LOSS PREVENTION Briefing

NORTH
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LOSS PREVENTION BRIEFING FOR NORTH MEMBERS GENERAL / MAY 2017

Tanker Management Self Assessment

Contents

Introduction

The introduction of the International Safety Management (ISM) Code in July 1998 required companies to develop and implement a safety management system (SMS) for vessels within their fleet. This was intended to standardise and document management processes that would assist with the reduction in the number of accidents on board and help to protect the marine environment.

However, within the tanker sector, inconsistencies in the application of the Code from one company to another soon became apparent to vessel inspectors and oil company ship vetting departments. To help address this imbalance the Oil Companies International Marine Forum

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(OCIMF) introduced Tanker Management Self Assessment (TMSA).

Purpose

To be effective, a management system needs to be much more than just procedures. The company leadership/management should define the company's values and aspirations and detail how the company intends to achieve the objectives of their stated policies. Management should provide adequate resources to ensure that the vessels are properly managed, crewed, operated and maintained. The management system should also include procedures which ensure that incidents and near misses are investigated to determine root causes, so that corrective and preventative actions can be implemented. There should be systems in place to analyse risk to ensure exposure to risk is considered at every level of management.

TMSA contains all of these elements and provides a structure to assist owners and operators to assess the effectiveness of their own safety management system with suitable tools; so as to measure and improve aspects identified as being sub-standard or weak.

The first edition of TMSA was originally intended for tankers of more than 500 GT, since those ships were subject to the requirements of the 1974 SOLAS Convention, and therefore the ISM Code. Four years of experience and comprehensive feedback from the oil industry brought about the publication of TMSA 2 in 2008. TMSA 2 was updated to widen its application to all tank vessels, irrespective of size. The third edition of TMSA (TMSA 3) was introduced in April 2017. TMSA 3 revised and updated all of the twelve existing elements and introduced a thirteenth – 'Maritime Security'.

Wider Application

The widespread acceptance of TMSA within the tanker sector has focussed the attention of some industry observers on the suitability of its application to other vessel types. A closer examination of the TMSA key performance indicators (KPI) and best practice guidance very quickly reinforces this view.

All thirteen key elements of TMSA refer to aspects of ship management and operational activity that should feature in every safety management system. Members are strongly advised to review the content of TMSA in detail and consider using it as a good example of industry best practice, irrespective of vessel type.

Monitoring and Improving Performance

Benchmarking

The ISM Code Section 12: *Company verification, review and evaluation*, requires companies to conduct audits to verify that safety and pollution prevention measures comply with the safety management system (SMS). The ISM code also requires companies to periodically evaluate the effectiveness of the SMS. TMSA provides a platform on which companies are able to measure SMS performance.

Subscribers to TMSA, who are also members of Intertanko, can review their practice and compare performance with other Intertanko members via an on-line benchmarking system.

The introduction of TMSA 3 coincided with the integration of the TMSA system directly into the Ship Inspection Report Programme (SIRE) application at https://www.ocimf.org/sire.

Previously, the SIRE and TMSA systems had been operated separately. The new combined SIRE/TMSA programme provides an improved, single area to maintain all data related to a tanker's technical operator.

Continuous Improvement

TMSA is designed to help companies continually improve their SMS through regular self assessment. The following paragraphs summarise the continuous–improvement cycle.

Plan

Effective strategies require clear purpose, policies, processes, roles and responsibilities. TMSA guidelines give vessel operators an indication of related objectives and targets that will help them develop their goals.

Act

In order for companies to achieve their improvement objectives there must be consistent and effective implementation of plans. Operators should clearly communicate plans to all staff and then prioritise and target processes for improvement.

Measure

Chapter twelve of the ISM Code requires that companies evaluate their safety management system and perform internal safety audits to assess performance and compliance with existing procedures. Safety and environmental excellence requires processes to check and measure the organisation's progress towards sustainable improvement.

Improve

In order to improve, a company must be able to assess its performance and identify relevant goals that will keep the continuous improvement process evolving. The results of this assessment can then provide the foundation for an improvement plan that highlights areas where maximum benefit can be achieved. The plan should be agreed by staff and focus on long term targets and objectives that can best benefit the operator.

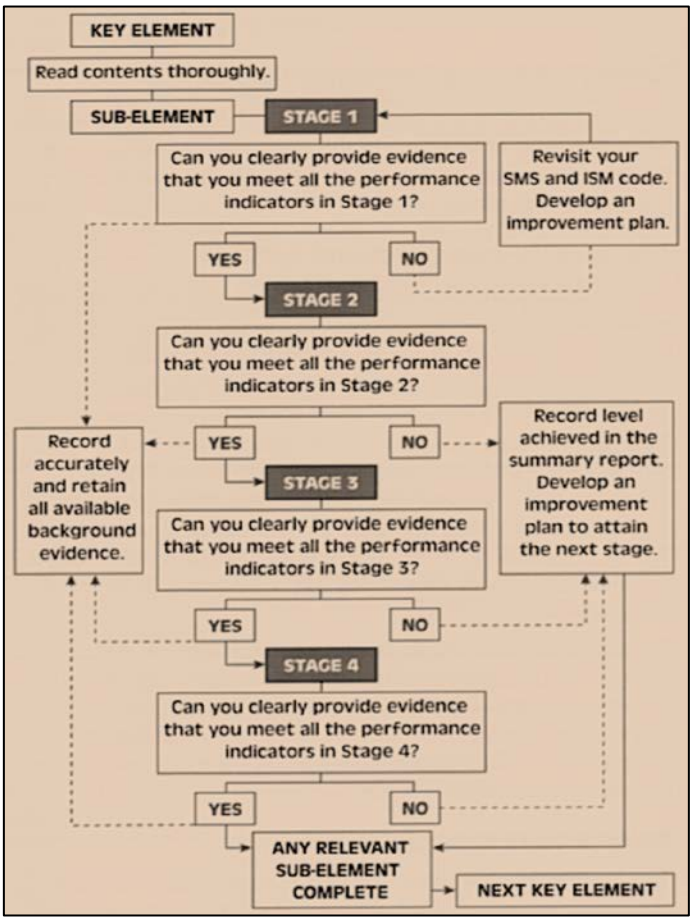
This segment of the continuous improvement cycle aligns actions with process targets and ensures that individual improvement plans are regularly reviewed and updated.

The TMSA programme complements industry quality codes and is intended to encourage self-regulation and promote continuous improvement. It is also designed to provide vessel operators with a means by which they can demonstrate a strong commitment to safety and environmental excellence.

Measuring SMS Status

TMSA breaks the status of a company's management system down into four key stages. The thirteen elements of TMSA contain KPIs and examples of best practice for each stage of the development process.

Stages one and two are often referred to as the lower stages and stages three and four described as the higher stages. The higher stages build on the lower stages. To achieve the most benefit, the stages should be completed in sequence. If the lower stages have not been effectively addressed, assumptions made in completing higher stages may be unsound. The emphasis should therefore be on completing elements in the order presented.



TMSA Development Process – Key Steps
(Source – OCIMF)

Users will learn most and derive the most value when the processes described in TMSA are completed by the personnel who are responsible for fulfilling the corresponding section of the company's SMS.

An example of a KPI and corresponding best management practice is contained in each of the paragraphs describing the thirteen elements later in this briefing.

Key Performance Indicators

TMSA provides Key Performance Indicators (KPIs) to measure the effectiveness of quality management systems, and progress towards achieving company goals and responsibilities.

The company should use KPIs to identify areas of operation that require improvement and lay down follow-up plans that identify the assignment of responsibility for implementing improvements.

As part of the self assessment process companies should evaluate which of the four stages of process development best reflects their current operating practice. This forms the basis of the score submitted on the OCIMF on-line self-assessment database and provides the benchmark values for future goal setting and development work.

Operators should read each of the four developmental stages of a process and determine whether they can readily provide evidence to demonstrate that they meet the performance criteria.

Once adopted, TMSA guidelines can form part of the company's safety management system and comprehensively fulfil a company's obligation under chapter twelve of the ISM Code.

A number of KPIs will be considered inappropriate for certain types of vessel and/or operator. Factors which may render specific KPIs unsuitable may include:

- Company size or structure.
- Specific trade.
- Local or national regulations, customs or conditions.

Once the company has completed the self-assessment process, they should have a clear idea of their safety and environmental performance. The self-assessment can then be used to drive a cycle of continuous improvement with clearly defined goals. For Intertanko members, benchmarking can be carried out with industrial peers using the Intertanko TMSA on-line benchmarking facility mentioned above.

The TMSA Elements

The following sections give a brief description of each of the thirteen TMSA elements; together with an example of a KPI with associated best practice guidelines for each element.

Element I and IA – Leadership and the Safety Management System

A statement of commitment from the company chief executive is a fundamental foundation of any safety management system. Element one acknowledges this fact and outlines the responsibilities of company management to develop and maintain a dynamic SMS that promotes excellence in the fields of health, safety, security and the environment (HSSE). The SMS should consist of clear and concise documented procedures that identify the roles, responsibilities and accountabilities for all staff, ashore and afloat.

Example:

Key Performance Indicator from TMSA Stage 2
Management strives to improve safety and environmental performance at all levels.
Best Practice Guidance
Management has a documented plan in place that contains specific actions to achieve long-term goals and aspirations. Management has a way of measuring and identifying trends in safety and environmental performance at all levels by maintaining statistical records of near misses, non-conformances and incidents.

Element 2 – Recruitment and Management of Shore-Based Personnel

A mechanism to control the assessment of competence and certification of seafarers has, to some extent, been addressed with the introduction and continued revision of the IMO 1978 Standards of Training and Certification and Watchkeeping (STCW) Regulations (as amended). Element two of TMSA identifies the need for a similar approach to the qualification and appointment of shore based personnel.

A formalised pre-employment process should determine the suitability of applicants for all appointments to shore-side posts. The selection process should ensure that

candidates are medically fit, technically competent, suitably qualified and experienced to undertake the roles for which they are recruited. Appraisal, training, continuous development and succession planning programmes should be integral parts of the SMS. Personnel continuity, with an emphasis on staff retention and development are key factors in ensuring effective committed and motivated shore management. Personnel records should include a training portfolio for each member of staff, which can be used to ensure that they are kept up to date on recent developments within the industry.

Example:

Key Performance Indicator from TMSA Stage 4
The company aims to fill relevant shore-based positions from within the fleet wherever possible.
Best Practice Guidance
Suitable candidates may be identified through a combination of: temporary shore-based assignments; feed-back from superintendents; appraisal reviews.

Element 3 and 3A – Recruitment Management and Wellbeing of Vessel Personnel

The competence, motivation health and well-being of a ship's crew are critical factors in ensuring the safe and efficient operation of any vessel. Pre-recruitment checks by the employer need to determine the accuracy of an applicant's qualifications and experience. Pre-employment medical screening of crew members, such as those offered by the Association have been shown to significantly reduce claim costs for medical and repatriation expenses.

Regular crew appraisal procedures adopted by an employer will help identify those individuals who work well as team and can be used to ensure crew members are provided with programmes of continuous professional development suitable for their own, and the company's objectives. Continuous appraisal should be used to identify and correct weaknesses in competence and to encourage and develop candidates for promotion.

In situations where manning agents are used, regular audits of those agents should be conducted to ensure company procedures are reflected in operating practices.

Adequate resources should be allocated to ensuring that the personal needs and well-being of sea-staff are satisfactorily addressed.

Example:

Key Performance Indicator from TMSA Stage 3
The company provides career development for Junior Officers and aims to promote Senior Officers from within the company, where possible
Best Practice Guidance
Career development guidance is documented and clearly sets out the requirements necessary for promotion.

Element 4 – Vessel Reliability and Maintenance including Critical Equipment

Robust and well applied repair and maintenance procedures are important in ensuring safe, efficient and reliable vessel operation. The ISM Code calls for additional control measures to be established for mechanical, electrical and other items of equipment that could, in the event of failure, result in a hazardous situation. This 'critical equipment' may include, but not be limited to main propulsion systems, steering gear and cargo handling equipment.

Efficient planned maintenance systems (PMS) that incorporate defect reporting and close-out procedures will assist with maintaining a vessel's classification status. Effective PMS should also ensure that suitable spares are available for the timely completion of planned work.

There should be a close working relationship between a vessel's crew and the designated superintendent. Regular vessel visits, including sailing visits, by superintendents reinforce this relationship. Procedures for out-of-service repair periods, e.g. dry-dockings, should be formally developed and involve close collaboration between ship and shore staff.

Example:

Key Performance Indicator from TMSA Stage 3
A common, computer-based maintenance system on board each vessel records all maintenance tasks and incorporates the defect reporting system...
Best Practice Guidance
The maintenance and defect reporting system may include: manufacturer's recommended maintenance requirements; work instructions and associated risk assessments; equipment and machinery history; synchronisation capability between ship and shore database; guidance on remote diagnostics where applicable. Defect reports are analysed and planned maintenance tasks are amended as appropriate. This may include a review of minimum spare parts required.

Element 5 – Navigational Safety

Although the master is ultimately responsible for the safe navigation of the vessel, the company are obliged to establish and maintain navigational procedures that ensure the safety of the vessel. These are likely to reflect the content of publications such as the International Chamber of Shipping publication 'Bridge Procedures Guide', and ensure that navigational techniques appropriate to the circumstances of the voyage, are implemented fully.

Implementation of industry best practices would include the regular conduct of comprehensive navigational audits, conducted on passage by suitably qualified and experienced personnel from the company. Company audits should be backed-up by and bench-marked with, independent audits performed by suitably qualified, specialist contractors.

Example:

Key Performance Indicator from TMSA Stage 4
Navigation officers undertake periodic refresher bridge resource management simulator training at a national or industry accredited shore establishment.
Best Practice Guidance
The company operates a programme to provide this training for all navigation officers at a specified frequency. The training team composition reflects the nationalities of the bridge teams in the fleet. The bridge resource management training programme is used to enhance the dynamics within bridge team members and to increase awareness of cultural diversity, communication style and hierarchy bias among the team. Where it is not practical to have representative nationalities present then the course has modules and role play to address the human factors as described above.

Element 6 and 6A – Cargo, Ballast, Tank Cleaning, Bunkering, Mooring and Anchoring Operations

The driving factor behind TMSA Elements 6 and 6A is the desire to ensure that on board operations associated with cargo, bunkering and mooring are conducted safely and efficiently. To that end, comprehensive procedures covering all aspects of the applicable operations need to be in place. Furthermore, those procedures need to be understood and applied by all relevant staff.

Junior officers should be actively engaged in the planning and execution of cargo, bunkering and mooring operations, as part of their personal development plans. Crew members should receive suitable training prior to being placed in charge of cargo and ballasting operations, this may include the use of computer based or simulator training ashore.

Mooring operations are a frequent source of personal injuries. These accidents are often caused by poor working practices and a lack of a proactive safety culture. Robust company mooring procedures will reflect the contents of the OCIMF Mooring Equipment Guidelines and information papers and the UK MCA publication

'Code of Safe Working Practice for Merchant Seamen (COSWP)', Chapter 26 – 'Anchoring, Mooring and Towing Operations'. North of England's Loss Prevention Briefings on 'Mooring Operations' and 'Wire Ropes and Their Uses' also highlight some best industry practices.

Example:

Key Performance Indicator from TMSA Stage 3
The SMS requires Junior Officers/relevant personnel to be actively involved in planning, line setting and execution of the cargo, ballast, tank cleaning and bunkering operations as part of their continuing personal development plan.
Best Practice Guidance
The company promotes an effective team management approach to cargo, ballast, tank cleaning and bunker handling through onboard training and mentoring. Training records and appraisal reports may be used to monitor progress.

Element 7 – Management of Change

Change of any description within an organisation or on board a ship introduces the possibility of additional risk. An evaluation of the impact that change may have on operational matters and procedural tasks will assist in identifying those areas that will be affected most. Suitable risk assessments will then be necessary to control the implementation of this process. COSWP Chapter 1 - 'Managing Occupational Health and Safety' – Annex 1.1 'Management of change' - provides detailed instructions on how this should be carried out.

Technical changes may require the provision of revised drawings, plus revisions to operational and technical manuals. Required changes need to be properly recorded and effectively linked with the vessel's document control system. In this way important controlled documentation will remain relevant and up-to-date.

There should be a periodic review of all implemented changes, to evaluate the outcome of those changes and to measure the extent to which planned objectives have been met.

Example:

Key Performance Indicator from TMSA Stage 2
The management of change process ensures all proposed temporary and permanent changes to onboard procedures and equipment are subject to risk assessment.
Best Practice Guidance
The risk assessment is conducted as a part of the planning of the proposed change. The risk assessment identifies and addresses the full range of hazards and consequences of the proposed change.

Element 8 – Incident Reporting, Investigation and Analysis

The fundamental principle underpinning Element 8 is that all incidents are preventable. Therefore the company needs to have procedures in place that incidents and near misses are always reported, investigated and analysed, so as to prevent recurrence. Incident investigation needs to delve down into the actual root causes. Measures to effectively eliminate the causes and prevent further incidents need to be implemented and promulgated.

Element 8 highlights the importance of crew and shore staff involved in accident investigation receiving suitable training and support from the company and third party subject specialists.

Training programmes should include suitable refresher training and this should form part of the individual's personal training programme.

Company reflection and review practices must ensure that incident information and analysis findings are promulgated efficiently to the other vessels within the fleet and details are discussed with crew members during safety committee meetings and onboard training drills.

Example:

Key Performance Indicator from TMSA Stage 2
External training in incident investigation and analysis is given to at least one member of the shore-based management teams.
Best Practice Guidance
Industry recognised training providers are used to facilitate specific courses in incident investigation and analysis. Knowledge from the training courses may then be used to train other shore and vessel personnel.

Element 9 and 9A – Safety Management

TMSA principles are intended to enhance the implementation of the spirit of the ISM Code and the adoption of a proactive safety culture on board.

Monitoring the implementation of safety management systems requires a review by shore based managers of working practices carried out on board. Completed risk assessments should be reviewed by technically competent company representatives. Common risk assessments should be introduced throughout the fleet. A comprehensive programme of near miss reporting should be adopted. All of these measures serve to promote the safety culture on board.

Best practices include the implementation of concentrated safety awareness campaigns, detailed procedures for the management of third party contractors and the employment of fleet safety trainers to conduct onboard training and to promote company values and safety culture. Example:

Key Performance Indicator from TMSA Stage 4
Management collates all risk assessments for best practice sharing, in order to improve the company safety culture.
Best Practice Guidance
The company identifies best practices for common areas of risk assessment and ensures that these are shared across the fleet.

Element 10 – Environmental and Energy Management

Fundamental to effective environmental practices are the systematic identification, assessment and minimisation of sources of marine and atmospheric pollution, and the environmentally responsible disposal of potentially damaging residual waste.

Reference in company protocols to the requirements of MARPOL and/or national and regional limitations should be supported by regular reviews of action necessary to ensure present and future compliance. A long term environmental plan should be maintained and reviewed and updated regularly. The environmental management plan should include fleetwide energy efficiency and fuel management practices. Ship recycling practices should adhere to environmentally sound principles.

Example:

Key Performance Indicator from TMSA Stage 4
Fleet environmental performance and energy efficiency is benchmarked.
Best Practice Guidance
Performance is measured within the company and benchmarked across the industry periodically.

Element 11 – Emergency Preparedness and Contingency Planning

An emergency response system that deals with shipboard and company emergencies needs to be established. The system requires regular and robust testing to ensure that is fit for the purpose of adequately responding to and dealing with incidents.

Companies should develop a comprehensive programme of drills that test the response to all foreseeable emergencies. A shore based response team should be integral to a structured training programme.

Element 11 of TMSA identifies the need for media training, business continuity and recovery following a major incident

Plans for incident management must account for the twenty four hour operational practices of most companies and provide shore based emergency response personnel with the resources they need to manage an incident.

Contact details for relevant members of company and external staff including third party salvage and towing specialists should be available to the person in charge.

Designated members of the team should receive media training appropriate to their role, to ensure the control of information passed to the press. A relationship should be established with media professionals to support company staff.

Realistic, regular and robust emergency exercises and drills should be undertaken that reflect the nature of vessel and fleet operation. Drills and exercises should be designed to test the effectiveness of arrangements to call on external personnel and resources.

Example:

Key Performance Indicator from TMSA Stage 2
Lessons learnt from exercises and actual incidents are incorporated into the emergency response plans.
Best Practice Guidance
Following an exercise or incident the company records lessons learnt; identifies areas for t improvements; ensures that corrective actions are implemented, including any identified training requirements; ensures that exercises are discussed at the management reviews and circulates lessons learnt among fleet and shore-based personnel

Element 12 and 12A – Measurement, Analysis and Improvement

Perhaps the most important feature of any effective safety management system is the dynamic nature of its implementation. TMSA refers to an effective company SMS as a 'living document at the core of the business'.

Operators must strive to ensure their system manuals do not sit on the shelves gathering dust; they should be used as a tool in the daily operation of the processes and procedures they refer to.

The effectiveness of that tool must be reviewed and assessed on a regular basis to make sure that it accurately reflects the nature of the work in hand and has not become outdated and irrelevant.

Vessel inspections, checks on legislative compliance by ships' crews, and a review of actions closed out following audit will all give an indication of how well the system is performing.

A fleet standard format of inspection that satisfies the requirements of industry best practice guidelines should be used for internal audits performed on all vessels and shore support offices associated with the system.

Staff members with responsibility for performing audits should be suitably experienced and given formal auditor training, a record of audits performed should be held for future reference by management and numbers of audits performed in keeping with those planned monitored.

The effectiveness and status of corrective actions recommended in previous audits need to be assessed as part of this process and systems should include a documented process that can be used for this purpose.

An analysis of inspection results and the operator's ability to satisfy ISM requirements as well as regulatory and legislative amendments should form part of periodic management reviews of the SMS.

Example:

Key Performance Indicator from TMSA Stage 3
In order to improve the inspection process, analysis of inspection results is compared with data from third-party inspections.
Best Practice Guidance
The company compares its own inspection results with the results of inspections conducted by third parties. The comparison is comprehensive and identifies any specific areas of weakness. Where there are consistent anomalies, the vessel inspection process is reviewed and improved. These comparisons are used to monitor/improve fleet inspection standards.

Element 13– Maritime Security

The maritime security situation is dynamic and continually changing. In order to monitor and manage the changes the ship operator needs to have an effective security management system in place. The system should be such that threats to security in all areas of the business are identified and risks posed thereby are mitigated to the lowest practicable level.

Security management should be included in the internal audit programme. External specialist support should be provided to deal with identified threats as and when appropriate. Vessels should be provided with enhanced security and monitoring arrangements and provisions should be in place to consider, test and install innovative security measures onboard existing and new build ships where appropriate.

Procedures should be implemented with respect to cyber security. These procedures should include the identification of threats to onboard and company electronic systems. The procedures should include guidance on cyber security awareness and measures to counteract threats posed by cyber attacks.

Example:

Key Performance Indicator from TMSA Stage 3
A travel policy is in place to minimise security threats to personnel.
Best Practice Guidance
The policy is based on risk assessment and includes vessel personnel, shore-based personnel and contractors travelling on company business. As appropriate, restrictions and guidance is in place for travel identified as being an elevated risk. The travel policy is regularly reviewed to take account of changes to security threats.

Conclusion

Although intended in the first instance as a 'best practice guide' for the tanker industry, TMSA has enormous potential for operators of all vessel types. Safety management can be improved by implementing key performance indicators, backed up by examples of industry best practice. TMSA can be an effective tool in enhancing company safety culture.

Using the International Safety Management (ISM) Code as its foundation, TMSA incorporates existing industry guidelines supported by practical examples of best practice and procedures that enable an operator to assess their own safety management system and benchmark their progress through four key stages of process development.

Using TMSA as part of a consolidated approach to ensuring an effective safety management has been shown to succeed, providing a safer environment for those on board and reducing risk to the environment.

Additional Reading

IMO publications

Code of Safe Practice for Cargo Stowage and Securing (CSS) Code

International Bulk Chemicals (IBC) Code

International Code for the Construction and Equipment of Ships carrying Liquefied Gases (IGC) Code

International Maritime Solid Bulk Cargoes (IMSBC) Code

International Safety Management (ISM) Code

Standards of Training Certification and Watchkeeping, (STCW), as amended.

UK MCA publications

Code of Safe Working Practices for Merchant Seamen (COSWP)

ICS publications

Bridge Procedures Guide

Guidelines on the Application of the ISM Code

Guidelines on the Application of the ILO Maritime Labour Convention

Guidelines on the IMO STCW Convention

Safe Transport of Containers by Sea

Shipping and the Environment A Code of Practice

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Tanker Safety Guide (Chemicals)

Tanker Safety Guide (Liquefied Gas)

Guidance for Ship Operators on the ISPS Code

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