close out: as an indication of excellence, tanker Operator should ensure that no observation remains outstanding. It is obvious that there are cases when a finding from SIRE inspector cannot be corrected during the inspection or even until the vetting department responds on OCIMF. Therefore, tanker operators are obliged to keep a note on this and act appropriately in order to close it out efficiently. As mentioned in previous chapter, SIRE inspection report should also be updated with the new status of the corrective actions.

Provided to Senior Management: depending on the nature of the open observation and its corrective actions, the responsible office personnel should make actions. Once the report of the open items is ready or amended, the senior management should be advised accordingly. In case of an overdue item, a Risk Assessment and/ or a Management of Change should be prepared to ensure that the safety standards remain high.

Vessel	Inspecting Company	Inspection Date	Question Reference	Observation	Initial Response	Target Closeout
Responsibility: Crewing Manager						
Vessel 1	Oil Company A	31/03/2017	VIQ6 (All) Q4.21	Inspector Observations: The Ch mate had no evidence of IMO model 1.27 training. He did have a certificate of refresher training for IMO ECDIS available.Other Inspector Comments: All staff had evidence of type specific training All staff except as noted had evidence of shore based IMO model 1.27 training	A copy of the certificate has been sent already on board by email and the original will be delivered by mail at the first convenient port.	31/08/2017
Vessel 2	Oil Company B	15/04/2017	VIQ6 (All) Q4.21	Inspector Observations: The Filipino 2nd officer (4th on the matrix) had completed his IMO Model Course 1.27 generic ECDIS training in 2008, so it was not based on the 2010 syllabus. His refresher training in 2012 was two days only so could not be considered as a complete IMO Course.Other Inspector Comments: Deck officers had completed IMO Model Course 1.27 generic ECDIS training as follows:	In accordance with the Company's plan the second officer will attend a refresher ECDIS course in accordance with the current requirements prior to his next employment.	31/12/2017
Vessel 3	Oil Company C	25/06/2017	VIQ6 (All) Q4.21	Inspector Observations: The second officer on board had not completed the type specific ECDIS course on JRC equipment.Other Inspector Comments: All other officers were in possession of valid generic (40 hrs) ECDIS course certificates. Type specific shore based training (16 hrs) was also provided to all officers.	In accordance with the Officers training plan the off signer second officer will also attend an ECDIS JRC type specific shore training prior to his next employment.	31/12/2017

Picture 5: Distribution of open items as per Person In Charge and Target Date of close out

STAGE	KPI	BEST PRACTICE GUIDANCE
4a	**Information from the analysis of these inspections is fed into a continuous- improvement process.**	Senior managers review the results from analysis to ***identify potential weakness*** in the company management system. Improvement to the management system is ***fed into the company's continuous-improvement process***.

Key point analysis

Identify potential weakness: a "safe" and objective tool to point out the areas that need improvement in operator's safety management system is the measurement of the recorded observations. using KPIs such as the number that a VIQ question is marked as "No" (thus as an observation) and the analysis of the risk of each of the VIQ questions leads to the desired conclusion.

Fed Into the Company's continuous-improvement process: the are several ways to improve the Safety management system, but what is the most important at this point is to have the amendments to get welcomed by the seafarers and the shore-based personnel. Smart and attractive ways to introduce the new guidelines is the key for such demanding necessities.

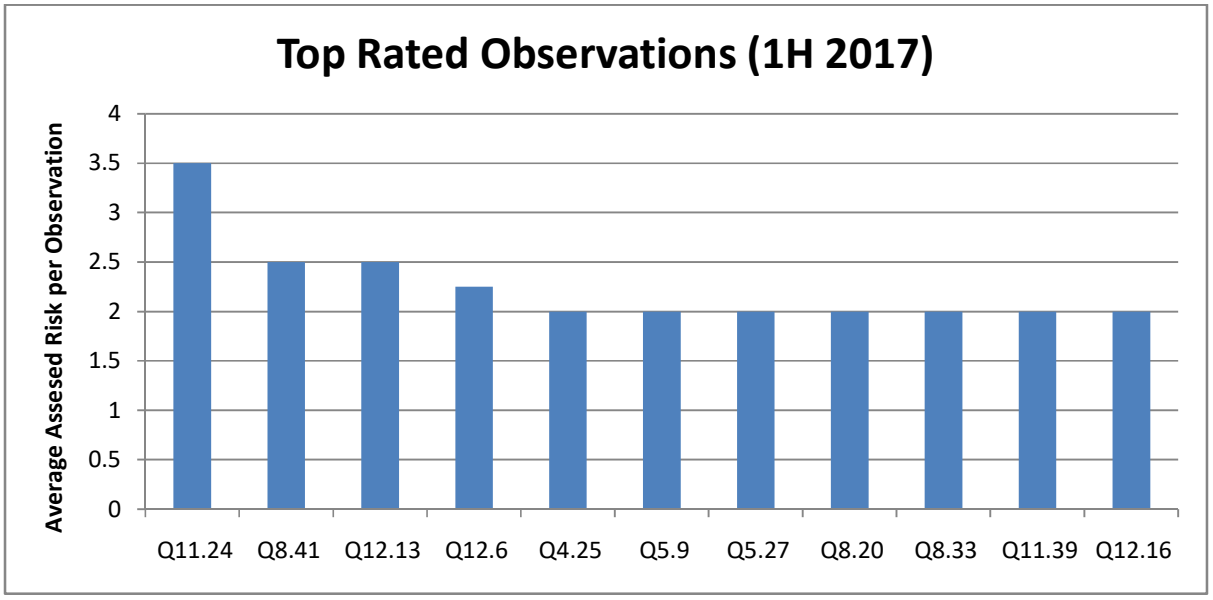


Figure 22: Company Case - Top Rated Observations (1H 2017)

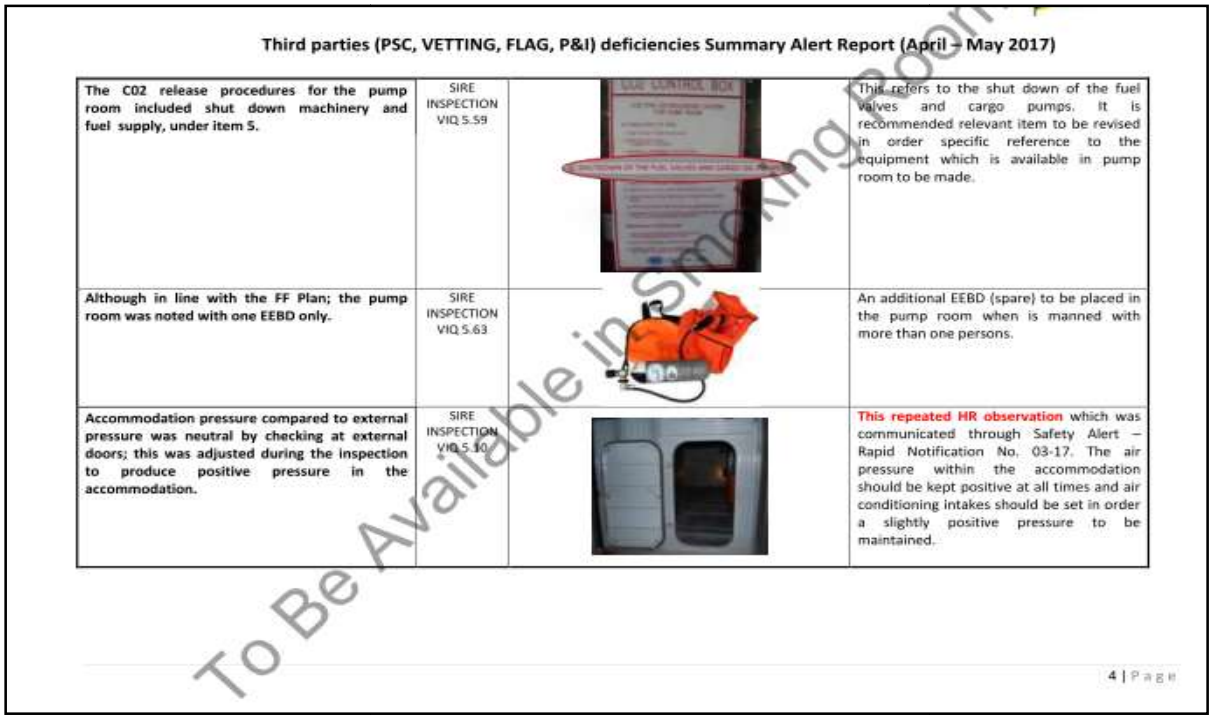
After having identified the observations that are mostly recorded during SIRE inspections, a document is prepared with detailed reference to each one of them along with operator's comments. This document aims to be guidance to the seafarers with the best practice guidelines and relevant extracts from Company Case SMS. It is forwarded to the fleet vessels as an entity and also discussed and distributed during Officers briefing / familiarization process. Additionally, in order to be on the safe side, Company Case sends it to the vessel, with the rest preparation documentation, prior any 3rd party or SIRE inspection, asking form the Master to revert with his comments and confirmation that none of them is applicable onboard his vessel.

Except of the TOP Rated and TOP Repeated Observations, SIRE/ PSC Alert report is forwarded to the fleet vessels on a monthly basis. The idea behind of this document remains the same; to keep all the vessels informed of possible High Risk Observations and to ask by return vessel's confirmation that everything is in order. This is a pro-active approach, as many observations can be corrected before an inspection to be conducted.

TOP RATED OBSERVATIONS Q1 2017

VIQ	Depiction of finding (s)	Photo	Company's Comments
11.24	The insulation lagging of steam inlet line for fuel oil heater in purifier room was broken, approximately 30 cm in length and the line was exposed.		The following actions/checks must be performed at all machinery, piping, valves protected with laggings and insulations: ☑ Inspect and confirm that all insulation and laggings are properly installed, free of damage and oil stains. ☑ Based on the above inspection/condition of insulation & laggings proceed with the considered necessary requisition. ☑ Ensure that after removal of laggings & insulation during service or maintenance the insulation shall be properly reinstalled. Safety Alert 16-16
11.41	Boiler feed water by pass valve observed to be leaking from the gland packing.	 Before  after	☑ All machinery spaces(including steering compartments, store rooms, workshops, purifier and hydraulic rooms, etc) must be clean, well painted and free of leaks and spills. ☑ Chief Engineers must closely supervise that leakages from machinery equipment are controlled as per manufacter and SOLAS requirements. ☑ Effective inspections should be carried out by the responsible crew.
8.41	There were soft patch repairs on the washing drain lines of both IG fans (one was painted over).		☑ Any defect on the piping of cargo, ballast, inert gas and other systems must be properly reported to the company. ☑ If temporary repairs are necessary, they must be supported by necessary documentation in accordance with Company's procedures, Class and legal requirements.

Picture 6: Company Case- TOP Rated observations- Distribution report



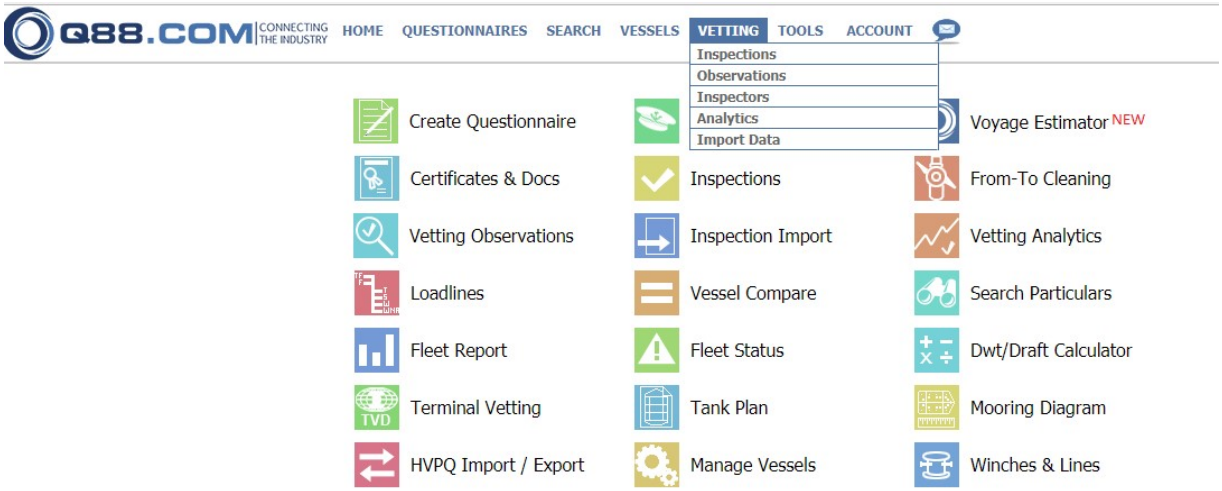
Third parties (PSC, VETTING, FLAG, P&I) deficiencies Summary Alert Report (April – May 2017)

The C02 release procedures for the pump room included shut down machinery and fuel supply, under item 5.	SIRE INSPECTION VIQ 5.59		This refers to the shut down of the fuel valves and cargo pumps. It is recommended relevant item to be revised in order specific reference to the equipment which is available in pump room to be made.
Although in line with the FF Plan; the pump room was noted with one EEBD only.	SIRE INSPECTION VIQ 5.63		An additional EEBD (spare) to be placed in the pump room when is manned with more than one persons.
Accommodation pressure compared to external pressure was neutral by checking at external doors; this was adjusted during the inspection to produce positive pressure in the accommodation.	SIRE INSPECTION VIQ 5.10		**This repeated HR observation** which was communicated through Safety Alert – Rapid Notification No. 03-17. The air pressure within the accommodation should be kept positive at all times and air conditioning intakes should be set in order a slightly positive pressure to be maintained.

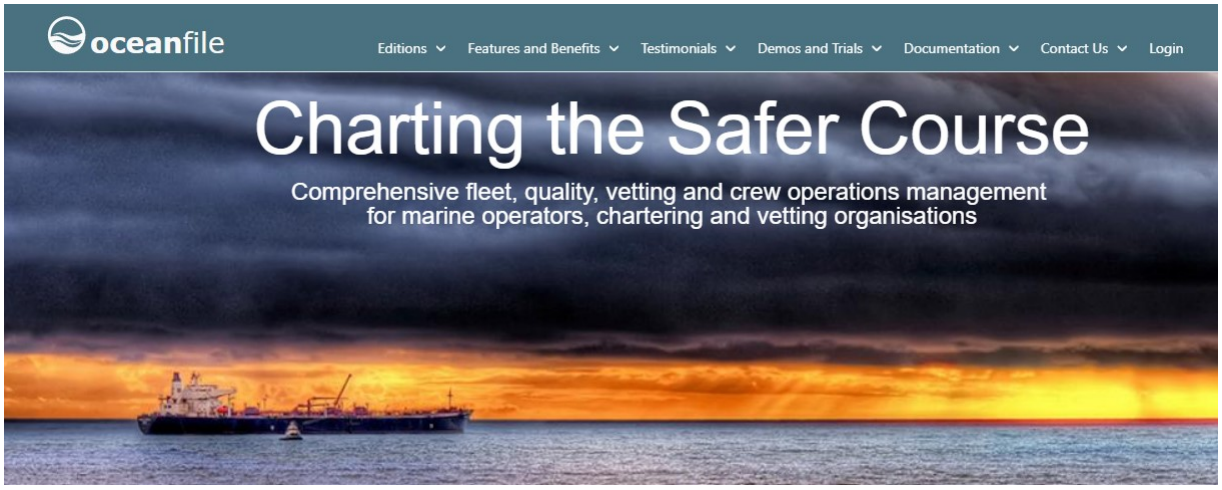
4 | Page

Picture 7: Company Case- Sample of Safety Alert report

STAGE	KPI	BEST PRACTICE GUIDANCE
4b	The results of vessel inspections are analyzed to identify trends and common problems.	The results are collated and presented in a manner that facilitates analysis and may be captured in a ***computer database***.
Key point analysis ***Computer database***: Shipping Industry has been enhanced with many computerized platforms, which provide the user with automated statistic analysis tools, an endless storage of data and information. This enables both operators and oil companies to keep proper recording and to measure easily and accurately the results of internal and external inspections.		



Picture 8: Q88 website screenshot



Picture 9: Oceanfile website screenshot

The Company Case uses two different web services (Q88 and Oceanfile) aligned with their database. Q88 has an extra function, which enables the users to check the compliance of their vessels with the Oil Companies requirements, mainly regarding the Officers Matrix. Both products assist the vetting department to produce their statistical analysis reports. The combination of two provides the Company Case with an extra way to double-check and back-up its inspections records. They may cost more than an in-house database; however their products are time-saving for her employees and trustworthy. The only requirement from the operator is to feed their data of internal audits, SIRE inspections and PSC reports into the platforms. Then, by using available tools, analysis can be exported in editable formats and to be imported in Company's reports.

CONCLUSIONS

The vetting criteria varies amongst the oil companies and differ according to the Terminals involved in the business, but typically, in order to be considered acceptable to an oil major, a tanker should satisfy the following criteria:

1. there must be an up-to-date (no more than six months old) SIRE report evidencing minimal defects of the tanker in question and it's on-board systems and maintenance; excessive number of recorded observations or even a single high risk observation may lead to the vessel's rejection
2. the ship and the rest of the operated fleet vessels must have a good safety overall performance record; TMSA verification audits are carried out in order to ensure compliance
3. the 'Officers matrix' and shore-based management systems must be adequate; [3] and
4. the Operator must comply with the Oil Company's specific requirements.

Still, vetting is an important and invaluable addition to the safety net to ensure that the industry uses good quality ships. It does not take away any liability from other parties, such as the Flag or Classification Society inspections. Rather, it places a higher standard also on those parties, which contributes to an overall higher standard in the industry than has been accomplished through legislation. The fact that vetting affects the definition of seaworthiness for tankers, that the contractual regulation of it is difficult to balance, and that there is an increased duty of care placed upon charterers/cargo owners is not negative.

It has accomplished incident and pollution prevention in a manner almost more effective than legislation by ensuring that sub-standard ships do not enter under the industry umbrella. On the contrary, it is a manner of vessel selection that should be encouraged and continuous efforts of harmonization should be made. The benefits of a well functioning vetting policy or vessel selection system are by far greater than the possible liabilities it may bring with it.

BIBLIOGRAPHY

[1] Intertanko, Guide to the Vetting Process, 11th Edition, published in 2015

[2] Tim Knowles, Tanker Vetting-Understanding the issues involved, published in 2010

[3] Helen Mc Comick, Oil Major Vetting & Approvals, Standard Bulletin, published in December 2011

[4] OCIMF website www.ocimf.org, retrieved on 02 Sep 2017

[5] OCIMF, TMSA 3, published in 2017

[6] Cpt. Horward N. Snaith, Inspection & Vetting Screening, April 2011

APPENDIX I: Glossary & Abbreviations

Reference	Definition
Benchmarking	The Process of comparing organizational performance and practices with other organizations, preferably leaders in the same industry, for the purpose of identifying, understanding and adapting best practices to help an organization improve its performance.
Best Practice	OCIMF views this method of working or procedure as one to aspire to within a process of continuous improvement.
EBIS	The European Barge Inspection Scheme
Evaluation & Measurement	The process of checking a system to see whether it is functioning as designed and is achieving its stated aims and objectives. Evaluation determines the process and procedures are functioning and are being executed effectively. Measurement determines the quality of the processes and the degree to which the aims and objectives are being achieved.
KPI	Key Performance Indicator
Management Review	Management Reviews are held to evaluate the overall effectiveness of an organization's performance and safety management system (SMS) and to identify improvement opportunities. These reviews are carried out by the organization's senior managers and are conducted on a regular basis.
OCIMF	Oil Companies International Marine Forum
PSC	Port State Control
SIRE	Ship Inspection Report Programme
SMS	Safety Management System
TMSA	Tanker Management Self Assessment

APPENDIX II: VIQ Questions as found in this thesis

VIQ	Question
Q2.1	Are all the statutory certificates listed below, where applicable, valid and have the annual and intermediate surveys been carried out within the required range dates?
Q2.8	Is the vessel free of conditions of class or significant recommendations, memoranda or notations?
Q3.3	Do all personnel maintain hours of rest records and are the hours of rest in compliance with MLC or STCW requirements?
Q3.9	Does the officers' matrix posted for the vessel on the SIRE website accurately reflect the information relating to the officers on board at the time of the inspection?
Q4.10	Is navigation equipment appropriate for the size of the vessel and in good order?
Q4.10	Is navigation equipment appropriate for the size of the vessel and in good order?
Q4.21	If the vessel is equipped with an Electronic Chart Display and Information System (ECDIS) as an approved means of navigation, are the Master and deck watchkeeping officers able to produce appropriate documentation that and type-specific ECDIS familiarization has been carried out?
Q4.25	Was a comprehensive passage plan available for the previous voyage and did it cover the full voyage from berth to berth?
Q4.7	Are checklists for pre-arrival, pre-departure, watch handover, pilot-master exchange and pilot card effectively completed?
Q5.11	Is all loose gear on deck, in stores and in internal spaces properly secured?
Q5.20	Has the vessel adequate enclosed space entry procedures?
Q5.27	Are portable gas and oxygen analyser appropriate to the cargoes being carried and are they in good order and is there a record of regular testing and calibration?
Q5.30	On vessels fitted with an inert gas system, are instruments capable of measuring hydrocarbon content in an oxygen deficient atmosphere available and in good order?
Q5.33	Is electric welding equipment in good order and are written safety guidelines available on site?
Q5.40	Are lifeboats, including their equipment and launching mechanisms, in good order?
Q5.59	Are the main deck, pump room, engine room and other fixed fire extinguishing systems, where fitted, in good order and are clear operating instructions posted?
Q5.62	Are firemen's outfits and breathing apparatus in good order, fitted with fully pressurised air cylinders and ready for immediate use?
Q5.63	Are emergency escape breathing devices (EEBD's) in the accommodation, pump room and engine room in good order and ready for immediate use?
Q5.68	Are accommodation ladders, gangways, pilot ladders where fitted, in good order?
Q5.9	Are external doors, ports and windows kept closed in port?
Q6.1	Are the Engine Room (Part I) and Cargo (Part II) Oil Record Books (ORBs) correctly completed?
Q7.7	Are procedures in place to carry out regular inspections of cargo and ballast tanks, void spaces, trunks and cofferdams by the vessel's personnel and are records maintained?

Q8.20	Are the cargo, ballast and stripping pumps, eductors and their associated instrumentation and controls including temperature monitoring, in good order and is there recorded evidence of regular testing?
Q8.25	Are the remote and local temperature and pressure sensors and gauges in good order and is there recorded evidence of regular testing?
Q8.33	Are SOLAS secondary venting requirements being complied with?
Q8.41	Is the inert gas system including instrumentation, alarms, trips and pressure and oxygen recorders, in good order?
Q8.81	Are all cargo cranes and other lifting equipment properly marked and has periodical testing and inspection been carried out?
Q9.12	Are mooring winches, including winch foundations in good order?
Q10.10	Is the communications equipment in good order?
Q11.10	Does the operator subscribe to a fuel, lubricating and hydraulic oil testing programme, and is there a procedure in place to take into account the results?
Q11.14	Is a planned maintenance system being followed and is it up to date?
Q11.24	Are hot surfaces, particularly diesel engines, free of any evidence of fuel, diesel and lubricating oil?
Q11.37	Are machinery spaces and steering compartments clean and free from obvious leaks and is the overall standard of housekeeping and fabric maintenance satisfactory?
Q11.39	Is the bilge high level alarm system regularly tested and are records maintained?
Q11.41	Are the following, where applicable, all in good order and do they appear to be well maintained? - Aux. Engines - Boilers - Purifiers - Piping Condition
Q11.43	Are concise starting instructions for the emergency generator clearly displayed?
Q12.1	Is the general condition, visual appearance and cleanliness of the hull satisfactory?
Q12.12	Is the general condition of electrical equipment, including conduits and wiring, satisfactory?
Q12.13	Are light fittings in gas-hazardous areas Ex 'd' rated and in good order?
Q12.16	Are alleyways free of obstructions and exits clearly marked?
Q12.2	Are hull markings clearly indicated and correctly placed?
Q12.3	Is the general condition, visual appearance and cleanliness of the weather decks satisfactory?
Q12.5	Is the general condition of service pipework satisfactory and is it free from significant corrosion and pitting and soft patches or other temporary repairs?
Q12.6	Are pipe stands, clamps, supports and expansion arrangements satisfactory?