



Ship Inspection Report (SIRE) Programme

**Vessel Inspection Questionnaires for Inland and
Offshore Oil, Chemical and Gas Barges including
Towing and Pushing Vessels. (European Region)
(VIQ 5)**

2015 Edition

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Oil Companies International Marine Forum

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SECTION 1

1.1 History of the SIRE Programme

In 1993, OCIMF established a Ship Inspection Report (SIRE) Programme, which enabled OCIMF members to submit their ship inspection reports to OCIMF for distribution to OCIMF members and certain qualifying non-OCIMF members.

Participation in the original programme, as either an inspecting OCIMF Member or a programme recipient, was strictly voluntary and each programme recipient determined independently how to evaluate the information contained in the reports received from OCIMF.

Under the SIRE Programme, the operator of any ship that is the subject of a report was given a copy of that report and the opportunity to submit written comments relating to the report, to both the inspecting OCIMF Member and to OCIMF.

Report recipients accessed the SIRE System Index by computer and this permitted the index to be viewed or downloaded. Programme recipients could order reports and any matching operator comments from the SIRE system. Reports and comments were transmitted by facsimile to the programme recipients' pre-registered facsimile numbers on request.

1.2 Revisions to the Programme

The original SIRE Programme was first revised in 1997 and introduced the means whereby programme recipients were able to receive reports and any operator comments electronically, as well as by facsimile.

Two major changes were also introduced in the 1997 Revised Programme. These were:

1. A Uniform Vessel Inspection Procedure; and,
2. A Vessel Particular Questionnaire (VPQ)¹

The SIRE Programme was been revised a number of times.

The 2004 revisions made further important changes to the inspection procedure whilst also adding numerous new vessel types that are inspected under the programme.² Collectively, these are referred to herein as "Vessels". Subsequent revisions updated the VIQ questions and guidance, but did not add any questions. This 2011 Edition substantially changes the focus of the VIQ to increase the emphasis of the inspection on navigation procedures and cargo and ballast handling operations. Consequently significant changes have been made in this edition.

1 Under the Original 1993 Programme, the inspecting OCIMF Member was free to choose whatever inspection protocol and report format it desired. In 1997, the Uniform Vessel Inspection Procedure changed this. The Vessel Particular Questionnaire was a newly developed OCIMF document, also introduced in 1997 and was not part of the original programme. The Vessel Inspection Questionnaire was further revised in 2000, and the Vessel Particulars Questionnaire was also revised in 2003 when a Harmonised Vessel Particulars Questionnaire (HVPQ) was introduced. Updated VIQs were published in 2004, 2005, 2008, 2009 & 2014.

2 The SIRE Programme was expanded in 2005 to include the inspection of barges carrying petroleum products, chemicals, or gas, or vessels used in the carriage of packaged petroleum products or gas, or road tankers carrying the same commodities. Towing vessels that are utilised in the handling of barges carrying the above listed products may also be inspected under the SIRE Programme. The inspection of these vessels and associated questionnaires are addressed in separate questionnaires.

1.3 Uniform Vessel Inspection Procedure

The programme requires that participating submitting companies follow a uniform **Vessel Inspection Procedure**. This procedure has an ***Inspection Element*** and a ***Report Element***.

The **Inspection Element** uses a series of detailed inspection questionnaires as appropriate for the type of vessel inspected. These questionnaires address issues associated with safety and pollution prevention. Inspectors who are employed, or contracted by submitting companies must (with certain exceptions) answer all these questions.

Questions are, in many cases, accompanied by guidance notes and/or references to source documents. Their purpose is to aid the Inspector's response.

The **Report Element** is developed from the completed electronic questionnaire that is submitted by the Inspector, either directly to the SIRE web site, or to the submitting company for further processing prior to transmission to the vessel operator and to SIRE.

SECTION 2

2.1 The Vessel Inspection Questionnaires, Inspector Manuals and VIQ Computer Programmes.

The 3rd Edition revisions to the SIRE Vessel Inspection Questionnaires and their accompanying Inspection Reports introduced significant changes to the scope and presentation of the Programme.

These were:

1. The inspection of oil tankers (together with combination carriers and shuttle tankers), chemical carriers and gas carriers. Under the revised Programme, these vessels are categorised by size.
2. The inspection of barges carrying petroleum products, chemicals, or gas, or vessels used in the carriage of packaged petroleum products or gas or road tankers carrying the same commodities, and also towing vessels that are utilised in the handling of barges carrying the above listed products. Collectively, in the VIQ documents, the inspection questionnaires that are used are referred to as "Vessel Inspection Questionnaires" ("VIQs")
3. The key question and sub-question concept used in the 1st and 2nd Editions of the VIQ was discontinued in the 3rd and subsequent editions and replaced (except in a few cases) with individual questions. As in the case of previous editions, however, the "Yes" "No", "Not Seen" or "Not Applicable" responses are utilised.

2.2 Inspector Manuals

The Inspector Manual was a new feature introduced with the SIRE revisions in 2000. The Manual reorganised the VIQ key questions, sub-questions and guidance notes to follow the order of the route that would normally be taken by an inspector in the course of an inspection³.

As in the case of the previous editions of the VIQ, Inspector Manuals will be used with this 2011 Edition that set out the questions into the approximate order that an inspector is likely to encounter them during the course of an inspection. Selection of the questionnaire to be used for each particular inspection is made using a "Vessel Selection Wizard" incorporated into the SIRE Report Editor Software programme. This Wizard requires a series of questions to be answered. When the Wizard is completed, the appropriate questionnaire can be printed on a local printer, with the questions set out either in the format of the VIQ itself, or in the format of the Inspector Manual. The questionnaire may be printed in A4 or Letter paper, or reduced to a size appropriate to be used with the SIRE VIQ Pocketbook. **These Questionnaires must be used during each inspection.** The inspection findings must be transferred from the pocketbook to the appropriate VIQ computer programme after the inspection is completed.

³ Each Inspector Manual is laid out on the assumption that an inspection takes the following course: a review of the vessel's Documentation, followed by an inspection of the Wheelhouse and Navigation, Communications, General external areas (including Mooring, Main Deck and Pumproom), Cargo Control Room, Engine and Steering Compartments and finally, the Accommodation.

SECTION 3

3.1 Using the SIRE Vessel Inspection Questionnaires (“VIQs”)

The inspection questionnaires used in this programme contain a series of questions related to safety and pollution prevention applicable to the type of vessel that is inspected. These questions are consecutively numbered and are logically grouped into separate chapters.

Each chapter contains a series of questions to be answered by the inspector. Questions *may* be accompanied by guidance, namely:

1. Guidance notes to inspectors;
2. Reference source(s) citing regulation(s) or industry guidelines pertaining to questions; and
3. An indicator to identify issues when an inspector comment is mandatory.

The above-mentioned guidance, regulatory/industry references amplify the questions and these are provided to assist the inspector to answer the questions.

If the guidance and references lead the inspector to conclude that the question should be answered positively, the box “**Yes**” in the VIQ computer programme should be checked. On the other hand, if the guidance and any reference sources indicate to the inspector that the question should be answered negatively, the “**No**” box should be checked.⁴ Where appropriate, the “**Not Seen**” or “**Not Applicable**” box should be ticked.

The inspector *must* respond to all the questions appropriate to the type of vessel being inspected. ***Failure to do this will mean that the inspection report cannot be transmitted to the SIRE Internet site for processing by the principal who commissioned the inspection.***

The inspector *must* insert an Observation when responding to any question where the response box is marked “**No**”. The Observation *must specify and explain* the reason why a negative response is made. Additionally, where a box is marked “**Not Seen**”, the reason for the “**Not Seen**” response *must* be given in the Observation section accompanying the question. In cases where a “**Not Applicable**” response is required, the “**Not Applicable**” response is treated in the same way as a “**Yes**” response and there is no requirement for the reason to be made in the Observations section accompanying the question. However, 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.*** In some cases, where the type of vessel being inspected results in one or more questions being not applicable to that type of vessel, the Report Editor is programmed to automatically answer those questions “**Not Applicable**”. In many cases, the question does not have a “Not Applicable” option.

For some questions, the inspector is required to comment irrespective of how the question is answered. This requirement is flagged in the printed VIQ by bold, highlighted, italic text in the guidance notes. In the electronic Report Editor software it is highlighted in yellow.

At the end of each chapter there is an **Additional Comments** section. If the inspector has additional comments in respect of subject matter that is not covered by the specific questions in the chapter, the inspector may make such comments in the Additional Comments section.

⁴ A few Questions do not have guidance, in such cases; the Inspector is required to make an unaided answer.

The above listed requirements are summarised below.

Box	Option	Response
Y	Yes	Tick “ Yes ” if, in the inspector’s professional judgement assisted by the guidance (if provided), a positive response can be made to the question. If, in the inspector’s judgement 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	Tick “ No ” if, in the inspector’s professional judgement assisted by the guidance (if provided), a negative response should be made to the question.
NS	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.
NA	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 judgement 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.
	Observations and Comments	An Observation by the inspector is required for 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. Inspectors are free to record comments even where a box is checked “ Yes ” 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 <i>additional</i> to those which the inspector may make when responding to the specific questions.

3.2 VIQ Availability to Operators

Vessel operators, who require copies of the questionnaires set out in this programme, may obtain them directly from the www.ocimf.com web site at no cost to the vessel operator.

SECTION 4

Conduct of Inspections

4.1 Mandatory Inspection Requirements

The following mandatory inspection requirements **must** be followed by inspectors in the conduct of their shipboard inspection in order for reports to meet the requirements of the SIRE Programme:

4.1.1 General Requirements.

1. The inspector must introduce himself or herself to the Master or the Master's authorised deputy, explain the scope of the inspection and discuss the preferred order in which it will be carried out, prior to commencement of the inspection. Inspectors should co-operate fully to conduct the inspection in the order that will cause the least disruption to the vessel's operations. The inspector must be accompanied by a member of the ship's staff at all times during the course of the inspection.
2. The inspector must set a good example with respect to his or her own personal safety procedures whilst on board the vessel and in the terminal and must wear appropriate personal protection equipment at all times.
3. Electrical or electronic equipment of non-approved type, whether mains or battery powered, must not be active, switched on or used within any gas-hazardous or other hazardous areas. This includes torches, radios, mobile telephones, radio pagers, calculators, computers, photographic equipment and any other portable equipment that is electrically powered but not approved for operation in a gas-hazardous area. It should be borne in mind that equipment such as mobile telephones and radio pagers, if switched on, can be activated remotely and a hazard can be generated by the alerting or calling mechanism and, in the case of mobile telephones, by the natural response to answer the call. Any specific Terminal requirements must be adhered to.
4. Any Observations that the inspector intends to record in the VIQ must be pointed out and discussed 'on site' at the time with the member of the ship's staff assigned to accompany the inspector. This ensures that the nature of the Observations are fully understood and can also avoid extended discussion at the end of the inspection.
5. On completion of the inspection, some Submitting Companies require the inspector to provide a list of the inspection findings in the form of written observations, others do not. In either case, the inspector must discuss the inspection findings with the Master or the Master's authorised deputy before leaving the vessel. Other than to prepare these observations, however, the inspector must not remain on the vessel to complete the inspection report. It is recognised that on occasions this may not be possible, especially when leaving and joining the vessel is done by helicopter on vessels doing STS operations.
6. The guide time for an inspection as specified in 4.3.4 below is variable depending on the type of vessel, to conduct the inspection of the vessel, compile the observation list if appropriate, and conduct the close out meeting. The completion of the report using the report editor software before the inspector leaves the vessel must not occur as this reduces the time that the inspector will spend conducting the physical inspection of the vessel. As specified in 4.1.1.5 above, the inspector must leave the vessel on completion of the inspection and must not remain on board to complete entering the report details into the report editor.

4.1.2 Additional Requirements.

In addition to the general mandatory requirements list above, the Inspector:-

1. **Must** respond by entering the requested information or by checking one response box for each question;
2. **Must**, where guidance to a question is provided, consider all the guidance to determine how the question should be answered;
3. **Must** carefully consider and provide a proper response to every question;
4. **Must** use objective evidence when answering each question (the assurance of the vessel's staff is insufficient evidence or proof);
5. **Must** include an explanatory Observation in the Observation section that accompanies a question when it is answered "No" or "Not Seen". Where the VIQ question is answered "Not Applicable" or in cases where the guidance requires a comment regardless of how a question is answered, such comment must be recorded in the "Comments" section.
6. **Must not** use a "Yes" response to any question where an inspector's Observation or Other comment contains negative elements (if there is such negative Observation or Other comment then the answer to that question should be "No");
7. **Must not**, in any **Other Comment** or **Additional Comments**, include -
 - i. Any overall or partial ship rating or indication of ship acceptability / non-acceptability;
 - ii. Any matter unrelated to the topic of a VIQ chapter and, in particular, any matter unrelated to ship safety and pollution prevention; and,
 - iii. Any overall chapter ending or other partial summary of the inspector's findings;
8. **Must** give the factual basis and specific reasons for any opinions or subjective comments made by the inspector;
9. **Must** note any deficiencies or inspector-observed conditions, to which action was taken whilst the inspector was on board, and
10. **Must not** offer any comments or opinions with regard to actions to be taken in respect of any deficiencies or observed conditions noted by the inspector.
11. **Must not** use the expression "we" in any Observation or Other comment unless the inspection was conducted by more than one inspector.
12. **Must not** at any time give any verbal indication of ship acceptability / non-acceptability.
13. **Must not** discuss or communicate by any means (verbal, written, electronic or otherwise) any findings, information gained or outcome of the inspection with any third party other than those with a legitimate involvement in the inspection process for that vessel.

4.2 Permitted Inspection Actions

Inspectors *may*:

1. Include in the "Comments" section accompanying any question, inspector comments even where the question is answered with a "Yes" **provided** such comments give useful information to the report recipient;
2. Respond to questions or provide comments on the basis of material not included in the guidance specified for the question but must note this reliance and explain reason for the reliance;
3. Include in the "Additional Comments" for each chapter, any comments in respect of the subject matter not addressed by questions contained in the chapter additional to those that the inspector may make in response to the specific questions in the chapter; and
4. Respond to questions which are not applicable to either the vessel or its cargo by checking such questions "Not Applicable".

4.3 Other Inspection Requirements.

1. Unless authorised by the OCIMF Inspecting Member and agreed by the vessel's operator, inspections should not take place at night.
2. The inspector should consider requesting that equipment be run and tested to confirm that it is in operational order and that officers and crew are familiar with its operation, but must ensure that such requests do not cause delay or interfere with the safety and normal operation of the vessel.
3. It should be recognised that the overall objective of the inspection is to provide the user of a SIRE Report with a factual record of the vessel's condition and standard of operation at the time of the inspection and, in turn, allow an assessment of the risk that use of the vessel might pose.
4. The scope of a SIRE inspection is variable dependant on the type of vessel being inspected. Inspectors must take into account the hours of rest requirements that must be observed and ensure that the SIRE inspection does not interfere with these.
5. Under normal circumstances, a SIRE inspection will take place when a vessel is alongside in port whilst discharging or loading cargo. During the course of the inspection ballast/void tank entry is discouraged. Physical assessment of the condition of ballast tanks/void spaces etc. can be made only in circumstances where the tank access hatches or plates can be removed and the tank internals sighted from the deck. In any event, actual tank access should only be made at the specific instructions of the inspecting company, with the authority of the Master and provided that port and terminal regulations allow. In all cases, the enclosed space entry procedures set out in ISGOTT Chapter 10 must be strictly observed.

SECTION 5

5.1 The Distributed Report

The responses recorded in the Vessel Inspection Questionnaires (the **Inspection Element**) serve as the basis for development of the second element of the Vessel Inspection Procedure (the **Report Element**) distributed under the programme. The inspector's completed VIQ must be reviewed by the submitting company prior to processing in the SIRE system and transmission to the vessel operator.

The processed VIQ is automatically converted into a report after the submitting company has processed it in the SIRE System. The report does not replicate the pages of the Vessel Inspection Questionnaire but is distributed in abbreviated form. It consists of a conversion of the inspector VIQ responses into a uniform report format. The report is divided into three sections as follows:

Section 1

General information

- Contains the informational responses required in Chapter 1 of the VIQ plus answers to certain questions from other VIQ chapters where specific details or dates are required.

Section 2

Questions marked "Yes" without comment.

- Lists, by index number **only**, the questions in the VIQ which have been checked with a "Yes" response, but without inspector comment.

Section 3

Questions marked "No", "Not Seen", "Not Applicable" or otherwise commented upon and any chapter ending **Additional Comments**.

- Contains; in their entirety,
 - (a) All VIQ questions which have been answered with a "No", or "Not Seen" response, as well as the comments made by the inspector to supplement such responses;
 - (b) All other VIQ questions which have otherwise been commented upon, together with the comment; and,
 - (c) Any additional comments made at the end of the VIQ chapters.

In some cases, the SIRE Report Editor will automatically enter "Not Applicable" response.

Introduction

For the purposes of this document the "European SIRE Barge Variant" region is defined as, Baltic Area (including west coast of Norway and Northern Russia), Mainland Continental Europe, United Kingdom and Ireland, Mediterranean Area, excluding North Africa.

Chapter 1. General Particulars

1 General Particulars

1.1 Vessel Variant

1.2 Is the inspected vessel subject to European Regulations?

If yes, state to which regulations the barge is subject.

1.3 Name of Vessel

Prefixes (MT, MV, SS etc.) must not be entered unless the prefix is actually a part of the registered name of the vessel. The name must be entered exactly as it appears on the Certificate of Registry or equivalent.

If operating in a tug/vessel combination record name of other vessel.

1.4 IMO number

If an IMO number has not been assigned, check the box "Not applicable".

1.5 ENI Number

If an ENI number has not been assigned, check the box "Not applicable".

1.6 Official Number or Vessel Identification Number (VIN)

If an Official Number, Vessel Identification Number (VIN)

1.7 Date of the inspection

If the inspection falls into two or more days for any reason the date shall be the date of completion of the inspection.

1.8 Place of the inspection

Describe in comments the location where inspection is taking place. I.e. Port name, terminal name, berth name etc.

1.9 Geographic region where the vessel normally trades

1.10 Flag

If a change of flag has occurred in the past 6 months record date of change of Flag and previous flag in comments.

1.11 Deadweight Tonnage.

Record deadweight in metric tonnes. If no Deadweight Tonnage assigned mark question 'NA'

1.12 Maximum Tonnage

Record maximum tonnage in metric tonnes. If no Maximum Tonnage assigned mark question 'NA'

1.13 Gross tonnage

Record Gross tonnage in metric tonnes. If no Gross Tonnage assigned mark question 'NA'.

1.14 Date the vessel was delivered

Record the original date of delivery from the builder's yard. For tugs and barges where month and day are not found use 1 January and year.

1.15 Has vessel been subject to Rebuild/Major structural conversion?

If subject to rebuild (s) state date (s) of rebuild and provide details of areas covered by rebuild, if not subject to rebuild answer question 'NA'.

1.16 Name of the Company commissioning the inspection

The software automatically inserts the name of the Inspecting Company.

1.17 Name of the inspector (For use of Inspecting Company only)

The BIQ software automatically inserts the name of the inspector. This is for use by the Inspecting Company and for OCIMF internal purposes only and will not be displayed in the delivered report.

1.18 Time the inspector boarded the vessel

If the inspection took place over two or more days, in two or more sessions, or was carried out by more than one inspector, record the arrival and departure details in the comments.

1.19 Time the inspector departed the vessel**1.20 Time taken for the Inspection**

Record the time taken to conduct the inspection to the nearest 5 minutes. This is the actual time of inspection and does not include the times the inspection was suspended for any reason (Lunch, PSC inspection etc.) or was conducted over two or more sessions.

1.21 Hull type

Single hull Double hull Double sides Full breadth double bottom Centre tank double bottom

1.22 Vessel's operation at the time of the inspection

<i>Loading</i>	<i>Discharging</i>	<i>At anchor</i>	<i>Idle</i>	<i>At sea</i>	<i>River transit</i>	<i>Repairs afloat</i>
<i>In drydock</i>	<i>STS loading</i>	<i>STS discharging</i>	<i>Cooling Down</i>	<i>Gassing-up</i>		

1.23 Products being handled

<i>Crude Oil</i>	<i>Dirty petroleum products (low flash)</i>	<i>Dirty petroleum products (high flash)</i>	<i>Clean petroleum products</i>	<i>Vegetable oils</i>
<i>Animal oils</i>	<i>Chemicals</i>	<i>Liquefied gas</i>	<i>Other (specify)</i>	

Notes: A volatile product is petroleum having a flash point below 60°C as determined by the closed cup method of testing. If a cargo is being handled at a temperature within 10°C of its flashpoint, it should be considered volatile. As an example a cargo with a flashpoint of 80°C should be considered volatile if handled at a temperature of 70°C or above.

1.24 Name of the vessel's Operator

For the purpose of the SIRE Programme, an 'Operator' is defined as the company or entity which exercises day to day operational control of, and responsibility for, a vessel. This may be the DOC holder.

1.25 Address of the vessel's Operator**1.26 Telephone number****1.27 Fax number****1.28 Email address****1.29 Date the Operator assumed control of the vessel**

1.30 Does the data entered in the Barge and Tug Particulars Questionnaire appear to be accurate and up to date?

To participate in the OCIMF SIRE Programme as a Barge and Tug Particulars Questionnaire (B&TPQ) submitting company, the Operator should contact OCIMF at sire@ocimf.com. Inspectors should randomly check that B&TPQ entries are correct. The B&TPQ should not be used to obtain details of Certificates, expiry dates etc. These must be obtained from the original documents.

1.99 Additional comments

If the Inspector has comments in respect of the subject matter covered by the Chapter additional to those which the Inspector may make in response to the specific questions in the Chapter, the Inspector should include such additional comments in this section.

Chapter 2. Certification and Documentation

1 Certification and Documentation

2.1 Has the vessel been provided with national or international trading certificates?

State whether vessel has:

- Certificate of Approval including a product list (ADN 8.1.8)
- Ship's Certificate (Revised Convention Rhine Navigation)
- Community Inland Navigation Certificate. (EC 2006/87 Part I Article 3)

The certificate of approval shall attest that the vessel has been inspected and that its construction and equipment comply with the requirements of these regulations (ADN 8.1.8.2)

The certificate of approval shall be valid for not more than five years. The date on which the period of validity expires shall be shown on the certificate. The competent authority which issued the certificate may, without inspection of the vessel, extend the validity of the certificate by not more than one year. Such extension may be granted only once within two periods of validity. (ADN 8.1.8.4)

For tank vessels, the relief pressure of the safety valves or of the high velocity vent valves shall be entered in the certificate of approval. (ADN 8.1.8.3)

Operating on the Community inland waterways shall carry:

(a) when operating on a Zone R waterway:

— either a certificate issued pursuant to Article 22 of the Revised Convention for Rhine Navigation;

— or a Community inland navigation certificate issued or renewed after 30 December 2008, and attesting full compliance of the craft, without prejudice to the transitional provisions of Chapter 24 of Annex II, with technical requirements as defined in Annex II for which equivalency with the technical requirements laid down in application of the above mentioned Convention has been established according to the applicable rules and procedures;

(b) when operating on other waterways, a Community Inland Navigation Certificate, including, where applicable, the specifications referred to in Article 5. (EC 2006/87 Part I Article 3)

2.2 If applicable, has the vessel been provided with a Continuous Synopsis Record (CSR)?

For vessels constructed prior to 01 July 2004 the CSR shall provide the history of the vessel as from 1st July 2004. (SOLAS 2002 XI-1 Reg 5)

2.3 If applicable, has the owner/operator been issued a Document of Compliance (DoC)?

The issuing authority for the DoC and the SMC may be different organizations, but the name of the operator must be the same on both. There should be a copy (which need not be a certified copy) of the DoC on board, which shows that the original has been endorsed for the annual verification.

2.4 If applicable, has the vessel been provided with a Safety Management Certificate (SMC)?

The SMC is subject to a renewal verification every five years, and at least one intermediate verification, which, if only one, shall be between the second and third anniversary.

2.5 If applicable, does the vessel operator have ISO 9001 or other Quality Management System?

State what Certification the operator holds.

2.6 If applicable has the vessel been provided with a Safety Equipment Certificate, supplemented by Form E or equivalent?

If provided with an equivalent document provide details in comments.

2.7 If applicable, has the vessel been provided with a Radio Certificate and/or Radio license?

2.8 If applicable has the vessel been provided with a Safety Construction Certificate?

The Safety Equipment, Safety Radio and Safety Construction Certificates maybe combined within the same form known as the Ship Safety Certificate. Form C will be attached instead of Forms E and R. There should be evidence that each annual survey has been carried out as applicable.

2.9 If applicable, has the vessel been provided with an IOPP Certificate, supplemented by Form A or B?

An IOPP Certificate may or may not, be issued. Issuance may be dependent upon the trading area of the vessel and according to the requirements of the controlling Administration.

2.10 If an IOPP Certificate has been issued, what is the vessel's designation as recorded in the IOPP Certificate, Form B, Question 1.11?

2.11 If applicable, has the vessel been provided with a Loadline Certificate or equivalent?

The following documents shall be available on board:

(a) Ship's certificate;

(b) A measurement certificate if applicable;

CEVNI 1.10.1(b)

Describe in comments details of equivalent certificate.

2.12 If applicable has the vessel been provided with an International Ship Security Certificate and associated security plan or equivalent?

The ISPS Code came into effect on 1st July 2004. The ISSC is subject to renewal verification every five years, and at least one intermediate verification, which, if only one, shall be between the second and third anniversary. Actual requirements will vary from country to country.

For each crew member of a vessel carrying dangerous goods, means of identification, which includes a photograph, shall be on board during carriage. (ADN 1.10.1.4)

2.13 If applicable, has the vessel been provided with an International Sewage Pollution Prevention Certificate or equivalent?

For International Sewage Pollution Prevention Certificate, this applies to vessels delivered after 27th Sept. 2003, and to existing vessels by 27th Sept. 2008.

Describe in comments details of equivalent certificate.

2.14 If applicable, has the vessel been provided with an International Tonnage Certificate?

2.15 If applicable, has the vessel been provided with a Minimum Safe Manning Document or equivalent?

If the vessel has been provided with a MMD, list the required and actual numbers for both officers and ratings.

2.16 If applicable, has the vessel been provided with a sailing hour record book (ships log), and is it maintained?

Sailing hour record books should be applicable to the trading pattern of the vessel.

Record the operational mode at the time of inspection.

A ship's log conforming to the requirements of the Administration shall be kept on board each vessel.

The beginning and end of rest periods shall be entered each day during the voyage.

The particulars relating to a change of operating mode shall be entered on a fresh page of the ship's log. (UNECE Res 61. 23-8.1)

A distinction shall be made between the following operating modes (per 24 hours):

A1 daytime navigation for a maximum of 14 hours

A2 semi-continuous navigation for not more than 18 hours

B continuous navigation for 24 hours and more

Daytime navigation maybe extended to a maximum of 16 hours, not more than once a week, if the vessel is equipped with a tachograph approved by the Administration and in proper working order, and if the

members of the minimum crew include one holder of the boatmaster's certificate and a helmsman.
(UNECE Res 61. 23-5)

Tachograph recordings shall be kept on board for six months following the last entry if the vessel is equipped with a tachograph.
(UNECE Res 61. 23-8.5)

2.17 If applicable, has the vessel been provided with a Certificate of Fitness for the Carriage of Chemicals?

This will be issued either under the IBC or BCH Code for chemicals, or the IGC, GC or EGC Code for gas. Gas carriers carrying dual code cargoes must have a NLS Certificate.

2.18 If applicable, has the vessel been provided with a Certificate of Fitness for the Carriage of Gas?

2.19 If applicable, has the vessel been provided with a Noxious Liquid Substances Certificate?

A NLS Certificate is required for any vessel carrying MARPOL Annex 2 cargo that does not have a Certificate of Fitness for the Carriage of Chemicals.

2.20 What is the Name of vessel's P and I Club or equivalent insurance provider?

Indemnity may be provided by a P&I Club or an equivalent entity.

2.21 Is the vessel registered with a Classification Society?

If registered with a Classification Society name of society to be included in comments. Include date of expiry and if applicable date of last intermediate survey in comments.

The technical inspection referred to in 2006/87/EC Article 8 shall be carried out by the competent authorities which may refrain from subjecting the craft in whole or in part to technical inspection where it is evident from a valid attestation, issued by a recognised classification society in accordance with Article 1.01 of Annex II, that the craft satisfies in whole or in part the technical requirements of Annex II. Classification societies shall only be recognised if they fulfil the criteria listed in Part I of Annex VII. (2006/87/EC Article 10)

On the basis of the criteria set out in Parts I and II, the following classification societies are currently approved in accordance with Article 10 of this Directive:

- Bureau Veritas,
- Det Norske Veritas Germanischer Lloyd SE (DNV GL SE)
- Lloyd's Register of Shipping.
- Registro Italiano Navale (RINA)
- Russian Maritime Register of Shipping
- Russian River Register
- Shipping Register of Ukraine

(ECE /ADN/29)
(2006/87/EC Article 10)

2.22 What was the date of the last Special Survey?

2.23 What is the date of the next Special Survey?

2.24 Is the Safety Plan available and legible?

Fire control plans must be permanently displayed in prominent positions showing clearly, for each deck, the location and particulars of all fire-fighting equipment, dampers, controls etc. (ISGINTT 9.9.2.5 5)

2.25 If applicable, is a Damage Stability Plan on board?

Either the plan or evidence of 3rd party Damage Stability agreement should be provided.

For vessels complying with the additional requirements for double-hull vessels:

- a damage-control plan
- the documents concerning intact stability as well as all conditions of intact stability taken into account for the damaged stability calculation in a form the master understands
(ADN 8.1.2.3)

2.26 Date of departure from the last class-credited drydock/repair period.

In addition, if the last dry-docking/repair period was unscheduled, record the date and the reason. The date of the last class-credited drydock or 'In Water Survey' can be found in the Classification Society Survey Status Report. Details relating to the last bottom inspection can be found in the Cargo Ship Safety Construction Certificate.

2.27 If applicable date of the last class Survey Status Report.

Note: The most recent report should be available and this should be dated not more than four months prior to the date of the inspection. Class Survey Status Reports may not have been updated to reflect the latest status, despite the date of the document. However, class surveyors leave documentation on board at the time of surveys stating what has been carried out and these should be examined to ensure the correct information is reported.

2.28 If applicable what was the date of last Port State Control inspection or equivalent?

List the nature of any deficiencies at last PSC inspection if any. List any deficiencies that remain unresolved.

2.29 If propane gas is used for cooking and/or heating, is the equipment operated outside of a gas-hazardous area; is a certificate provided and is it valid?

Liquefied gas installations shall be suitable throughout for use with propane and shall be built and installed in accordance with best practice.

No part of a liquefied gas installation shall be located in the engine room. (2006/87/EC Article 14.02)

Heating, cooking and refrigerating appliances shall not be fuelled with liquid fuels, liquid gas or solid fuels. (ADN 9.3.1.41.2)

The use of galley stoves and other cooking appliances that employ naked flames should be prohibited while a tanker is at the terminal. (ISGINTT 4.2.3)

2.30 Has the Operator provided operating policies and procedures, and are these being followed?

This should include the Operator's Health, Safety and Environment (HSE) policy. Policies should be written in the working language of the vessel.

2.31 Has the operator's representative visited the vessel within the last six months?

The operator's representative must be a Technical/Marine superintendent or person familiar with the company's Safety Management System (SMS) and responsible for its implementation.

Record date of last visit.

2.32 Is a recent operator's internal audit report available and is a close-out system in place for dealing with non-conformities?

This audit must be conducted as part of the operator's SMS procedures. Satisfactory evidence should record that corrective action was taken to rectify non-conformities. A close-out system, which includes a time limit for corrective action, informing the operator when completed and the operator ensuring that it has been, should be in place and the inspector should ensure that the required actions have been made within the required time. Inspectors must not use Operator's audits as a means to record Observations. Some administrations may permit an extension for this review. If the Company are subject to ISO9001, then an internal audit should be available. Internal audit report should not be greater than 12 months old.

2.33 Does the master review the "Safety Management System" and report to the operator on any deficiencies?

The master's review of the operator's policies and procedures should be carried out annually and there should be documentary evidence of these available.

2.34 Is the vessel free of conditions of class or significant recommendations, memoranda or notations?

Record any conditions of class or significant recommendations, memoranda or notations of any nature, including due dates. Where class records address structural issues of concern, including bottom pitting, areas of substantial corrosion, cracks, buckling or serious indents, record the details as to the extent and the measures taken to arrest further development. Where a condition of class has been postponed, the details including the condition, original date and the new date for completion should be recorded. If records indicate that measures have been taken to address or restore loss of longitudinal or transverse strength, record the details and the repairs undertaken. The existence of doublers anywhere within the vessel's structure and deck strapping must be reported. If conditions of class have not been completed by the required due date, then the classification of the vessel may be subject to suspension.

2.99 Additional comments

If the Inspector has comments in respect of the subject matter covered by the Chapter additional to those which the Inspector may make in response to the specific questions in the Chapter, the Inspector should include such additional comments in this section

Chapter 3. Crew Management

1 Crew management

3.1 If the vessel is unmanned, record the name of the company, or companies providing the manpower?

Attending personnel must be suitably trained and qualified to handle cargo transfer. The company providing personnel must ensure that evidence of training and qualifications are carried by these persons and are made available to inspectors on request. Newly employed or joining personnel must be familiarized with the operational aspects of the vessel.

3.2 If the vessel is manned, complete the attached crew matrix for all officers and ratings

3.3 If the vessel is manned, are personnel directly employed by vessel's Operator?

If not state in comments the name of the crew's employer.

3.4 Are all personnel able to communicate effectively in a common language?

Record the common working language in comments.

3.5 If the vessel has a change of Master/Captain, is there a formalised information exchange process?

Are there formal handover notes when Master / Captain changes.

3.6 Have all officers attended either a Bridge Resource Management, Bridge Team Management course or equivalent applicable to the trade?

These should be formal shore-based courses.

Boatmaster shall hold a boatmasters certificate issued in accordance with the Recommendations on Minimum Requirements for the Issuance of Boatmasters Certificates in Inland Navigation with a view to their Reciprocal Recognition for International Traffic. (UNECE Res 61. 23-2.3.1)

3.7 Has the Master attended a ship handling course where applicable?

A master with less than three years' time in rank on board, must have attended a ship handling course or have sufficient practical experience. Practical experience may include training at chief officer rank under a master's supervision, provided this is properly documented. In the event that the master has in excess of three years' experience, this question should be answered NA. The IMO Model course 1.22 – Ship Simulator and Bridge Teamwork may be of assistance in the preparation of courses.

3.8 Has at least one officer who has immediate responsibility for cargo transfer, in possession of the Certificates of Specialized Training as applicable to the type of cargo being carried?

Persons whose duties concern the carriage of dangerous goods, shall be trained in the requirements governing the carriage of such goods appropriate to their responsibilities and duties. (ADN 1.3.)

When dangerous substances are carried, the responsible master shall at the same time be an expert. (ADN 7.2.3.15)

An expert is a person who has special knowledge of the ADN. Proof of this knowledge shall be furnished by means of a certificate from a competent authority or from an agency recognised by the competent authority. (ADN 8.2.1.2)

3.9 Are policies relating to work and rest periods in place and are they being complied with?

Such policies are applicable to all personnel involved with operations. Records for hours of rest must be maintained for both manned and unmanned vessels. These, and physical evidence must show that hours of rest are at least in accordance with those applicable in STCW/MLC or other local legislation.

Personnel are to have sufficient hours of rest to ensure that they are 'fit for duty' and are able to carry out their duties safely, in accordance with (inter)national labour regulations. (ISGINTT 13.3.1)

A distinction shall be made between the following operating modes (per 24 hours):

- A1 daytime navigation for a maximum of 14 hours
- A2 semi-continuous navigation for not more than 18 hours
- B continuous navigation for 24 hours and more

Daytime navigation may be extended to a maximum of 16 hours, not more than once a week, if the vessel is equipped with a tachograph approved by the Administration and in proper working order, and if the members of the minimum crew include one holder of the boatmaster's certificate and a helmsman.

(UNECE Res 61. 23-5)

3.10 Does the operator's Drug and Alcohol policy meet or exceeds OCIMF guidelines?

Drug and alcohol policies should be established and be clearly communicated to all personnel.

(ISGINTT 13.4.1)

3.11 What was the Operator's defined maximum level of blood alcohol content?

OCIMF recommends that officers and ratings observe a period of abstinence from alcohol prior to scheduled watchkeeping duty or work periods. The objective should always be to ensure that, prior to going on scheduled duty the blood alcohol content of the seafarer is theoretically zero.

(OCIMF Guidelines for the control of drugs and alcohol)

The consumption of alcohol should be controlled to ensure no person is intoxicated while on board. The standards that are used to define intoxication are laid down in published industry guidelines, which define alcohol limits and the method of determining them. Controls on consumption should ensure that personnel are able to carry out scheduled duties free from the effects of alcohol. Scheduled duties include, but are not limited to, standing of a deck or engine watch, the commencement of day work for day workers, arrival at a pilot station, going to mooring stations, or any other duty (including overtime work) scheduled at a specific time. On tankers operating with an Unmanned Machinery Space (UMS), the officer on standby duty, on call to answer UMS alarms, is considered to be on duty for the purposes of alcohol control. No person should be allowed to consume alcohol while on watch or during the performance of any shipboard duties. The issue of alcohol on board should be carefully controlled under the guidelines set out in the Company's policy and should be monitored by the Master.

(ISGINTT 13.4.2)

3.12 What was the recorded frequency of unannounced drug testing?

To ensure that the drug and alcohol policy is effective, operators should have a programme in place to prevent the use of illegal drugs and the misuse of alcohol.

Tests may be performed for the following reasons:

- Reasonable suspicion.
- After an accident.
- Pre-employment.
- Random testing programme.

A policy for random tests should be developed by the Company in conformity with the requirements/limitations of the country of jurisdiction.

(ISGINTT 13.4.3)

3.13 What was the recorded frequency of unannounced alcohol testing?

The frequency of unannounced testing should be sufficient so as to serve as an effective deterrent to abuse.

(OCIMF Guidelines for the control of drugs and alcohol)

To ensure that the drug and alcohol policy is effective, operators should have a programme in place to prevent the use of illegal drugs and the misuse of alcohol.

Tests may be performed for the following reasons:

- Reasonable suspicion.
- After an accident.
- Pre-employment.
- Random testing programme.

A policy for random tests should be developed by the Company in conformity with the requirements /limitations of the country of jurisdiction.

(ISGINTT 13.4.3)

3.14 What was the date of the last unannounced on-board alcohol test?

- 3.15** What was the date of the last unannounced Drug and Alcohol test undertaken by an external agency?
- 3.16** Does the operator have Drug and Alcohol testing following an incident and / or any operational anomalies?
- 3.17** Is the Drug and Alcohol policy posted in a prominent area on board the vessel?
- 3.18** Does the operator have a requirement for personnel to undergo regular medical examinations to ensure fitness for duty, beyond statutory requirements?

Physical fitness for the job shall be certified by a medical certificate issued on first enlistment as a crew member by a doctor designated by the competent authority. (UNECE Res 61. 23-3.1)

Certification of fitness shall be renewed periodically in accordance with the requirements of the Administration. (UNECE Res 61. 23-3.3)

Record in comments details of additional medical/fitness for duty examinations.

3.99 Additional comments

If the Inspector has comments in respect of the subject matter covered by the Chapter additional to those which the Inspector may make in response to the specific questions in the Chapter, the Inspector should include such additional comments in this section.

Chapter 4. Navigation and Communications

1 Navigation and Communications

4.1 Is an up to date Operator's Navigational and Bridge Organisation Manual on board with adequate operator's navigation instructions and procedures?

Do the bridge procedures address high risk navigational situations:-

- *Restricted visibility*
- *High traffic density*
- *Reduced manoeuvrability*

The operator's procedures should also include at least the following:

- *A clear statement that safety of life and the safety of the vessel take precedence over all other considerations;*
- *Operation of the retractable wheelhouse if applicable;*
- *Allocation of bridge watchkeeping duties and responsibilities for navigating procedures;*
- *Circumstances when the master must be called;*
- *Chart and nautical publication correction procedures including, if appropriate, electronic chart corrections;*
- *Procedures to ensure that all essential navigation equipment is available and fully operational;*
- *A hard copy of the operator's navigation policy and procedures must be available on the bridge, including procedures to be adhered to when the vessel is non-operational.*

An updated copy of the navigation regulations applicable to the waterway shall be carried on board of every vessel, except unmanned vessels, open small crafts and assemblies of floating material. (CEVNI Art 1.11.1)

4.2 If the vessel is provided with a retractable wheelhouse, does the operator provide instructions for its safe use?

Minimum instructions should include;

- *Operating parameters clearly posted*
- *Warning signals when operating*
- *Procedures for operation*

Retractable wheelhouses shall be fitted with an emergency lowering system.

All lowering operations shall automatically trigger a clearly audible acoustic warning signal. That requirement shall not apply if the risk of injury which may result from the lowering is prevented by appropriate design features.

It shall be possible to leave the wheelhouse safely whatever its position. (2006/87/EC Article 7.12)

4.3 Has the wheelhouse been adequately manned at all stages of the voyage and at anchor and were lookout arrangements adequate?

Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate to the prevailing circumstances and conditions as to make a full appraisal of the situation and the risk of collision. (Colregs Rule 5)

The look-out must be able to give his full attention to the keeping of a proper look-out and no other duties shall be undertaken or assigned which could interfere with that task. (STCW A-VIII/2-3.1/14)

The officer in charge of the navigational watch may be the sole look-out in daylight provided that on each occasion:

- *The situation has been carefully assessed and it has been established without doubt that it is safe to do so*
- *Full account has been taken of all relevant factors including but not limited to:-*
 - *State of weather*
 - *Visibility*

- Traffic density
- Proximity of dangers to navigation; and
- The attention necessary when navigating in or near traffic separation schemes
- Assistance is immediately available to be summoned to the bridge when any change in the situation requires. (STCW A-VIII/2-3. 1/15)

Note: The operator's navigational instructions and procedures must contain guidance relating to circumstances when the person in charge of the watch may be the sole lookout, including considerations that the person in charge has had sufficient rest prior to starting the watch.

The experience of the watch persons, weather and traffic conditions will dictate the required bridge manning composition at any specific time. Each stage of the voyage must be reviewed to establish that sufficient personnel were on the bridge and that an effective communications and teamwork structure was in place. Inspectors must take into account the impact of additional bridge manning upon the work load of any individual and impact of hours of rest regulations.

Manning of vessels under 55m in length may permit just one man operation in the Netherlands, Belgium and France. (UNECE Res 61. 23-5)

Where a wheelhouse has been designed for radar navigation by one person, the helmsman shall be able to accomplish his task while seated and all of the display or monitoring instruments and all of the controls needed for operation of the vessel shall be arranged in such a way that the helmsman may use them comfortably while the vessel is under way without leaving his position or losing sight of the radar screen. (2006/87/EC Article 7.01)

4.4 If applicable, is the navigational equipment appropriate for the type of vessel and is it operational?

Regardless as to whether a vessel is required by legislation to carry specific navigational equipment, if navigational equipment is fitted then it should be operational. The inspector should make spot checks to ensure that equipment, as fitted and as appropriate to the vessel, is operational. If equipment is either missing or not operational, record this as an observation.

In wheelhouses designed for radar navigation by one person:

- the radar screen shall not be shifted significantly out of the helmsman's axis of view in its normal position;
- the radar image shall continue to be perfectly visible, without a mask or screen, whatever the lighting conditions outside the wheelhouse;
- the rate-of-turn indicator shall be installed directly above or below the radar image or be incorporated into this. (2006/87/EC Article 7.06)

4.5 If required, is an operational compass(s) provided?

Compass can be either magnetic, gyro or solid state type. Inspector to state type of compass(s) fitted and if operational. If a magnetic compass is fitted then a deviation card should be provided. Record in comments date the last deviation card was issued.

4.6 If required, is an operational Global Maritime Distress and Safety System (GMDSS) provided?

SOLAS classed vessels required GMDSS and personnel must be qualified in its use.

4.7 Is an operational Global Positioning System receiver (GPS) provided?

(GPS) is the standard generic term for satellite navigation systems. The GPS should be a fixed unit. If the GPS is a hand held type the question should be answered 'NO' and the type of GPS system stated.

4.8 Is an operational main engine RPM indicator provided?

4.9 Where applicable is an operational propeller pitch indicator provided.

4.10 Is an operational 3cm radar provided?

State number of radars fitted. If none fitted then answer question 'NA'.

Craft longer than 110 m shall be fitted with a radar navigation system, together with a rate-of-turn indicator in accordance with Article 7.06(1) (2006/87/EC Article 22a.05.1(b))

Radar scanner motors are not rated for use in dangerous/hazardous areas and, on smaller vessels, may be situated within shore hazardous zones. Caution should therefore be exercised should radars require testing alongside. The radar should be switched off or placed on standby when alongside a terminal and the terminal should be consulted before testing radar equipment during cargo operations. (ISGINTT 4.8.3)

The radar equipment and rate-of-turn indicators shall be of a type that has been approved by the competent authority. (2006/87/EC Article 7.06)

Where a vessel complies with the special provisions for wheelhouses designed for radar navigation by one person as set out in Articles 7.01, 7.04 to 7.08 and 7.11, the following entry shall be made in the Community certificate: 'The vessel has a wheelhouse designed for radar navigation by one person'. (2006/87/EC Article 7.13)

4.11 Is an operational 10cm radar provided?

State number of radars fitted. If none fitted then answer question 'NA'.

4.12 Is an operational VHF Radio provided?

Where vessel wheelhouses designed for radar navigation by one person are equipped with a radio telephone system for the public correspondence network, reception shall be possible from the helmsman's seat. (2006/87/EC Article 7.07)

The use of permanently and correctly installed VHF and UHF equipment during cargo, bunkering, ballasting, tank cleaning, gas freeing, purging or inerting operations is considered safe. However, it is recommended that the transmission power be set to low power (one watt or less) when used in port operations. (ISGINTT 4.8.2.2)

4.13 Are operational hand-held radios (Walkie Talkies) provided?

Portable VHF/UHF radios should be type-approved for use in hazardous areas. If none fitted then answer question 'NA'.

Handheld UHF/VHF portable transceivers must be of an intrinsically safe type. (ISGINTT 4.3.4)

4.14 Is an operational search light provided?

A searchlight that can be operated from the wheelhouse shall be fitted. (2006/87/EC Article 10.02)

4.15 Are operational sound signals provided?

If none fitted then answer question 'NA'.

The sound signals given by motorized vessels shall be accompanied by light signals synchronized with them, such light signals shall be yellow, bright and visible from all directions. (CEVNI Article 4.01.2)

In wheelhouses designed for radar navigation by one person it shall be possible to activate the sound signals by a foot operated switch. That requirement shall not apply to the 'do not approach' signal in accordance with the applicable navigational authority regulations of the Member States. (2006/87/EC Article 7.05.4)

4.16 Is an operational depth sounder provided?

Vessels navigating in zone 2 shall be provided with an echo sounder or a sounding lead.

(UNECE Res 61.10-2.2)

If none fitted then answer question 'NA'

4.17 If fitted, is the speed and distance indicator operational?

Doppler speed input on tugs is not very accurate if pushing barges. GPS and Electronic Charts can be used as speed measuring device for ground stabilised speed. If none fitted then answer question 'NA'

4.18 Is a rudder angle indicator provided?

On Towboats with full follow-up mechanical steering, the levers are the indicators. If none fitted then answer question 'NA'.

The rudder position shall be clearly displayed at the steering position. If the rudder-position indicator is electric it shall have its own power supply. (2006/87/EC Article 6.07.1)

Vessels with wheelhouses designed for radar navigation by one person shall be steered by means of a lever. It shall be possible to move that lever easily by hand. The position of the lever in relation to the longitudinal axis of the vessel shall correspond precisely to the position of the rudder blades. (2006/87/EC Article 7.04.5)

4.19 Is a rate of turn indicator provided?

Synonymous with "swing meter". The rate of turn indicator can be a standalone unit or integrated with an ECS. If none fitted then answer question 'NA'.

The rate-of-turn indicator shall be located ahead of the helmsman and within his field of vision. (2006/87/EC Article 7.06.1)

Craft longer than 110 m shall be fitted with a radar navigation system, together with a rate-of-turn indicator in accordance with Article 7.06(1) (2006/87/EC Article 22a.05.1(b))

4.20 Are navigation lights, shapes and signals provided and are they appropriate for the operation of the vessel?

Navigation lights includes any lights required for operational purposes, i.e. dangerous cargo lights. On barges, if light stands are used the interior of the light box should be painted flat black. If none fitted then answer question 'NA'.

The arrangement and colour of the repeater lights for the navigation lights and light signals shall correspond to the actual position and colour of those lights and signals.

The failure of a navigation light or light signal to function shall cause the corresponding repeater light either to go out or to provide a signal in another manner. (2006/87/EC Article 7.05.3)

When visibility conditions so require, the visual signals prescribed for use at night shall also be displayed by day. (CEVNI Article 3.01.1)

4.21 If Applicable, is an operational Single Side Band (SSB) radio provided?

4.22 If applicable, is an operational Digital Selective Calling (DSC) Communications system fitted?

SOLAS classed vessels required GMDSS and personnel must be qualified in its use.

4.23 Is an operational Automatic Radar Plotting Aid (ARPA) system provided?

If none fitted then answer question 'NA'.

4.24 Is an operational Automatic Identification System (AIS) provided?

When alongside a terminal or port area where hydrocarbon gases may be present, either the AIS should be switched off or the aerial isolated and the AIS given a dummy load. Isolating the aerial preserves manually input data that may be lost if the AIS is switched off. If necessary, the port authority should be informed. When alongside a terminal or port areas where no hydrocarbon gases are likely to be present, and if the unit has the facility, the AIS should be switched to low power. (ISGINTT 4.8.4)

4.25 Is an operational NAVTEX system provided?

Required on SOLAS classed vessels or if the vessel operated more than 100 nautical miles but not more than 200 Nautical Miles from the nearest land. If none fitted then answer question 'NA'.

4.26 Is an operational automatic pilot provided?

If none fitted then answer question 'NA'.

4.27 Is an operational internal communication system provided?

If none fitted then answer question 'NA'.

It shall be possible to establish communication links from the steering position:

(a) with the bow of the vessel or convoy;

(b) with the stern of the vessel or convoy if no direct communication is possible from the steering position;

(c) with the crew accommodation;

(d) with the boatmaster's cabin.

Reception at all positions of these internal communication links shall be via loudspeaker, and transmission shall be via a fixed microphone. The link with the bow and stern of the vessel or convoy may be of the radio-telephone. (2006/87/EC Article 7.05.3)

4.28 Are binoculars provided and are they in good order?

A pair of binoculars, 7 x 50 or with larger lens diameter shall be on board. (2006/87/EC Article 10.02.2(g))

4.29 If applicable, is the vessel fitted with an operational off-course alarm?

4.30 If applicable, is the vessel fitted with a Voyage Data Recorder (VDR)?

Some vessels may be fitted with a Simplified Voyage Data Recorder (SVDR)?

4.31 If applicable, is there a documented procedure for the operation of the VDR and are the Deck Officers familiar with procedure to retain the VDR data in the event of an incident?

Note: In the event of an incident the data retained in the VDR can be invaluable in accident investigations, ship's crew should be aware of how to retain this data and prevent it from being over written. The OCIMF information paper "Recommendations on the Proactive Use of Voyage Data Recorder Information" provides further information on the use of VDRs.

4.32 Are the navigation charts, light lists, tide tables and pilot books provided, adequate for the vessel's trading area?

Fully corrected and up to date charts and other nautical publications should be provided for at least the most recent previous voyage and the forthcoming voyage. All required publication can be maintained in an electronic form and backup system must be provided. The requirement is to have the most current edition chart and most recent Notice to Mariners.

Vessels navigating in zone 2 shall be provided with availability of nautical charts (UNECE Res 61.10-2.2)

An updated copy of the navigation regulations applicable to the waterway shall be carried on board of every vessel, except unmanned vessels, open small crafts and assemblies of floating material.

An electronic version is acceptable when readable at short notice. (CEVNI Article 1.11)

4.33 If an Electronic Chart System is fitted, is it fully operational?

If no electronic chart system is fitted on board then answer question 'NA'

Inland ECDIS equipment which can be operated in navigation mode shall be regarded as radar equipment. In addition the requirements of the Inland ECDIS standard shall be met. (2006/87/EC Article 7.06.1)

4.34 If an electronic chart system is fitted, are the users qualified and have received sufficient training in the system?

Vessels may not use radar and Inland ECDIS equipment which may be used for conning the vessel with overlaid radar image (Navigation Mode) unless a person holding a certificate of aptitude to use radar in accordance with the requirements of the competent authorities is on board (CEVNI Article 4.06.1)

4.35 Are emergency or auxiliary steering gear / pump changeover instructions posted and are they clearly understood?

4.36 If a bow or stern thruster is fitted, are operating instructions provided and are the directions of thrust clearly indicated on the operating console?

Craft longer than 110 m shall; be fitted with a multi-propeller propulsion system, with at least two independent engines of equal power and a bow thruster that is controlled from the wheelhouse and is also effective when the craft is in an unladen state; or have a single-propeller propulsion system and a bow thruster that is controlled from the wheelhouse with its own power supply and which is also effective when the craft is in an unladen state and makes it possible for the craft to proceed under its own power in the event of a breakdown of the main propulsion system. (2006/87/EC Article 22a.05.1 (a))

In the case of rudder-propeller, water-jet, cycloidal-propeller and bow-thruster systems, equivalent devices shall be acceptable as control, indicating and monitoring devices. (2006/87/EC Article 7.04.9)

4.37 Are the air draughts clearly displayed in the wheelhouse?

The vertical distance from the water line to the top of the highest structure on the vessel or combined units must be displayed. Where fitted with a retractable wheelhouse, air draughts should be displayed for both conditions.

4.38 On vessels with retractable wheelhouses is the relation between the sailing speed and the time needed to lower the wheelhouse clearly posted and understood.

On some vessels range finders may be fitted to give warning on when the wheelhouse/mast is to be lowered when approaching an obstruction. If retractable wheelhouse not fitted answer 'NA'.

4.39 Are local navigation warnings/information received on board on a regular basis and readily available to the navigators?

State the means of receipt of warning e.g. VHF / Navtex / Internet etc.

4.40 Was a comprehensive passage plan available and appropriate for the previous voyage and did it cover the full voyage from berth to berth?

A detailed voyage or passage plan should be prepared which should cover the entire voyage or passage from berth to berth, including those areas where the services of a pilot will be used. This planning should include, but not be limited to the following items:

- *Check the planned route for proximity to hazards*
- *Charts, Light List, Tide Tables, Notice to Mariners, Coastal pilot for intended routes*
- *Bar crossings, Bridge transits, Restricted waterways, Locks*
- *Bridge Personnel are Posted for various stages of the intended routes*
- *Forward and after drafts of the barge or barges and under-keel and vertical clearances (air-gaps) for all bridges, ports, and berthing areas. Note: Air draughts should be clearly displayed in the wheelhouse*

Communication contacts at any Vessel Traffic Services, bridges, and facilities, and any port-specific requirements for VHF radio. Position monitoring in narrow channels and rivers should be continuous.

4.41 Are pre-arrival, pre-departure and watch handover checklists being completed?

The Pre arrival and departure navigation and manoeuvring equipment tests shall be completed prior to departure and arrival at a berth.

4.42 If fitted is the satellite Emergency Position Indicating Radio Beacon (EPIRB) fitted, armed and labelled correctly and inspected in accordance with the manufacturer's requirements?

The EPIRB shall be:

- *Installed in an easily accessible position;*
- *Ready to be manually released and capable of being carried by one person into a survival craft;*
- *Capable of floating free if the ship sinks and of being automatically activated when afloat; and*
- *Capable of being activated manually.*

Notes: The vessel's name, the serial number and the maritime mobile services identity (MMSI or 15 Hex ID) should be clearly indicated on the EPIRB. (SOLAS Ch. IV Reg 8 1.1)

4.99 Additional comments

If the Inspector has comments in respect of the subject matter covered by the Chapter additional to those which the Inspector may make in response to the specific questions in the Chapter, the Inspector should include such additional comments in this section.

Chapter 5. Safety Management

1 General Safety

5.1 Are the vessel personnel familiar with the operation of firefighting, lifesaving and other emergency equipment?

Note: Vessel personnel should be familiar with the operation of the fixed firefighting systems, the main and emergency fire pumps, the emergency steering gear, the donning and use of breathing apparatus and oxygen resuscitation equipment as applicable.

*The crew shall be familiarised with the handling of fire-extinguishing systems and fire extinguishers.
(ADN 1.3.2.2.2)*

5.2 Is the deck area free of visible safety deficiencies?

This could include but not be limited to:-

- *Decks should be clean and tidy and free of any loose material.*
- *Non slip walkways should be identified and in good condition*
- *free of trip hazards*
- *Adequately lit in hours of darkness.*
- *Raised obstacles clearly marked.*

5.3 Does the Operator provide adequate personal protection equipment, (PPE) appropriate to the cargo(es) being carried and is it being used correctly?

Personnel should be properly trained in the use of PPE.

Protective clothing and equipment should be worn by all personnel engaged in operations on board and ashore. It is recommended that this should comprise a boiler suit (or similar clothing providing full cover, anti-static and flame retardant), safety shoes, safety glasses and a safety helmet as appropriate. All personnel should also wear life vests or other similar buoyancy devices where there is a risk of falling into the water. (ISGINTT 26.2.1)

List of Dangerous Goods Column (18) contains the alphanumeric codes for the equipment required for the carriage of the dangerous substances (ADN 3.2.3.1)

Insofar as the provisions of Chapter 3.2, Tables A or C require, the following equipment shall be available on board;

PP: for each member of the crew, a pair of protective goggles, a pair of protective gloves, a protective suit and a suitable pair of protective shoes (or protective boots, if necessary. On board tank vessels, protective boots are required in all cases;

EP: a suitable escape device for each person on-board;

EX: a flammable gas detector with the instructions for its use;

TOX: a toximeter with the instructions for its use;

A: a breathing apparatus ambient air-dependent.

(ADN 8.1.5.1)

Persons connecting or disconnecting the loading and unloading piping or the vapour pipes or gas discharge pipes, or taking samples, carrying out measurements, replacing the flames arrestor plate stack or relieving pressure in the cargo tanks shall wear the PP equipment referred to in 8.1.5 where prescribed in Column (18). (ADN 7.2.4.16.8)

5.4 Is a Quality Manual (Safety Management Manual) available on board and are personnel familiar with its contents?

Record the date of the latest revision?

5.5 Are smoking regulations posted and being adhered to and are smoke rooms adequately identified?

Smoking in port should only be permitted under controlled conditions and preferably not during cargo operations, ballasting and gas freeing. Difficulties perceived in introducing a restrictive smoking policy,

including a total ban, should not impede the implementation of such a policy if it is in the interest of safe operations. Appropriate measures should be in place, both on the ship and the shore, to ensure full compliance.

Smoking should be strictly prohibited within the restricted area enclosing all tanker berths and on board any tanker while at a berth. (ISGINTT 4.2.2.2)

While the tanker is moored at the terminal, even when no operations are in progress, smoking can only be permitted in designated smoking places or, after there has been prior agreement in writing between the Responsible Person and the Terminal Representative, in any other closed accommodation, subject to local (port) regulations. (ISGINTT 4.2.2.3)

ISGINTT Appendix 1: Tanker – Shore Safety Check-list
 ISGINTT Appendix 2: Seagoing – Inland Tanker / Inland Tanker Safety Check-List
 Warning notices should be posted on the doors to these designated compartments.

Buildings, places and rooms designated as areas where smoking is permitted should be clearly marked as such. (ISGINTT Appendix 7)

The notice boards displaying the prohibition of smoking in accordance with 8.3.4 shall be legible from either side of the vessel.

Notice boards indicating the circumstances under which the prohibition applies shall be fitted near the entrances to the spaces where smoking or the use of fire or naked light is not always prohibited. (ADN 9.3.1/2/3.74)

5.6 Is the vessel provided with a safe means of access?

Safe access to small craft is often difficult. Inspectors should use good judgment to determine that access to or between vessels, tugs and jetties access is safe. Vessels should have a lifebuoy, light and rescue line at, or near the point of access. In addition personnel should be provided with, and should wear a personal flotation device with water-actuated light. All access and working areas should have adequate lighting.

A boarding gangway at least 0,4 m wide and 4 m long whose side edges are defined by a brightly-coloured strip; that gangway shall be equipped with a handrail. The inspection body may permit shorter gangways for small vessels. (2006/87/EC Article 10.02.2(d))

The use of wood, aluminium alloys or plastic materials within the cargo area is only permitted for gangways and external ladders. (ADN 9.3.1/2/3.0.3)

A tanker's gangway consists of a straight, lightweight bridging structure provided with side stanchions and handrails. The walking surface has a non-slip surface or transverse bars to provide foot grips for when it is inclined. (ISGINTT 16.4.3.2)

5.7 Is loose gear on deck or in internal spaces properly secured?

5.8 Is an operational emergency lighting system provided?

5.9 Is an operational general alarm provided?

There shall be an independent alarm system enabling the accommodation, engine rooms and, where appropriate, the separate pump rooms to be reached.

5.10 If applicable, is an operational accommodation gas detection system provided?

The sensors of the gas detection system shall be set at no more than 20% of the lower explosive limit of the substances allowed for carriage in the vessel. The system shall have been approved by the competent authority or a recognised classification society. (ADN 7.2.2.6)

Electrical equipment used during loading, unloading and gas-freeing during berthing and which are located outside the cargo area shall be at least of the "limited explosion risk" type. (ADN 9.3.1/2/3.52.3 (a))

This provision does not apply to electrical installations in the accommodation, the wheelhouse or the service spaces outside the cargo areas if;

1. these spaces are fitted with a ventilation system ensuring an overpressure of 0.1 kPa (0.001 bar) and none of the windows is capable of being opened; the air intakes of the ventilation system shall be located as far away as possible, however, not less than 6.00 m from the cargo area and not less than 2.00 m above the deck;
2. the spaces are fitted with a gas detection system with sensors
 - at the suction inlets of the ventilation system;
 - directly at the top of edge of the sill of the entrance doors of accommodation and service spaces.
3. The gas concentration measurement is continuous;
4. When the gas concentration reaches 20% of the lower explosive limit, the ventilators are switched off. In such case and when overpressure is not maintained or in the event of failure of the gas detection systems, the electrical installations which do not comply with ADN 9.3.1/2/3.52.3 (a)) shall be switched off. The switching off shall be indicated in the accommodation and wheelhouse by visual and audible means. (ADN 9.3.1/2/3.52.3(b))

5.11 Is all shipboard lifting equipment in good condition and routinely tested?

The operator should have a policy with respect to frequency of examination and testing of lifting equipment. Lifting equipment includes, but is not limited to, cranes, derricks, chain blocks, slings, strops etc.

All shipboard lifting equipment, such as is used for the handling of cargo transfer equipment and/or gangways, should be examined at intervals not exceeding one year and load tested at least every 5 years unless local, national or company regulations require more frequent examinations. (ISGINTT 8.3.1)

2 Fire Fighting Equipment

5.12 Is an Emergency Plan posted?

This may be provided as a single plan and incorporated in the Muster List and include fire and lifesaving contingencies or in the form of separate plans.

Fire control plans must be permanently displayed in prominent positions showing clearly, for each deck, the location and particulars of all fire-fighting equipment, dampers, controls etc. When the tanker is in port, these plans could also be displayed, or be readily available, outside the accommodation block for the assistance of shore based fire-fighting personnel. (ISGINTT 9.9.2.5)

5.13 Is sufficient firefighting equipment on board, which may include hoses, nozzles, firemen's outfits, breathing apparatus and portable extinguishers and is it in satisfactory condition, and ready for immediate use?

There shall be at least one portable fire extinguisher in accordance with European standard EN 3:1996 at each of the following places:

- (a) in the wheelhouse;
- (b) close to each entrance from the deck to accommodation spaces;
- (c) close to each entrance to service spaces which are not accessible from the accommodation spaces and which contain heating, cooking or refrigeration equipment using solid or liquid fuels or liquefied gas;
- (d) at each entrance to engine rooms and boiler rooms;
- (e) at suitable points below deck in engine rooms and boiler rooms such that no position in the space is more than 10 metres walking distance away from an extinguisher. (2006/87/EC Article 10.03.1)

Portable fire extinguishers shall be checked at least every two years. An inspection certificate shall be issued, signed by the inspector and showing the date of inspection. (2006/87/EC Article 10.03.5)

In addition to the fire –extinguishing appliances required by local, regional or international requirements generally applicable to the carriage of goods by inland waterway the vessel shall be equipped with at least two additional hand fire-extinguishers having the same capacity. The fire extinguishing agent shall be suitable for fighting fires involving the dangerous goods carried. (ADN 8.1.4)

Three suitable and sufficiently long hoses with jet/spray nozzles having a diameter of not less than 12mm shall be provided. It shall be possible to reach any point of the deck in the protected area simultaneously with at least two jets of water which do not emanate from the same hydrant. (ADN 9.3/1/2/3/40.1)

On board the tanker, this is normally achieved by having fire hoses with spray/jet nozzles ready for use. Having portable dry chemical powder extinguishers available in the cargo area provides additional protection against small flash fires. (ISGINTT 24.8)
Hand fire extinguishers and fire extinguishing hoses shall be inspected at least once every two years by persons authorised for this purpose by the competent authority.

5.14 If fitted, are fixed fire, smoke and gas detection systems fully operational, tested, and are the inspection records up to date?

Permanently installed firefighting systems in engine rooms, boiler rooms and pump rooms shall be monitored by means of an appropriate fire alarm system. The alarm shall be noticeable in the wheelhouse, the accommodation spaces and the room to be protected. (2006/87/EC Article 10.03b.3.3)

The room to be protected shall be monitored by means of an appropriate fire alarm system. The alarm shall be noticeable in the wheelhouse, the accommodation spaces and the room to be protected. (2006/87/EC Article 10.03b.3.3)

In engine rooms and pump rooms the alarm signal shall take the form of a flashing light that is visible on all sides and clearly perceptible at all points. (2006/87/EC Article 7.09)

Fixed fire detection systems in combination with an alarm station are recommended and should be tested on a regular basis. (ISGINTT 5.4)

Fixed gas detection units are usually fitted as a means of detecting leakage and not for gas testing prior to entry. Gas testing for entry should only be carried out using equipment that has been calibrated and tested and that has appropriate indicator scales. (ISGINTT 2.4.8)

5.15 If a fixed firefighting system is installed, is it fully operational, tested, and are the inspection records up to date?

If a fixed firefighting system is installed, records of the last analysis of halon, foam and/or dry powder should be provided. If a fixed CO₂ firefighting system is installed, the date of its last testing should be on board. Alcohol resistant foam must be provided for chemical carriers.

Record in comments type of system(s) installed, area(s) covered, and date(s) of last inspection by authorised service agent.

In addition the engine room, the pump-room and all spaces containing essential equipment (switchboards, compressors, etc.) for the refrigeration equipment, if any, shall be provided with a fixed fire-extinguishing system. (ADN 9.3.1/2/3.40.2)

Fire protection in accommodation spaces, wheelhouses and passenger spaces is to be provided only by suitable automatic pressurised water sprinklers as permanently installed fire-fighting systems. (2006/87/EC Article 10.03a.1)

For protecting engine rooms, boiler rooms and pump rooms, the following extinguishing agents may be used in permanently installed fire-fighting systems:

- (a) CO₂ (carbon dioxide);
- (b) HFC 227ea (heptafluoropropane);
- (c) IG-541 (52 % nitrogen, 40 % argon, 8 % carbon dioxide). (2006/87/EC Article 10.03b.1)

5.16 If fitted, is the type of foam compound suitable for the cargoes which the vessel is certified to carry and the vessel's area of operation?

Foam systems are used for fighting fire in the cargo spaces, on the cargo deck, in the pumproom or in the engine spaces. (ISGINTT 8.1.3.2)

5.17 If a deck water spray system is installed, is it fully operational, tested, and are the inspection records up to date?

If a gas or vapour water-spray system is required in column (9) of Table C Chapter 3.2, it shall be kept ready for operation during loading, unloading and carriage. (ADN 7.2.4.28.1)

When water-spraying is required in column (9) of Table C Chapter 3.2 a water-spray system shall be installed in the cargo area on deck for the purpose of reducing gases given off by the cargo by spraying water. (ADN 9.3.1/2/3.28)

5.18 If fitted is the emergency stop for the accommodation, wheelhouse and engine room ventilation system clearly marked and operational?

Any forced ventilation present in the engine room, boiler room or pump room to be protected shall switch off automatically if the fire-fighting system is triggered.

There shall be devices available with which all apertures which can allow air to enter or gas to escape from the room to be protected can be quickly closed. It shall be clearly recognisable whether they are open or closed. (2006/87/EC Article 10.03b.2)

3 Lifesaving Equipment

5.19 If lifesaving equipment is on board, is it in satisfactory condition and ready for immediate use and are personnel familiar with its operation?

A procedure should provide familiarization of new personnel with use of lifesaving equipment. Emergency drills should be undertaken at regular and frequent intervals. If required the number and type of distress signals on board should be in date, properly stowed and ready for immediate use. Muster lists should be posted and up to date. The capacity of the life raft(s) must be sufficient for the vessel's complement; in satisfactory condition and hydrostatic releases "if fitted" must be correctly attached and ready for immediate use. Lifejackets should be provided for all personnel, in satisfactory condition and fitted, as required with self-igniting light, or line. Lifejacket donning notices should be posted. The emergency equipment locker should be clearly marked and easily accessible.

On board craft there shall be at least three lifebuoys in accordance with European standard EN 14144: 2002. They shall be ready for use and attached to the deck at appropriate points without being attached to their mounting. At least one lifebuoy shall be in the immediate vicinity of the wheelhouse and shall be equipped with a self-igniting, battery-powered light that will not be extinguished in water. (2006/87/EC Article 10.05.1)

A personalised, automatically inflatable lifejacket in accordance with European standards EN 395: 1998 or EN 396:1998 shall be within reach of every person who is regularly on board a craft. Non-inflatable lifejackets in accordance with these standards shall also be admissible for children. (2006/87/EC Article 10.05.2)

The following craft shall carry a ship's boat according to European standard EN 1914: 1997:

- (a) motor vessels and barges exceeding 150 t deadweight;
- (b) Tugs and pushers with a water displacement of more than 150 m³

(2006/87/EC Article 10.04.1)

The lifeboat required in accordance with the Regulations referred to in 1.1.4.6 shall be stowed outside the cargo area. The lifeboat may, however be stowed in the cargo area provided an easily accessible collective life-saving appliance conforming to the Regulations referred to in 1.1.4.6 is available within the accommodation area. (ADN7.2.3.29.1)

5.20 If applicable, are survival suits provided for all personnel?

An approved immersion suit is to be provided for every person on board ship, no later than the first safety equipment survey on or after 1 July 2006. Exemptions from this requirement may still be granted by Administrations for ships constantly engaged on voyages in warm climates, except for bulk carriers (as defined in SOLAS regulation IX/1 (SOLAS Ch. III Reg 32.3.2)

5.21 If fitted are safety ropes and equipment available to effectively undertake rescue from enclosed spaces?

Prior organisation is of great value in arranging quick and effective response. Lifelines, rescue harness, breathing apparatus, resuscitation equipment (if available) and other items of rescue equipment should always be kept ready for use and trained personnel should be available. (ISGINTT 10.6.2)

Entry into empty cargo tanks, the cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms and hold spaces is not permitted, except where the person entering the spaces wears a self-

contained breathing apparatus and other necessary protective and rescue equipment, and is secured by a line. (ADN 7.2.3.1.6)

5.22 Are emergency escape sets provided on board where required?

Emergency escape sets should be provided in machinery spaces and other manned enclosed spaces. If the vessel is assigned to a barge carrying toxic cargoes, emergency escape packs must be provided for all personnel.

In so far as the provisions of Chapter 3.2, Tables A or C require, the following equipment shall be available on-board;

EP: a suitable escape device for each person on-board; (ADN 8.1.5.1)

4 Operational Safety

5.23 Are Material Safety Data Sheets (MSDS) on board for all the cargo, bunkers and other products being handled, and are all personnel familiar with their use?

MSDS data sheets should be on board for the following:-

- All grades of cargo being carried
- All grades of fuel used on board
- All chemicals used on board
- Paints, protective coatings and all other corrosive or toxic materials that are carried on board?

To assist ship's crews in preparing for toxic cargoes, the IMO has urged governments to ensure that ships are supplied with, and carry, Material Safety Data Sheets (MSDS) for significant cargoes.

The supplier should provide the relevant MSDS to a tanker before it commences loading the products. The tanker should provide the receiver with an MSDS for the cargo to be discharged.

UN ECE and EU regulations do not require that tankers carry (M)SDS. Instead, tankers need to be issued with 'Instructions in Writing'. (ISGINTT 2.3.4)

Bunker fuels containing high H₂S concentrations may be supplied without advice being passed to the tanker beforehand. Tanker's personnel should always be alert to the possible presence of H₂S in bunker fuel and be prepared to take suitable precautions if it is present.

Before loading bunkers, the tanker should communicate with the supplier to ascertain whether the fuel to be loaded is likely to have any H₂S content. (ISGINTT 2.7.5)

5.24 Are paints, and flammable/toxic liquids safely stored?

To store flammable liquids with a flash point of less than 55°C there shall be a ventilated cupboard made of non-combustible material on deck. On its outside there shall be a symbol 'Fire, naked flame and smoking prohibited' with a diameter of at least 10 cm. (2006/87/EC Article 11.13)

5.25 Are there contingency plans and procedures in place?

Contingency plans and procedures should be in place to cover as a minimum the following scenarios:-

- Leakage, spillage or fire involving the cargo
- Pollution
- Breakout from the berth
- failure of steering gear
- collision or grounding
- Loss of power/blackout.
- Jettisoning of cargo
- Uncontrolled gas release
- Fire. (Accommodation, Engine room, pumproom etc.)
- Security.

The actions to be taken in the event of an emergency at a terminal should be contained in the terminal's Emergency Plan (ISGINTT 26.5)

5.26 Are drills for contingency plans and procedures being carried out?

A programme of drills to cover contingencies should be in place. Record the frequency of drills in comments.

Tanker personnel should be familiar with the theory of fire-fighting outlined in Chapter 5 and should receive instruction in the use of fire-fighting and emergency equipment. Practices and drills should be arranged at intervals to ensure that personnel retain their familiarity with the equipment. (ISGINTT 9.9.2.7)

5.27 If manned, are regular drills undertaken.

Regular drills should be performed top cover at least the following:-

- Firefighting
- Life saving
- Lifeboat and abandon ship
- Pollution control.

Persons wearing self-contained breathing apparatus shall be physically able to bear the additional constraints. They shall:

- In the case of devices operating with pressurised air, be trained in their handling and maintenance;
- In the case of devices supplied with pressurised air through a hose, be instructed in their handling and maintenance. The instruction shall be supplemented by practical exercises.

(ADN 1.3.2.2.4)

Tanker personnel should be familiar with the theory of fire-fighting outlined in Chapter 5 and should receive instruction in the use of fire-fighting and emergency equipment. Practices and drills should be arranged at intervals to ensure that personnel retain their familiarity with the equipment. (ISGINTT 9.9.27)

5.28 Is a Permit to Work system used on board the vessel?

The Permit to Work system may include one or more of the following documents to control hazardous activities:

- A work instruction.
- A maintenance procedure.
- A local procedure.
- An operational procedure.
- A check-list.
- A permit.

(ISGINTT 9.3.1)

It is the responsibility of the Company to establish procedures for safe entry of personnel into enclosed spaces on board. The process of requesting, raising, issuing and documenting permits to enter into an enclosed space should be controlled by procedures in the tanker's safety management system (SMS).

(ISGINTT 10.4)

Hot Work on board the tanker must be prohibited until all applicable regulations and safety requirements have been met and a Permit to Work has been issued. (ISGINTT 22.7.1.2)

5.29 Is a risk assessment programme used on-board the vessel?

A risk assessment should entail a careful examination of what, in the range of operations, could cause harm, with a view to deciding whether the precautions are adequate, or whether more should be done to minimise accidents and ill health on board a tanker. (ISGINTT 9.2.1)

5.30 If appropriate to the cargoes carried, are gas-tight proximity suits or chemical resistance suits available and in satisfactory condition?

Insofar as the provisions of Chapter 3.2, Tables A or C require, the following equipment shall be available on-board;

PP : for each member of the crew, a pair of protective goggles, a pair of protective gloves, a protective suit and a suitable pair of protective shoes (or protective boots), if necessary. On board tank vessels, protective boots are required in all cases; (ADN 8.1.5.1)

Persons connecting or disconnecting the loading and unloading piping or the vapour pipes or gas discharge pipes, or taking samples, carrying out measurements, replacing the flames arrestor plate stack or relieving pressure in the cargo tanks shall wear the PP equipment referred to in 8.1.5 where prescribed in Column (18). (ADN 7.2.4.16.8)

5.31 Is continuous communication between the barge and tug, or the barge and terminal, being maintained?

The use of VHF/UHF radio equipment as a means of communication between tanker and shore personnel should be encouraged. (ISGINTT 4.8.2.2)

The agreed tanker-to-shore communications system should be maintained in good working order. (ISGINTT 11.1.6.4)

5.32 If required are dangerous cargo signals displayed?

Vessels carrying out transport operations involving flammable substances that are referred to in ADN shall carry, in addition to the marking prescribed elsewhere in these regulations, the following marking in accordance with the requirements of subsection 7.1.5.0 or sub-section 7.2.5.0 of ADN:

*By night:
A blue light;*

*By day:
A blue cone, point downwards as indicated in ADN, Chapter 3.2, Table A, column (12) or Table C, column (19). These markings shall be in a suitable position and high enough to be visible from all directions. The blue cone may be replaced by one blue cone at the bow and one blue cone at the stern of the vessel, at a height of not less than 3 m.*

Vessels carrying out transport operations involving substances constituting health hazards that are referred to in

ADN shall carry, in addition to the marking prescribed elsewhere in these regulations, the following marking, in accordance with the requirements of sub-section 7.1.5.0 or sub-section 7.2.5.0 of ADN:

*By night:
Two blue lights;*

*By day:
Two blue cones, point downwards,*

Vessels carrying dangerous goods listed in Table C of Chapter 3.2 shall display the number of blue cones or blue lights indicated in column (19). These markings shall be placed one about 1 m above the other, in a suitable position and high enough to be visible from all directions. The two blue cones may be replaced by two blue cones at the bow and two blue cones at the stern of the vessel at a height not less than 3 m.

(CEVNI Article 3.14)

5.33 Are procedures in place to ensure that oxygen levels are safely controlled during purging with an inert medium?

Tankers using an inert gas system should maintain their cargo tanks in a non-flammable condition at all times. It follows that:

- Tanks should be kept in an inert condition at all times, except when it is necessary for them to be gas free for inspection or work, i.e. the oxygen content should be not more than 8% by volume and the atmosphere should be maintained at a positive pressure.*
- The atmosphere within the tank should make the transition from the inert condition to the gas free condition without passing through the flammable condition. In practice, this means that, before any tank is gas freed, it should be purged with inert gas until the hydrocarbon content of the tank atmosphere is below the critical dilution line. (ISGINTT 7.1.5.1)*

5.34 Are procedures in place to ensure that self-reacting products are handled safely?

5.35 Are means provided for the testing of cofferdams/void spaces for leakage?

Cofferdams/void spaces should be regularly tested for leakage of liquids, vapours and toxic products. Records of testing should be maintained.

5.36 If portable gas detection instruments are provided, do personnel demonstrate familiarity with their operation and calibration?

Portable instruments appropriate to the cargoes being handled should be carried and should be in satisfactory working condition. Portable gas detectors should be ready for immediate use and should be calibrated as per manufacturer's instructions. Hoses of suitable length should be available.

Tanker crews need to measure the oxygen, flammable and toxic gas concentrations in an atmosphere. This will enable them to detect the presence of any explosive mixtures, toxic vapours or oxygen deficiency that may present a risk of explosion or hazard to personnel.

On tankers fitted with an inert gas system, there is the additional need to measure the oxygen content of inert gas as part of the safe management of cargo tank atmospheres. (ISGINTT 8.2.1)

It is recommended that a tanker carrying cargoes that are likely to emit a toxic or flammable gas, or to cause oxygen depletion in a cargo space, be provided with an appropriate instrument for measuring the concentration of gas or oxygen in the air, together with detailed instructions for its use. (ISGINTT 8.2.3)

5.37 If required are emergency eye bath, sprays and decontamination showers available and in satisfactory condition?

On gas carriers authorised to transport these products, deck showers and eye baths are provided for water dousing; their locations should be clearly indicated. (ISGINTT 28.5)

The shower and the eye and face bath prescribed in the rules for construction shall be kept ready in all weather conditions for use during loading and unloading operations and cargo transfer operations by pumping. (ADN 7.2.4.60)

A shower and an eye and face bath shall be provided on the vessel at a location which is directly accessible from the cargo area. (ADN 9.3.1/2/3.60)

5.38 Are emergency first aid kits available?

The first aid kits should be complete and ready for immediate use and suitable for cargoes the vessel is carrying. Flag state requirements will dictate the number and location of first aid kits. Note in comments whether vessel has an additional first aid equipment such as defibrators etc.

An appropriate first-aid kit with a content in accordance with a relevant standard of a Member State. The first-aid kit shall be kept in an accommodation room or in the wheelhouse and be stored in such a way that it is easily and safely accessible if necessary. If first-aid kits are stored under cover, the cover shall be marked by a symbol for first aid kit having a side length of at least 10 cm. (2006/87/EC Article 10.02(f))

5.39 When an unfamiliar cargo is to be carried, is there a procedure to review the safety aspects and handling procedures?

5 Tank Cleaning Safety

5.40 Are the risks associated with tank cleaning clearly understood?

Every precaution must be taken to guard against the dangers associated with static electricity during tank cleaning and use of re-recycled wash water. The toxic hazards when tank cleaning after the carriage of chemicals must be understood. It is essential that a comprehensive tank cleaning guide is available on board. Some major chemical tanker operators have developed their own comprehensive tank cleaning guidelines, and these should be reviewed. If they have not, a recognized professionally produced industry publication should be available on board.

All tank washing operations should be carefully planned and documented. Potential hazards relating to planned tank washing operations should be systematically identified, risk assessed and appropriate preventive measures put in place to reduce the risk to as low as reasonably practicable (ALARP). (ISGINTT 11.3.2)

5.41 Are cargo tank atmospheres controlled during tank cleaning?

Safe and effective procedures should be in place when tank cleaning using chemicals and solvents or water washing and when gas freeing and steaming cargo tanks and records available.

In tankers that do not have access to inert gas, either through on board facilities (e.g. IGS plant) or shore supply, it is only possible to address the 'fuel' and the 'sources of ignition' sides of the fire triangle. In a non-inert condition, there are no physical barriers that will ensure elimination of these two hazards individually. Therefore, the safety of tank washing in the non-inert condition depends on the integrity of equipment, and implementation of strict procedures to ensure these two hazards are effectively controlled.

Non-inert cargo tank washing should only be undertaken when two sides of the fire triangle are addressed by a combination of measures to control both the flammability of the tank atmosphere AND sources of

ignition. It is recommended that all tankers that operate in the non-inert mode incorporate within their design and equipment the ability to mechanically ventilate cargo tanks concurrently with tank washing, in order to control tank atmospheres. (ISGINTT 11.3.2)

5.42 Are external doors ports and windows kept closed in port?

A tanker accommodation and machinery spaces contain equipment that is not suitable for use in flammable atmospheres. It is therefore important that volatile cargo vapours are kept out of these spaces.

During loading, unloading, gas freeing, tank cleaning and purging operations, all external doors, ports and similar openings on the tanker should be closed.

A screen door cannot be considered a safe substitute for an external door. Additional doors and ports may have to be closed in special circumstances or due to structural peculiarities of the tanker.

If external doors have to be opened for access, they should be closed immediately after use. Where practical, a single door should be used for working access in port. Doors that must be kept closed should be clearly marked.

Doors should not normally be locked in port. However, where there are security concerns, measures may need to be employed to prevent unauthorised access while at the same time ensuring that there is a means of escape for the personnel inside. Although discomfort may be caused to personnel in accommodation that is completely closed during conditions of high temperatures and humidity, this discomfort should be accepted in the interests of safety. (ISGINTT 24.1)

Doors shall be so arranged that they can be opened and closed safely from either side. They shall be protected against accidental opening or closing. (2006/87/EC Article 11.05.2)

5.43 If fitted, are outside air conditioning units type-approved for use in gas-hazardous areas, and are non-approved units electrically isolated during cargo handling operations?

Window type air conditioning units which are not certified as safe for use in the presence of flammable gas, or which draw in air from outside the superstructure, must be electrically disconnected and any external vents or intakes closed. (ISGINTT 11.4.3)

Externally located air conditioning units, should not be operated during any of the operations listed in Section 24.1 unless they are either located in safe areas or are certified as safe for use in the presence of flammable vapours. (ISGINTT 24.2)

6 Vessel Security

5.44 Are measures in place to prevent unauthorized boarding?

This may include provision of a deck watch, gangway notices and effective control of visitors.

No unauthorised person should be permitted on-board. This prohibition shall be displayed on notice boards at appropriate places. (ADN 8.3.3)

5.99 Additional comments

If the Inspector has comments in respect of the subject matter covered by the Chapter additional to those which the Inspector may make in response to the specific questions in the Chapter, the Inspector should include such additional comments in this section.

Chapter 6. Pollution prevention

1 Pollution prevention

6.1 Is the vessel provided with Oil Record Books or equivalents?

Regardless as to whether MARPOL Oil Record Books (ORBs) are required by local regulations, equivalent records must be maintained to account for the same operations as contained in the ORB's. Entries in the Oil Record Books (or their equivalent) must be up to date, accurate and Parts I and II must agree.

All vessels equipped with an engine room in accordance with Resolution No. 61, excluding small craft, shall carry on board a valid pollution prevention register (used oil log) (CEVNI Article 10.05.1)

The oily and greasy waste occurring during the operation of the vessel and referred to in article 10.04, paragraph 1 shall be delivered, against a receipt, to the reception facilities at regular intervals, depending on the condition and operation of the vessel. The receipt shall consist of an entry in the pollution prevention register (used oil log) by the reception facility. (CEVNI Article 10.05.3)

6.2 If required is an approved MARPOL Shipboard Oil Pollution Emergency Plan (SOPEP) or Shipboard Marine Pollution Emergency Plan (SMPEP) or equivalent provided?

When there is an immediate risk that public safety may be jeopardised, the participants shall immediately notify the emergency services and shall make available to them the information they require to take action. (ADN1.4.1.2)

6.3 Is suitable equipment provided to deal with small oil spills?

An oil spill kit should be provided to handle small spills

The boatmaster shall ensure the separate collection on board of oily and greasy waste occurring during the operation of the vessel and referred to in article 10.03, paragraph 1 above in receptacles provided for the purpose and the collection of bilge water in the engine room bilges. The receptacles shall be stored on board in such a way that any leakage of the contents may be noticed in time and easily prevented. (CEVNI Article 10.04.1)

6.4 Are anti-pollution notices posted?

Antipollution warning notices should be posted in conspicuous places on the vessel.

6.5 Are bulkheads, pipelines and the hull, free of visible leaks?

Blanks / Covers should be tight and fitted with good quality gaskets.

6.6 If fitted, are hydraulic lines on deck free of visible leaks?

6.7 Is a suitable containment fitted around hydraulic and other deck machinery?

6.8 Is a full perimeter spill rail fitted?

A raised steel plate along the cargo deck to a minimum height of 100mm (4 inches) should be fitted, however this may not be fitted depending on the nature of the cargoes carried and local legislation.

The extent of the perimeter guard rail should take into consideration service lines carrying oil or pollutants such as hydraulic or lube oil systems.

Record in comments the minimum height of the spill rail.

6.9 Is the condition of scupper plugs satisfactory and are scuppers effectively plugged?

If required, during cargo operations scupper plugs should be in place and liquid tight.

6.10 Are all the cargo and vapour manifolds provided with drip trays and free of product?

All connections, including those to vapour return system should have spill tray containment beneath. If the portable spill container is metallic it should be bonded to the hull structure. The spill container must be compatible with the product to be contained.

A permanently fitted drip tray, provided with suitable means of draining, should be fitted under all tanker and shore manifold connections. If no permanent means are fitted, portable drip trays should be placed under each connection in use to retain any leakage. The use of plastic should be avoided unless provision for bonding is made. (ISGINTT 24.7.4)

Receptacles intended for recovering possible liquid spillage shall be placed under connections to shore installations used for loading and unloading. This requirement shall not apply to the carriage of substances of Class 2. (ADN 7.2.4.16.5)

6.11 Are all loading arms/hose connections and manifold blank flanges fully bolted?

Only one reducer/expander should be fitted outboard of the manifold valve. Flanges should be fully bolted and of at least of the same thickness as the flanges to which they are attached.

The tightness of valves should not be relied upon to prevent the escape or seepage of products. All shore pipelines, loading arms and hoses not in use at a berth must be securely blanked. (ISGINTT 24.7.5)

6.12 Are bunker pipelines in good condition and regularly tested?

Bunker lines should be subject to survey/inspection at regular intervals. Bunker pipelines are defined as lines used for loading/unloading bunkers for consumption on board. The bunker lines should be clearly labelled. Record in comments the last date and type of testing and frequency.

6.13 Are spill containers fitted around all fuel, diesel and lubricating oil tank vents?

If save-alls are fitted their height around bunker tank vents should not be greater than the vent heads themselves. Containers should be empty of water and free of oil. Drain plugs should be in place in port. The vent heads should be clearly labelled to indicate the space that they serve.

6.14 Are bilge water and cargo slops handled in accordance with MARPOL or in accordance with the requirements of the local authorities?

Receipts should be retained, accounting for the disposal of cargo slops and engine residues to either barge or shore reception facilities.

The oily and greasy waste occurring during the operation of the vessel and referred to in article 10.04, paragraph 1 shall be delivered, against a receipt, to the reception facilities at regular intervals, depending on the condition and operation of the vessel. The receipt shall consist of an entry in the pollution prevention register (used oil log) by the reception facility. (CEVNI Article 10.05.3)

6.15 Are the machinery space(s) free of unauthorized overboard discharges and any evidence that unlawful oil discharge has taken place?

Measures should be taken to prevent the miss-operation of equipment, such as the oily water separator. These measures could include positive locking such as a breakable numbered seal on overboard discharge valves combined with a controlled log to document seal use.

6.16 If required are receipts maintained for each disposal of garbage?

Certificates may not always be provided where vessels are trading inland. However records should indicate the dates when disposals occurred, and of the quantity and nature of the garbage disposed.

The boatmaster shall ensure the separate collection on board and delivery to a reception facility of the waste referred to in article 10.03, paragraph 1, such as household refuse, sludge, slops and other special waste. If possible, household refuse shall be deposited separately according to the following categories: paper, glass, other recyclable materials and other refuse. (CEVNI Article 10.04.3)

6.17 Are sampling connections, valves, caps or plugs in satisfactory condition?

Are sampling connections, valves, caps or plugs properly secured to pipeline drains and vents?

6.18 Are cargo system sea and overboard valves suitably lashed, locked or blanked and are they thoroughly checked to ensure that they are fully closed prior to commencement of cargo transfer?

At the start of loading and at regular intervals throughout loading, discharging, ballasting and tank washing, a watch should be kept to ensure that oil is not escaping through sea valves.

Sea and overboard discharge valves connected to the cargo and ballast systems must be securely closed and lashed and may be sealed when not in use. In line blanks should be inserted where provided. When

lashing is not practical, as with hydraulic valves, some suitable means of marking should be used to indicate clearly that the valves are to remain closed.

Records of such checks should be recorded in the Deck or Cargo Log Book. Anti-pollution warning notices should be posted in the vicinity of these valves.

6.19 If ballast lines pass through cargo and/or Bunker tanks are they tested regularly and the results recorded?

6.20 Can the vessel check or sample segregated ballast prior to deballasting and are they free from oil.

A sample of the ballast tanks should be visually checked for oil contamination on each occasion before being discharged. Only ballast tanks adjacent to oil tanks or ballast tanks with oil pipelines running through them need to be checked. Under no circumstances should an oil sheen be detected on the surface of ballast water.

It is not satisfactory if numerous bolts must be removed from manhole covers to check that ballast is free of oil. If this is the only means of checking, an Observation must be made.

In the case of gas carriers there is no possibility of oil contamination of the permanent ballast unless oil pipelines pass through the ballast tanks or the ballast tanks are adjacent to bunker tanks. Except in these cases, sampling of the ballast tanks is not required.

6.99 Additional comments

If the Inspector has comments in respect of the subject matter covered by the Chapter additional to those which the Inspector may make in response to the specific questions in the Chapter, the Inspector should include such additional comments in this section.

Chapter 7. Structural

1 Structure

7.1 Is the hull free from visible structural defects that warrant further investigation?

The hull should be free of significant damage, indentations, oil staining, extensive coating breakdown and excessive marine growth. Hull markings should be legible and correctly placed.

7.2 Are weather decks free from visible structural defects that warrant further investigation?

Inspection of weather decks should include checking for any evidence of wastage, structural problems including evidence of over-pressurization, collision contact or distortion from heavy weather.

7.3 Is the superstructure free from visible structural defects that warrant further investigation?

7.4 If any cargo, ballast tanks or voids were sighted from the deck, were they in a satisfactory condition?

If the internals of a tank, or tanks, were sighted from the deck, record this fact in the comments and list the findings as appropriate. Regardless of whether tank entry is made, the opportunity should be taken where possible to sight from the deck the internal condition of at least two compartments and the forepeak. Valuable indications as to the condition of compartments such as ballast tanks, access trunks and peak tanks can be made from a visual inspection from the outside. Indications of unsatisfactory conditions can be wastage of handrails and ladder rungs, visible corrosion on vertical and horizontal framing, knife-edges on brackets, visible cracking and deformations of bulkheads or frames. Leakage from adjacent tanks or valve glands may be indicated by an oil sheen on the ballast, the presence of gas or the sound of falling liquid. For the purposes of this report, coating condition 'good', 'fair' or 'poor' is defined as follows:

- *Good condition with only minor spot rusting;*
- *Fair condition with local breakdown at edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for - poor condition;*
- *Poor condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration.*

7.5 Are procedures in place to carry out regular inspections of tanks and spaces and are records maintained?

The following tanks and spaces should be inspected when fitted:-

- *Cargo tanks*
- *Ballast Tanks*
- *Bunker and service (day) tanks*
- *Fresh water tank*
- *Lub oil tanks*
- *Void spaces*
- *Cofferdams*

Note. All tanks and spaces should be inspected at intervals not exceeding 2.5 years with a 6 month window either side. Records of all inspection results should be maintained. These should include a plan of each compartment with all its boundaries and should at least contain details and the location of:-

- *Structural deterioration and failure;*
- *Extent of corrosion, pitting and wastage;*
- *Extent of deterioration of any coating;*
- *Any leakages in bulkheads or pipework;*
- *The condition of cargo handling and monitoring equipment;*
- *Extent of sediment build-up.*

7.99 Additional comments

If the Inspector has comments in respect of the subject matter covered by the Chapter additional to those which the Inspector may make in response to the specific questions in the Chapter, the Inspector should include such additional comments in this section.

Chapter 8. Cargo Handling

1 General Cargo Handling

8.1 Is the vessel provided with company policy statements, instructions and procedures with regard to safe cargo operations?

8.2 Has a Ship/Shore Safety Check List (SSSCL) been properly completed and have those items that require reinspection, been inspected at the appropriate intervals?

The SSSCL should contain at least those questions as provided in ISGINTT or ADN. Loading or unloading shall not be started before a check list for the cargo in question has been completed.

The responsibility and accountability for the safe conduct of operations while a tanker is at a terminal are shared jointly between the tankers's Master (by ship/ship operations by both Masters) and the Terminal Representative. Before cargo or ballast operations commence, the Master(s), or his representative, and/or the Terminal Representative should:

- Agree in writing on the transfer procedures, including the maximum loading or unloading rates.*
- Agree in writing on the action to be taken in the event of an emergency during cargo or ballast handling operations.*
- Complete and sign the appropriate Safety Check-List(s). (ISGINTT 26.3.1)*

8.3 Have written loading, discharge or ballast transfer plans, as appropriate, been prepared and followed for the current operations?

Cargo transfer procedures must include precautions against exceeding permissible hull stresses. Personnel must be aware of trim and list limitations.

The cargo plan should allow for distribution within the tanker in order to achieve acceptable structural stress and the required trim to meet safe stability conditions when underway. (ISGINTT 32.5.1)

8.4 Does the operator require independent verification of cargo and ballast line up prior to commencement of each stage of the operation.

Prior to operations the system line up should be checked by more than one individual crew member.

8.5 If a loading computer or stability programme is in use, is it flag state or class approved?

If a flag state or class approved loading computer is not available, record in Comments, how stress and stability calculations are performed.

8.6 Are there records indicating that the operational accuracy of the load computer or stability programme is tested regularly?

Notes: At each survey, the loading instrument is to be checked for accuracy and the approved loading guidance information confirmed as being available on board. Class approved data should be used and the tests should be carried out in the presence of the attending surveyor. Regular on-board testing should also take place and records attesting to this should be maintained. The test should involve physically entering the data for each tank into the computer and verifying the result. It is not acceptable to simply retrieve a stored test condition from the computer and compare this against the official conditions.

8.7 Is the stress and stability information included with the cargo plan and are any limitations understood by the cargo watch personnel?

Notes: Inspectors should determine that prior to transfer of cargo, calculations have been made for stress and stability conditions for the start, interim and completion of transfer conditions. Regular monitoring of stress and stability should be taking place throughout cargo transfer to ensure that the conditions have been maintained within design limits.

The proof of sufficient stability shall be shown for every operating, loading and ballast condition in the stability booklet, to be approved by the relevant classification society, which classes the vessel. If it is impractical to pre-calculate the operating, loading and ballast conditions, a loading instrument approved by the recognised classification society which classes the vessel shall be installed and used which contains the contents of the stability booklet. (ADN9.3.1/2/3.13.3)

For vessels complying with the additional requirements for double hull vessels;

- A damage-control plan;*

- The documents concerning intact stability as well as all conditions of intact stability taken into account for the damaged stability calculation in a form the master understands (ADN8.1.2.2)

If the vessel is carrying deck cargo in form of oil in drums or other packaged cargo, this should be taken into account in the stability calculations.

8.8 Is the vessel free of inherent intact stability problems?

Notes: Vessels that have large width tanks will be subject to reductions of intact stability due to free surface. Although such vessels may meet intact stability criteria when in fully loaded or ballasted conditions, they may be unstable when multiple tanks are slack during cargo or ballast transfer operations, or in intermediate states of loading. Trim and stability manuals generally deal only with arrival and departure conditions and operators are not made aware that stability problems may exist at intermediate stages during cargo transfers.

If a vessel has either large width cargo tanks, "U" section ballast tanks, or double bottom tanks without watertight centreline bulkheads, inspectors should ascertain that the vessel meets intact stability criteria by requesting the chief officer to demonstrate, using the class approved loading instrument, the intact stability at the worst case condition. (I.e. all tanks slack and maximum free surface)

If no suitable loading instrument is provided and adequate instructions are not available, the question should be answered 'No', unless there is satisfactory proof that the vessel is free of inherent stability problems.

Inspectors should ascertain whether all officers appear familiar with operational restrictions and that instructions are prominently posted describing action to take if stability concerns are suspected or experienced. Record a "N" response and appropriate Observation if weaknesses or other concerns are revealed.

8.9 If the cargo is required to be inhibited, is the required information available?

Care shall be taken to ensure that these cargoes are sufficiently protected to prevent deleterious chemical change at all times during the voyage. Ships carrying such cargoes shall be provided with a certificate of protection from the manufacturer and kept during the voyage, specifying:

- The name and amount of additive present;
- Whether the additive is oxygen dependent;
- Date the additive was put in the product and the duration of its effectiveness;
- Any temperature limitations qualifying the additive's effective lifetime; and
- The action to be taken should the length of the voyage exceed the effective lifetime of the additives. (IBC 15.13.3)

Arrangements shall be made to ensure that the cargo is sufficiently stabilised in order to prevent a reaction at any time during carriage. The transport document shall contain the following additional particulars:

- (a) Name and amount of inhibitor added;
- (b) Date on which inhibitor was added and expected duration of effectiveness under normal conditions;
- (c) Any temperature limits having an effect on the inhibitor.

When stabilisation is ensured solely by blanketing with an inert gas it is sufficient to mention the name of the inert gas used in the transport document.

When stabilisation is ensured by another measurement, e.g. the special purity of the substance, this measurement shall be mentioned in the transport document. (ADN 3.2.3.1 Column (20)3)

While many of the liquefied gases are polymerisable (as indicated by a double bond in their molecular structure), cargo polymerisation difficulties only arise in practice in the case of butadiene, isoprene, ethylene oxide and vinyl chloride. Polymerisation may be dangerous under some circumstances, but can be delayed or controlled by the addition of inhibitors.

Inhibitors can be toxic. Those most commonly used are hydroquinone (HQ) and TBC. As will be noted, care should be taken when handling inhibitors and cargoes with inhibitor added. (ISGINTT 27.8)

8.10 Are legible and up to date pipeline and/or mimic diagrams available.

Pipeline or mimic diagrams should be available for the following where fitted:-

- Cargo systems
- Ballast Systems
- Inert gas Systems
- Venting systems.
- Cargo tank washing systems

Piping for loading and unloading shall be clearly distinguishable from other piping, e.g. by means of colour marking. (ADN 9.3.1/2/3.25.2)

8.11 Is information readily available to the responsible persons relating to maximum loading rates and venting capacities?

Personnel should be aware of all limitations associated with cargo loading.

Established practice and experience indicate that hazardous potentials do not occur if the product velocity is less than 7 metres/second.

Only where well documented experience indicates that higher velocities can be safely used should be limit of 7 metres/second be replaced by an appropriate higher value. (ISGINTT 11.1.7.8)

8.12 Is the Cargo Record Book correctly completed and up to date?

A cargo record book records all activities relating to cargo operations, including but not limited to loading, discharging, tank cleaning, handling of slops etc. This information may not be contained in one document but in several.

8.13 Are the cargoes being carried listed on the ship's Certificates?

All cargoes being carried should be listed on ship's certificates for example a Certificate of Fitness, Product list, Certificate of Approval (COA).

For tank vessels, the certificate of approval shall be supplemented by a list of all the dangerous goods accepted for carriage in the tank vessel, drawn up by the recognised classification society which has classified the vessel (vessel substance list).

Classification societies shall update the vessel substance list at each renewal of the class of a vessel on the basis of the annexed Regulations in force at the time. (ADN1.16.1.2.5)

8.14 If required is there a Procedures and Arrangements Manual available?

A Procedures and Arrangements Manual (P&A) contains vessel specific information relating to cargo handling. (MARPOL Annex II / Reg 14)

8.15 Are the responsible persons familiar with the carriage requirements for the cargoes on board in general?

Persons whose duties concern the carriage of dangerous goods, shall be trained in the requirements governing the carriage of such goods appropriate to their responsibilities and duties. (ADN1.3.1)

Commensurate with the degree of risk of injury or exposure arising from an incident involving the carriage of dangerous goods, including loading and unloading, personnel shall be trained in the hazards and dangers presented by the dangerous goods. (ADN1.3.2.3)

8.16 Are the dangers associated with co-mingling non-compatible cargoes in slop tanks and drip trays considered?

When residues of the previous cargo may cause dangerous reactions with the next cargo, any such residues shall be properly removed. (ADN 7.2.4.13.1)

8.17 Are safe and effective procedures in place for the effective stripping (final draining) of tanks at the end of cargo discharge?

When engaged in efficient stripping, the tanker must be able to provide a liquid pressure of at least 300 kPa (3 bar). The back pressure required to achieve product flow ashore should not exceed 300 kPa (3 bar). (ISGINTT 11.1.14.14)

For some non-toxic grades of chemical products, Veg oils etc., it may be necessary for personnel to enter the tank to mop product down to the pump suction.

8.18 Are safe and effective procedures in place for changing cargo grades?

Wherever possible, the following information should be provided prior to arrival; Advance information on proposed cargo handling operations, including grades, sequence, quantities and any rate restrictions.
(ISGINTT 22.2.3)

8.19 If applicable, are safe and effective procedures in place for ballasting and de-ballasting?

Double hull spaces, double bottoms and hold spaces which do not contain insulated cargo tanks may be filled with ballast water provided;

- This has been taken into account in the intact and damage stability calculations, and
- The filling is not prohibited in column (20) of Table C of Chapter 3.2.

If the water in the ballast tanks and compartments leads to the vessel no longer respecting these stability criteria;

- Fixed level indicators shall be installed; or
- The filling level of the ballast tanks and compartments shall be checked daily before departure and during operations.

In case of the existence of level indicators, ballast tanks may also be partially filled. Otherwise they shall be completely full or empty.
(ADN 7.2.3.20.1)

8.20 Are safe and effective procedures in place for vessel to vessel cargo transfer operations?

Procedures should follow the recommendations of the OCIMF/ICS/SIGTTO/CDI STS Transfer Guide. If the vessel is equipped with specialized equipment for regular ship-to-ship transfer operations such as fenders and hoses, the fact should be recorded in other comments.

Detailed recommendations for the safe conduct of such operations are given in the (local) Ship-to-Ship Transfer Guide (Liquefied Gases). Before any such operations are arranged, it is recommended that this publication be consulted and its procedures be adopted.
(ISGINTT 32.10)

8.21 If fitted, is the general condition of the cargo tank heating system satisfactory?

State type of heating system fitted: e.g. Cargo boiler, coils, heat exchanger, or other?

Cargo tanks containing substances which are heated during transport shall be equipped with devices for measuring the temperature of the cargo.
(ADN 7.2.3.42.2)

Where a heating system is provided inside the cargo tanks, the heating coils shall be subjected to initial tests before being put into service and thereafter at prescribed intervals.
(ADN 9.3.2/3.23.1)

The cargo heating system shall be designed so that the cargo cannot penetrate into the boiler in the case of a leak in the heating coils.
(ADN 9.3.2/3.42.1)

8.22 Are safe and effective procedures in place for gas freeing?

Records of operation should be maintained

Empty or unloaded cargo tanks having previously contained dangerous substances of Class 2 or Class 3, with classification code including the letter "T", may only be gas freed by either competent persons or companies approved by the competent authority for that purpose. Gas-freeing may be carried out only at the locations approved by the competent authority.
(ADN 7.2.3.7.1)

Gas-freeing of empty or unloaded cargo tanks having contained dangerous goods other than those referred to above maybe carried out while the vessel is underway or at locations approved by the competent authority by means of suitable venting equipment with the tank lids closed and by leading the gas/air mixtures through flame arrestors capable of withstanding steady burning.

Gas-freeing is, however prohibited within the area of locks including their lay-bys.
(ADN 7.2.3.7.2)

8.23 If the vessel has a pumproom, is the gas detection system operational?

If the vessel is certified to carry non-volatile cargoes, it may have a pumproom but may not be required to have a gas detection system fitted, in this case answer the question NA.

The sensors of the gas detection system shall be set not more than 20% of the lower explosive limit of the substances allowed for carriage in the vessel.
(ADN 7.2.2.6)

When the gas detection system is activated, the loading and unloading operations shall be stopped immediately. All shut-off devices shall be closed and the cargo pump-rooms shall be evacuated immediately. All entrances shall be closed. The loading or unloading operations shall not be continued except when the damage has been repaired or the fault eliminated. (ADN 7.2.3.2.2)

The gas detection system shall be maintained and calibrated in accordance with the instructions of the manufacturer. (ADN 7.2.3.6)

The condition of the gas detection system shall be checked by a recognised classification society whenever the certificate of approval has to be renewed and during the third year of validity of the certificate of approval. (ADN 9.3.1/2/3.8.3)

A service space located within the cargo area below deck shall not be used as a cargo pump-room for the loading and unloading system except where the cargo pump-room is provided with a permanent gas detection system which automatically indicates the presence of explosive gases or lack of oxygen by means of direct-measuring sensors and which actuates a visual and audible alarm when the gas concentration has reached 20% of the lower explosive limit. (ADN 9.3.1/2/3.17.6)

8.24 If the vessel has a pumproom, are ventilation fan shut-down arrangements operational?

Any forced ventilation present in the room to be protected shall switch off automatically if the fire-fighting system is triggered. (2006/87/EC Article 10.03b.2 (b))

There shall be devices available with which all apertures which can allow air to enter or gas to escape from the room to be protected can be quickly closed. It shall be clearly recognisable whether they are open or closed. (2006/87/EC Article 10.03b.2(c))

8.25 If applicable, are cargo pumps, booster pumps, cargo compressors, ballast pumps and stripping pumps, eductors and their associated instrumentation and controls in satisfactory operational condition, free of leaks?

8.26 If applicable have satisfactory column/cofferdam purging routines been established where deep well pumps are fitted?

8.27 If fitted are tank domes and associated fittings in a satisfactory condition and free from leaks, damage and corrosion?

8.28 If fitted, is the Emergency Shut-Down (ESD) System fully operational, and activating in less than 30 seconds?

ESD systems may be Fibre Optic, pneumatic, hydraulic, or electrical. An ESD system is designed to safely stop operations without pressure surges arising.

Cargo pumps and compressors shall be capable of being shut down from the cargo area and, in addition from a position outside the cargo area. (ADN 9.3.1/2/3.25.1)

Where the control elements of the shut-off devices of the cargo tanks are located in a control room, it shall be possible to stop the loading pumps and read the level gauges in the control room, and the visual and audible warning given by the level alarm device, the high level sensor and the instruments for measuring the pressure and the temperature of the cargo shall be noticeable in the control room and on deck. (ADN 9.3.1/2/3.21.8)

The vessel shall be so equipped that loading or unloading operations can be interrupted by means of switches, i.e. the quick-action stop valve located on the flexible vessel-to-shore connecting line must be capable of being closed. The switch shall be placed at two points on the vessel (fore and aft). (ADN 9.3.1/2/3.21.9)

At a number of locations around the tanker (bridge front, gangway, compressor room and cargo control room, emergency control station), pneumatic valves or electric push buttons are provided. (ISGINTT 31.1.3)

8.29 Is an emergency discharge system available?

A method of discharging the cargo in the event of cargo pump failure. A detailed procedure should be in place.

8.30 If required, are static electricity precautions being observed?

Adherence to the latest ISGINTT or industry guidance addressing Static Electricity should be made.

Whenever a flammable atmosphere could potentially be present, the following measures must be taken to prevent electrostatic hazards:

- The bonding of metal objects to the metal structure of the tanker to eliminate the risk of spark discharges between metal objects that might be electrically insulated. This includes metallic components of any equipment used for dipping, ullaging and sampling.*
- The removal from tanks or other hazardous areas of any loose conductive objects that cannot be bonded.*
- Restricting the linear velocity of the cargo to a maximum of 1 metre per second at the individual tank inlets during the initial stages of loading, i.e. until:

 - a) the filling pipe and any other structure on the base of the tank has been submerged to twice the filling pipe diameter in order that all splashing and surface turbulence has ceased and*
 - b) any water collected in the pipeline has been cleared. It is necessary to load at this restricted rate for a period of 30 minutes or until two pipeline volumes (i.e. from shore tank to ship's tank) have been loaded into the tank, whichever is the lesser.**
- Continuing to restrict the product flow to a maximum of 1 m/s at the tank inlet for the whole operation unless the product is 'clean'. A 'clean' product, within this context, is defined as one which contains less than 0.5% by volume of free water or other immiscible liquid and less than 10 mg/l of suspended solids¹.*
- Avoiding splash filling by employing bottom entry using a fill pipe terminating close to the bottom of the tank.*

The following additional precautions should be taken against static electricity during ullaging, dipping, gauging or sampling of static accumulator products:

- Banning the use of all metallic equipment for dipping, ullaging and sampling during loading and for 30 minutes after completion of loading. After the 30 minute waiting period, metallic equipment may be used for dipping, ullaging and sampling, but it must be effectively bonded and securely earthed to the structure of the tanker before it is introduced into the tank, and must remain earthed until after removal.*
- Banning the use of all non-metallic containers of more than 1 litre capacity for dipping, ullaging and sampling during loading and for 30 minutes after completion of loading. (ISGINTT 3.2.1)*

8.31 If the vessel is equipped with cranes or hose handling booms, are they in satisfactory condition, marked with Safe Working Load?

Testing should be made in accordance with local, national or international regulations and valid certificates and records of maintenance should be on board.

All shipboard lifting equipment, such as is used for the handling of cargo transfer equipment and/or gangways, should be examined at intervals not exceeding one year and load tested at least every 5 years unless local, national or company regulations require more frequent examinations. (ISGINTT 8.3.1)

A manufacturer's plate containing the following information shall be affixed to cranes:

- (a) manufacturer's name and address;*
 - (b) the CE marking, together with the year of manufacture;*
 - (c) series or type reference;*
 - (d) where applicable, serial number*
- (2006/87/EC Article 11.12.2)*

The maximum permissible loadings shall be permanently marked in a clearly legible manner on cranes. Where a crane's safe working load does not exceed 2 000 kg it will be sufficient if the safe working load at the maximum reach is permanently marked in a clearly legible manner on the crane. (2006/87/EC Article 11.12.3)

Cranes shall be checked regularly and in any case at least every 12 months, by an expert. During that inspection the safe working condition of the crane shall be determined by a visual check and an operating check. (2006/87/EC Article 11.12.7)

Every 10 years, at the latest, after the acceptance test the crane shall again be inspected by an expert recognised by the inspection body. (2006/87/EC Article 11.12.8)

8.32 Are cargo pipelines, inert gas lines vent lines and associated fittings in satisfactory condition and clearly identified and marked?

Visual inspection for soft patches or temporary repairs also corrosion, wastage, blisters and leaks. All pipelines on deck shall be clearly identified to indicate their service.

To guard against the possible misconnection of the tanker's vapour manifold to a terminal liquid loading line, the vapour connection should be clearly identified. Pipes for loading and unloading shall be clearly distinguishable from other piping, e.g. by means of colour marking. (ISGINTT 11.1.13.2)

8.33 If multiple cargoes are being handled, are signs placed at each cargo manifold, identifying the grade of cargo?

8.34 Are the cargo lines, vapour lines and inert gas lines in good order and is there recorded evidence of regular testing?

Details of the Test Pressure, the Maximum Allowable Working Pressure (MAWP) and the date of the test should be recorded and pipelines marked. Copy of pressure test should be on board. 'Oil Transfer Systems' should be tested to 100% the Maximum Allowable working Pressure at least twice within any five-year period. A vessel's 'Cargo Transfer System' includes the discharge pump and piping between the pump and the vessel's manifold, excluding any non-metallic hoses. In this case the MAWP can be assumed to be either the pressure at which the transfer piping relief valve is set or, where no relief valve (s) are fitted, the maximum discharge pressure that can be developed by the vessel's pump. For centrifugal pumps this is the pressure developed by the pump at zero flow conditions. It is not required to pressure test cargo pipelines or vents on gas vessels. Record in comments the last test date and test pressure.

It is good practice to pressure test cargo lines on a periodic basis, depending on the trade of the tanker. Although these pressure tests may provide an indication of the system's condition at the time of the test, they should not be considered a substitute for regular external inspection of the pipeline system and periodic internal inspections, particularly at known failure points, such as pump discharge bends and stub pipe connections. (ISGINTT 7.3.2)

8.35 If the vessel is provided with cargo hoses, are they in good order, pressure tested annually to their design working pressure, and is a record of all hose tests and inspections maintained on board?

The actual condition of the portable hoses should be assessed and an observation recorded if visible deterioration, damage or breakdown is observed.

Each length of hose should be marked by the manufacturer with:

- The manufacturer's name or trademark.
- Identification with the standard specification for manufacture.
- Factory test pressure.
- Month and year of manufacture.
- Manufacturer's serial number.
- Indication that the hose is electrically continuous or electrically discontinuous. (ISGINTT 18.2.4)

Cargo hoses in service should have a documented inspection at least annually to confirm their suitability for continued use. This should include:

- A visual check for deterioration/damage.
 - A pressure test to 1.5 times the Rated Working Pressure (RWP) to check for leakage or movement of end fittings. (Temporary elongation at RWP should be measured as an interim step.)
 - Electrical continuity test. (ISGINTT 18.2.6.1)

Hose assemblies used for loading or delivering products for the operation of the vessel and residual cargo shall comply with European Standards. EN 12115:2011-04 or EN 13765:2010-08 or EN ISO 10380:2003-10. They shall be checked and inspected in accordance to the manufacturer's instructions by persons authorised for the purpose by the competent authority. A certificate concerning this inspection shall be carried on-board. (ADN 8.1.6.2)

- 8.36 Are sample lines for both liquid and vapour provided and are they fitted with valves and caps?**
- 8.37 If any cargo or vapour lines are insulated, is the insulation in a satisfactory condition?**
- 8.38 Where cargo or vapour lines are isolated from the structure, are joints electrically bonded?**
Bonding is an essential precaution for preventing electrostatic charge accumulation and its importance cannot be over-emphasised. However, while bonding assists relaxation, it does not prevent accumulation and the production of hazardous voltages. Bonding therefore should not be seen as a universal remedy for eliminating electrostatic hazards. (ISGINTT 11.1.7.1)
- 8.39 Are cargo and vapour line expansion arrangements in a satisfactory condition?**
- 8.40 Are liquid and vapour lines free to move inside their clamps?**
- 8.41 If pipeline drains are fitted, are they provided with valves and caps, and are they in a satisfactory condition?**
- 8.42 Are relief valves fitted to the cargo pipeline system?**
Check documentation for last test date. Valve may be tagged (stamped) with last test date. Verify seal has not been tampered with.
- The Gas Codes' best practice requires all pipelines which may be isolated, when full of liquid, to be provided with relief valves to allow for thermal expansion of the liquid. These valves usually exhaust back into cargo tanks. (ISGINTT 31.1.4)*
- 8.43 If fitted is the deck water spray system in good order?**
When water-spraying is required in column (9) of Table C Ch. 3.2, a water-spray system shall be installed in the cargo area on deck to enable gas emissions from loading to be precipitated and to cool the tops of cargo tanks by spraying water over the whole surface so as to avoid safely the activation of the high-velocity vent valve at 50 kPa (0.5 bar).
- The system shall be capable of being put into operation from the wheelhouse and from the deck. (ADN 9.3.1/2/3.28)*
- 8.44 Are manifolds in satisfactory condition?**
Properly supported, free of corrosion and wastage, and maintained.
- Receptacles for residual products shall be capable of being earthed. (ADN9.3.1/2/3.53.4)*
- Where supports or jacks are utilised, they should be fitted in such a way that they stand directly onto the deck or some other substantial support. They should never be placed onto fixtures or fittings that are not capable of, or suitable for, supporting the load. (ISGINTT 18.1.2)*
- 8.45 Is there an effective means of segregating the cargo system?**
There should be an effective means of segregating multiple cargoes on board the vessel. These may include, but not limited to double valve segregation, removable spool pieces with bolted blanks etc.
- 8.46 Are the cargo pumps fitted with temperature sensors and are the sensors in good order?**
Cargo pumps within a pumphouse should be fitted with temperature sensors, deepwell pumps may not be required to have temperature sensors.
- 8.47 If fitted, are remote and local, temperature and pressure sensors and gauges in satisfactory operational condition?**
Temperature sensors and pressure gauges should be regularly calibrated and records maintained,

2 Cargo Compressor and Motor Rooms.

- 8.48 Where fitted, is the cargo conditioning (reliquefaction) plant and associated machinery and instrumentation in good order?**

The refrigeration system shall be composed of one or more units capable of keeping the pressure and temperature of the cargo at the upper limits of the ambient design temperatures at the prescribed level. (ADN9.3.1.27.1)

8.49 Is the compressor room/space well lit; are the light fittings suitable for use in gas-hazardous areas and are they in a satisfactory condition?

Only lighting appliances of the "flame –proof enclosure" or "apparatus protected by pressurisation" type shall be installed within the services spaces of the cargo area below deck (Zone 1) (ADN9.3.1.52.1(c))

8.50 Is the motor room being maintained at a positive pressure?

8.51 If the motor room access is located in a gas-hazardous area, is it provided with an air-lock suitably alarmed to warn if both doors are opened at the same time?

In such cases, an air-lock suitably alarmed to warn if both doors are opened at the same time should be fitted. Airlocks and alarms should be in good order. If pressure in the air-lock is lost, the system should shut down.

8.52 Is the gas detection equipment in a satisfactory condition?

The gas detection system shall be checked and inspected in accordance with the instructions of the manufacturer concerned by persons authorised for this purpose by the competent authority. A certificate concerning this inspection shall be carried on-board. (ADN8.1.6.3)

8.53 Are fixed gas detection sample points fitted at the appropriate levels for the cargo being carried?

The sensors of this system shall be placed at suitable positions at the bottom and directly below deck. (ADN9.3.1.17.6)

8.54 Are cargo compressors isolated from the cargo when carrying Propylene Oxide?

3 Void Spaces and Seals: Pressurised tanks.

8.55 Are void space seals, where fitted, in a satisfactory condition?

External condition of void space seals should be checked at deck level.

8.56 Is the environmental control of void spaces satisfactory?

The atmosphere in the void space should be controlled dependant on the type of cargo to be carried. The atmosphere should at all times be below the lower explosive limit. Fixed or portable atmosphere control equipment should be available.

Record in comments the frequency of monitoring void space sampling.

Void and ballast spaces located within the cargo tank block should be routinely monitored to check that no leakage has occurred from adjacent tanks. Monitoring should include regular atmosphere checks for flammable content and regular sounding/ullaging of the empty spaces. (ISGINTT 7.3.4)

8.57 If fitted, are relief valves and rupture valves/bursting discs for void spaces in good order?

8.58 Is there means of checking the void spaces are free of liquid?

4 Void and interbarrier spaces and seals. Other cargo tank types.

8.59 Is the oxygen and hydrocarbon content of the interbarrier spaces or void spaces regularly monitored and are the results recorded?

8.60 Is the interbarrier space purged with inert gas/nitrogen and is the system in good order?

8.61 Is the pressure in the interbarrier spaces or void spaces being maintained at a sufficient level to prevent ingress from the external atmosphere?

8.62 Are tank/void space access openings, flame screens and standpipes in satisfactory condition?

An external examination to assess general condition of the tank dome area.

5 Cargo Measurement

8.63 Are cargo tank calibration tables available and independently verified?

Record which organisation has verified the calibration tables.

8.64 Are cargo tank and/or other gauging/sampling points clearly identified?

8.65 If fixed cargo measuring equipment is fitted, is it operational and routinely calibrated?

Fixed cargo measuring equipment may incorporate, cargo level, temperature, and pressure. Check that records and frequency of calibration are available.

Cargo tanks shall be provided with a level gauge

(ADN9.3.1/2/3.21.1 (b))

The level gauge shall allow readings from the control position of the shut-off devices of the particular cargo tank. The permissible maximum filling level of the cargo tank shall be marked on each level gauge. (ADN9.3.1/2/3.21.3)

8.66 Are cargo tanks provided with a level alarm device and is the system fully operational?

The means of checking correct operation of the system should be noted.

Record the percentage level(s) at which alarm activates.

The level alarm device shall give a visual and audible warning on board when actuated. The level alarm device shall be independent of the level gauge. (ADN9.3.1/2/3.21.4) (ADN9.3.1/2/3.21.1c)

8.67 If fitted, is the cargo overfill protection system used during the cargo transfer?

8.68 If fitted, is the cargo overfill protection system connected to a shore ESD system, is it operational at the time of the inspection?

If at the time of the inspection the vessel is not conducting cargo operations or the terminal does not have ESD facilities, answer the question 'NA'. If 'NA' record reason.

The high level sensor referred to in 9.3.1/2/3.21.1 (d) shall give a visual and audible alarm on-board and at the same time actuate an electrical contact which in the form of a binary signal interrupts the electric current loop provided and fed by the shore facility, thus initiating measures at the shore facility against overflowing during loading operations. (ADN 9.3.1/2/3.21.5 (a))

During discharging by means of the on-board pump, it shall be possible for the shore facility to switch it off. For this purpose, an independent intrinsically safe power line, fed by the vessel, shall be switched off by the shore facility by means of an electrical contact. (ADN 9.3.1/2/3.21.5 (b))

8.69 Is the vessel fitted, with a cargo tank overfill protection system?

The system may be independent of the level gauge and/or the level alarm device.

The high level sensor shall also be capable of switching off the vessel's own discharging pump. The high level sensor shall be independent of the level alarm device, but it may be connected to the level gauge. (ADN 9.3.1/2/3/.21.5)

Record the system found on-board.

8.70 Are portable measuring devices available and in a satisfactory condition and regularly calibrated?

If provided, portable gauging devices should be in a satisfactory operational condition. Portable gauging such as ullage sticks, fabric or steel tapes may be an alternative method of measurement. In such cases, personnel should be aware of the dangers from associated electrostatic hazards.

8.71 If fixed tank gauges are not fitted, are sufficient portable tapes provided to simultaneously gauge each tank being worked, if used with vapour locks are they calibrated?

Corrections for datum levels and for list and trim should be checked and approved by the organisation certifying the system if ullages from retrofitted vapour locks are used for cargo calculation. Where vapour locks have been retro-fitted, certificates of calibration must be provided by a recognised Classification

Society or cargo Inspection Company. If a fixed cargo tank gauging system is fitted but is unreliable and portable tapes/vapour locks are being used as the main method of ullaging, this fact should be recorded as an Observation. The number of tapes in use must be recorded. Portable tapes should be calibrated in accordance with manufacturer's recommendations and certificates of calibration should be provided for each instrument.

8.72 If slip tubes are fitted, are they used only in emergencies?

Slip tubes are generally used only in cases of emergency. A small amount of cargo vapour or liquid is released during level measurement, therefore they are a restricted type of gauging device and must not be used when toxic cargoes are carried, and in the case of flammable cargoes, only if permitted by the terminal and the charterer. If slip tubes are the only method of gauging, record the fact as an observation.

Cargo tank liquid level gauges maybe restricted devices, which penetrate the tank and when in use permit a small quantity of cargo vapour or liquid to escape to the atmosphere, such as fixed tube and slip tube gauges. When not in use, the devices should be kept completely closed. The design and installation should ensure that no dangerous escape of cargo can take place when opening the device. Such gauging devices should be so designed that the maximum opening does not exceed 1.5 mm diameter or equivalent area unless the device is provided with an excess flow valve. (IGC Ch13.2.2.4)

8.73 If a flow meter is fitted, is it operational and calibrated in accordance with the requirements of the approving authority?

If flow meter(s) is/are fitted, records verifying the proving and calibration of the instrument(s) should be provided. These records should name the certifying authority, and record the dates when proving and calibration was conducted.

8.74 Is the responsible person in charge familiar with the term 'reference temperature', and has it been determined for this cargo?

Reference Temperature means the highest temperature which may be reached upon termination of loading, during transport, or during unloading, under the ambient design temperature conditions. (ISGINTT 32.5.5)

6 Venting and Inert Gas Systems

8.75 If the vessel is fitted with a cargo venting system, is it in a satisfactory operational condition?

If a venting system is fitted, it must be in a satisfactory condition and operated correctly. If high velocity vents are fitted, these should be operated as designed and not jacked open.

8.76 If the vessel is handling volatile or toxic cargoes, is it operating in a closed condition?

The ventilation of cargo tanks is dependent on vessel design, products carried and local regulations. Cargo tanks should operate under totally closed conditions through a designated venting system. A volatile product is petroleum having a flash point below 60°C as determined by the closed cup method of testing. If a cargo is being handled at a temperature within 10°C of its flashpoint, it should be considered volatile. Therefore a cargo with a flashpoint of 80°C should be considered volatile if handled at a temperature of 70°C or above.

Volatile petroleum is petroleum having a flashpoint below 60°C as determined by the closed cup method of test. (ISGINTT Definitions)

8.77 Are the P/V valves in good order, fitted with flame screens, inspected and cleaned as part of a regular maintenance routine?

Maintenance records should be reviewed. Each cargo tank or group of cargo tanks connected to a common vapour pipe shall be fitted with safety devices for preventing unacceptable overpressures or vacuums.

8.78 If cargo tank stop valves are fitted which permit the isolation of individual tanks from the venting system, are these provided with positive locking arrangements?

Seals may be acceptable in lieu of locks.

8.79 If cargo tank stop valves are fitted which permit the isolation of individual tanks from the common venting system, are the individual cargo tanks provided with two means of protection to prevent over or under-pressurisation?

ISGINTT Ch. 7.2 provides guidance. Common systems found can include, but not limited to-

- two pressure/vacuum valves on each tank,
- one pressure/vacuum valve and a pressure sensor alarm system on each tank
- one pressure/vacuum valve on each tank and common venting line.

Record description of system found on-board.

8.80 If an inert gas system is fitted, and is in use, is it operating satisfactorily?

The Inert Gas System including instrumentation, alarms, trips, pressure and oxygen recorders should be operational. Inert gas supply from the Inert gas generator should be less than 5% oxygen, and the inert gas in the cargo tanks should be less than 8% oxygen. Inert gas may be produced by either flue gas, Inert gas generator or by either bottled nitrogen or from Nitrogen generator.

In cases in which the inerting or blanketing of the cargo is prescribed, the vessel shall be equipped with an inerting system. This system shall be capable of maintaining a permanent minimum pressure of 7 kPa (0.07 bar) in the spaces to be inerted. In addition, the inerting system shall not increase the pressure in the cargo tank to a pressure greater than that at which the pressure valve is regulated. The set pressure of the vacuum-relief valve shall be 3.5 kPa (0.035 bar). (ADN 9.3.1/2/3.18)

Record type of inert gas system fitted.

8.81 If applicable, is a log kept of inert gas operations?

8.82 If the vessel is equipped with a vapour return system, is it operational?

If fitted but not operational at the time of inspection, answer NA.

8.83 If applicable, are records maintained of equipment maintenance, including the overhaul of the non-return valve?

A non-return valve or equivalent shall be fitted forward of the deck seal, provided with positive means of closure. As an alternative to positive means of closure, an additional valve having such means of closure may be provided forward of the non-return valve to isolate the deck seal from the inert gas main.

8.84 Is an operator's policy provided in case of failure of the inert gas system and do the crew members standing cargo watches understand this?

In the event that the inert gas system fails to deliver the required quality and quantity of inert gas, or to maintain a positive pressure in the cargo tanks, action must be taken immediately to prevent any air being drawn into the tanks. All cargo and or ballast discharge from inerted tanks must be stopped, the inert gas deck isolating valve closed, the vent valve between it and the gas pressure regulating valve (if provided) opened, and immediate action taken to repair the inert gas system.

Tanker Masters are reminded that national and local regulations may require the failure of an inert gas system to be reported to the harbour authority, terminal operator and to the port and flag state administrations. (ISGINTT 7.1.12.1)

8.85 If applicable, is the oxygen content of the inert gas delivery at or below 5%?

Record if the oxygen delivery is more than 5% or if a high oxygen level alarm is not fitted.

Inert gas systems should be capable of delivering inert gas with an oxygen content in the inert gas main of not more than 5% by volume at any required rate of flow; and of maintaining a positive pressure in the cargo tanks at all times with an atmosphere having an oxygen content of not more than 8% by volume except when it is necessary for the tank to be gas free. (ISGINTT 7.1.3)

8.86 If applicable, is the oxygen content in the cargo tanks at or below 8%?

Tanks should be kept in an inert condition at all times, except when it is necessary for them to be gas free for inspection or work, i.e. the oxygen content should be not more than 8% by volume and the atmosphere should be maintained at a positive pressure. (ISGINTT 7.1.5.1)

8.87 If applicable, are the vapour spaces in the cargo tanks being maintained at positive pressure?

8.88 If fitted, was the fixed oxygen analyser calibrated immediately prior to use of the inert gas system?

Before the inert gas system is put into service, the tests required by the operations manual or manufacturer's instructions should be carried out. If a fixed oxygen analyser and recorder are being used they should be tested and proved to be in good order. (ISGINTT 7.1.6)

8.89 Where fitted, do the readings on the local, bridge and cargo control room oxygen and pressure recorders agree?

Instrumentation shall be fitted for continuously indicating and permanently recording when inert gas is being supplied: The pressure of the inert gas supply forward of the non-return devices; and The oxygen content of the inert gas in the inert gas supply mains on the discharge side of the gas blowers. (FSS Code 15.2.4.2.1)
The devices referred to above shall be placed in the cargo control room. But where no cargo control room is provided, they shall be placed in a position easily accessible to the officer in charge of cargo operations. (FSS Code 15.2.4.2.2)

In addition, meters shall be fitted: In the navigation bridge to indicate at all times the pressure of the inert gas main forward of the non-return devices; in the machinery control room or in the machinery space to indicate the oxygen content of the inert gas in the inert gas supply mains on the discharge side of the gas blowers. (FSS Code 15.2.4.2.3)

8.90 If fitted, is the liquid level in the deck water seal correct and clearly visible?

Deck seals, or equivalent, are in good working order (ISGINTT Appendix 1/2/3 S/S Safety Checklist)

8.91 If fitted, does the P/V breaker appear to be in good order, fitted with flame screens, inspected and cleaned as part of a regular maintenance routine?

Liquid levels in pressure/vacuum breakers are correct, if applicable (ISGINTT Appendix 1/2/3 S/S Safety Checklist)

8.92 If fitted, are nitrogen systems and associated pipework in a satisfactory condition?

Nitrogen may be provided from either a nitrogen generator or bottled form to provide padding.

8.93 Are all tank hatches and other openings in good order and gas tight?**8.94 Are drums and packages as deck cargo in satisfactory condition, free of leaks and clearly marked showing the cargo they contain?**

Lifting equipment such as barrel chains, stops, winches, cranes and derricks should be free of defects. They should all have been load tested periodically and the results recorded.

Unless provided otherwise in ADN, the UN number corresponding to the dangerous goods contained, preceded by the letters "UN" shall be clearly and durably marked on each package. (ADN 5.2.1.1)

All package markings required;

(a) shall be readily visible and legible;

(b) Shall be able to withstand open weather exposure without a substantial reduction in effectiveness. (ADN 5.2.1.2)

The consignor shall provide in the transport documents a statement regarding actions, if any that are required to be taken by the carrier. The statement shall be in the languages deemed necessary by the carrier concerned, and shall include at least the following information;

(a) supplementary requirements for loading, stowage, carriage, handling and unloading of the package, over pack or container including any special stowage provisions for the safe dissipation of heat, or a statement that no such requirements are necessary;

(b) Restrictions on the mode of carriage or vehicle or wagon and any necessary routeing instructions;

(c) Emergency arrangements appropriate to the consignment. (ADN 5.4.1.2.5.2)

8.95 Are drums and packages carried as deck cargo stowed and lashed securely?

Drums should be stowed clear of the deck and securely lashed to prevent movement.

8.99 Additional comments

If the Inspector has comments in respect of the subject matter covered by the Chapter additional to those which the Inspector may make in response to the specific questions in the Chapter, the Inspector should include such additional comments in this section.

Chapter 9. Mooring

Notes: The OCIMF publications '**Effective Mooring**', '**Mooring Equipment Guidelines (MEG)**', '**Anchoring Systems and Procedures**' provide information on all aspects of mooring equipment and operations. Common causes of accidents are an inadequate understanding of good mooring practices, unattended mooring lines, a mixture of wire and non-wire moorings, unbalanced mooring arrangements, poor quality of mooring lines, poor maintenance of mooring equipment, insufficient knowledge of local conditions, inattention to weather and tidal conditions and passing traffic.

1 Mooring

9.1 Is the vessel effectively moored?

A mooring/unmooring plan/procedure should be provided. Generally mooring lines of the same size and type (material) should be used for all leads. Mooring lines should be arranged so that all lines in the same service are about the same length between the ship and the shore bollard. (MEG 1.5) The mooring arrangement in use for the port and its effectiveness should be reviewed. Breast lines provide the bulk of transverse restraint, back springs the longitudinal. Headlines and stern lines contribute much less to the mooring strength than is commonly supposed.

Vessels shall be moored securely, but in such a way that electrical power cables and hose assemblies are not subject to tensile strain and the vessels can be released quickly in an emergency. (ADN 7.2.5.3)

Mooring lines should preferably all be of the same material and construction. Ropes with low elastic elongation properties are recommended for all tankers, as they limit the tanker's movement at the berth. (ISGINTT 23.4.1)

9.2 Are there records of the inspection and maintenance of mooring ropes, wires and equipment and are certificates available?

All mooring ropes, wires and tails should be received with either individual certificates or, if part of a batch a certificate of conformity. A file showing the locations of the winches should be maintained. Test certificates for mooring lines, Mandel/Tonsberg shackles and synthetic tails should be kept in a file clearly showing to which winch each particular component has been fitted

It is recommended that on receipt, all ropes, wires and tails be permanently marked so that positive identification with their corresponding certificate can be made. Records should be kept of date placed in use, inspections, and any maintenance. (MEG 6.1.4)

For the required cables a certificate in accordance with European standard EN 10 204:1991, under No 3.1, shall be on board.

These cables may be replaced by ropes having the same length and tensile strength. The minimum tensile strength of these ropes shall be indicated in a certificate. (2006/87/EC Article 10.02.2(a))

9.3 Are spare mooring ropes/wires carried on-board?

9.4 Are pedestal fairleads, roller fairleads, and other mooring system rollers well-greased and free to turn, and are bits and chocks free of grooving?

Rollers should be free to turn and evidence of rope, wire or corrosion noted. Inspectors should note whether the design of the fairlead is suitable for the vessel and its trade. Evidence of wasting due to corrosion should be noted. Typical design features of both barges and small bunker vessels are open fairleads. This design can lead to moorings leading upwards and jumping out of the leads. This problem is particularly evident where small vessels may lie alongside larger ships for bunkering and also in areas of a large tidal range. Dumb barges and some small bunker type barges may not be fitted with powered winches or anchoring systems, therefore particular attention should be paid to the effectiveness of moorings and condition of equipment.

9.5 If fitted, are the winches/capstans that are employed for mooring in a satisfactory condition?

9.6 Are the mooring lines in satisfactory condition?

Standard synthetic fibre ropes will deteriorate more rapidly than steel wires or high modulus synthetic fibre ropes. All ropes and wires should be inspected on a regular basis and replaced when there are signs of damage. (ISGINTT 23.4.1)

9.7 If synthetic tails are used in conjunction with wires, are they in satisfactory condition and is a suitable joining shackle used between the wire and the tail?

Connecting links are usually Tonsberg, Mandal or Boss shackles. Tonsberg have a straight pin and the tail should be connected to it; Mandal has a curved roller and the wire should be connected to it; Boss shackles are available in both versions and the same rules apply.

9.8 If fitted, are windlasses, anchors, locking bars and cables in satisfactory condition and operating effectively?

The condition of the locking bars should be checked to ascertain that they function correctly by locking the chain when the vessel is at anchor to prevent the brake having to take the full load of the cable.

Vessels intended for the carriage of goods, apart from ship-borne lighters whose length L does not exceed 40m, shall be equipped with bow anchors. (2006/87/EC Article 10.01.1)

Anchors shall be in the fully raised position unless they are used. (CEVNI Article 1.12.2)

9.9 Are mooring lines secured to bits and turned up correctly?

The recommended method of turning a rope up on bits is to take one or two full turns around the leading post before 'figure-of-eighting'. The reason for this is to reduce the tendency to pull the two posts together. (MEG 8.2)

Note: Mooring lines must not be secured to winch/capstan warping drums.

9.10 If fitted are all powered mooring lines correctly reeled on drums?

Notes: Because of design changes by winch manufacturers, previous guidance used to determine the correct reeling direction of mooring lines on winch drums - that the fixed end of the brake band is under tension - is not valid in all cases. The reeling arrangements of mooring lines on winch drums should be examined to ensure that these are in accordance with the manufacturer's design requirements. Each arrangement should be assessed on a case-by-case basis. With lines correctly reeled, tension on the line should be in a direction that causes the free end of the band to be forced towards the fixed end, thereby forcing the two halves of the band to close together.

On both single and split drum winches, the holding power of the brake is decreased substantially if the mooring line is reeled on the winch drum in the wrong direction. Before arrival at the berth, it is important to confirm that the mooring line is reeled so that its pull will be against the fixed end of the brake strap, rather than the pinned end. Reeling in the contrary direction can seriously reduce the brake holding capacity, in some cases by as much as 50%. The correct reeling direction to assist the brake should be permanently marked on the drum to avoid misunderstanding.

Winches fitted with disc brakes are not subject to this limitation. (ISGINTT 23.4.2.3)

9.11 If fitted are all powered mooring lines secured on brakes and are the winches out of gear?

Once the mooring lines are secured to the shore, the mooring winch clutches should be dis-engaged, in order to permit release of the moorings in an emergency, for example, a fire rendering electrical systems inoperative. (ISGINTT 23.4.2.1)

9.12 If fitted, on split drum winches are all the lines made fast with no more than one layer on each tension side of the drum?

More than one layer increases the effective lever and reduces the brake holding capacity. (Meg 7.5.1)

The holding capacity of a winch brake is in inverse proportion to the number of layers of the mooring wire or rope on the drum. The designed holding capacity is usually calculated with reference to the first layer and there is a reduction in the holding capacity for each additional layer. This can be substantial - as much as an 11% reduction for the second layer.

If the rated brake holding capacity of a split drum winch is not to be reduced only one layer should be permitted on the working drum. (ISGINTT 23.4.2.3)

9.13 Are all mooring ropes/lines stowed neatly to minimize tripping hazards and are mooring areas clear and unobstructed?

9.14 If fitted, do mooring winch foundations appear to be in a satisfactory condition?

9.15 If fitted do brake linings, drums and pins appear to be in good order?

Defective brake gear is often evident, particularly on older vessels. Check the condition of cheek plates for wastage and distortion, the hinge pins and their retaining devices and the condition of the brake drum below the lining. If there is significant wear on the brake linings, the brake adjustment screw may be at the limit of its travel and further tightening not possible.

9.16 If mooring winches are fitted, is a policy in place for the testing of the winch brakes and are the results recorded?

The physical condition of the winch gearing and brake shoe linings or blocks has a significant effect on brake holding capacity in service. Mooring winch brakes should therefore be tested at regular intervals, not exceeding twelve months. A record, both of regular maintenance and inspections and of tests, should be kept on the tanker. If the deterioration is significant, the linings or blocks must be renewed. (ISGINTT 23.4.2.3)

9.17 Have snap back zones been identified and are personnel aware of the risks associated with these areas during mooring operations.

It is not necessary for snap back zones to be marked at the mooring locations.

When a line is loaded, it stretches. Energy is stored in the line in proportion to the load and the stretch. When the line breaks, this energy is suddenly released. The ends of the line snap back, striking anything in their path with significant force.

Snap-back is common to all lines. Even long wire lines under tension can stretch enough to snap back with considerable energy. Synthetic lines are more elastic and thus the danger of snapback is more severe.

Line handlers must stand well clear of the potential path of snap-back, which extends to the sides of and far beyond the ends of the tensioned line. (MEG 6.1.1)

9.18 Are the mooring winches provided with a failsafe system?

Winches should be fitted with a failsafe mechanism for operating the winch, whereby release of the operating controls will result in the winch stopping. If vessel is not provided with a failsafe system, then an emergency stop should be provided.

9.99 Additional comments

If the Inspector has comments in respect of the subject matter covered by the Chapter additional to those which the Inspector may make in response to the specific questions in the Chapter, the Inspector should include such additional comments in this section.

Chapter 10. Towing and Pushing Vessels

1 Towing and pushing vessels

10.1 Is the vessel provided with a towing/coupling procedure including a plan?

10.2 If appropriate does the operator have policy/procedures to determine 'tow/push to horsepower' ratio is sufficient?

The tow/push to horsepower ratio should be determined taking into account the likely conditions to be encountered on the voyage, i.e. current, weather, wind etc.

10.3 Is the equipment provided, sufficient to handle the tow/push?

Towing/pushing equipment, winches, hawsers and bridles should be in good condition and comparable with the tugs horsepower.

Tugs shall be equipped with a number of cables that are suitable for their operation. However, the main cable shall be at least 100 m long and have a tensile strength, in kN, not less than one third of the total power, in kW, of the main engine(s).

Motor vessels and pushers that are also able to tow shall be equipped with a towing cable that is at least 100 m long and whose tensile strength, in kN, is not less than one quarter of the total power, in kW, of the main engine(s). (2006/87/EC Article 10.02.2(b))

Tugging and towing craft shall be fitted with a tow hook which shall be capable of being released safely from the wheelhouse; this shall not apply if the design or other fittings prevent capsizing (2006/87/EC Article 16.05.1(b))

Towing devices shall consist of winches or a tow hook. The towing devices shall be located ahead of the propeller plane. This requirement shall not apply to craft that are steered by their propulsion units such as rudder propellers or cycloidal propellers (2006/87/EC Article 16.05.1(c))

10.4 Do personnel demonstrate evidence of training in towing/pushing operations and emergency procedures?

Procedures should include the use of emergency wires, stabilising the push/tow in emergency situations.

10.5 If fitted, do personnel demonstrate evidence of effective training and familiarity with the operation of the tow/coupling winch?

10.6 Does the height of eye from the tug wheelhouse provide sufficient visibility beyond the barge being towed or pushed?

There shall be an adequately unobstructed view in all directions from the steering position.

(2006/87/EC Article 7.02.1)

10.7 Are the sizes and strengths of the towing wire(s)/coupling wire(s) deployed, adequate for their intended use?

The main cable shall be at least 100 m long and have a tensile strength, in kN, not less than one third of the total power, in kW, of the main engine(s).

Motor vessels and pushers that are also able to tow shall be equipped with a towing cable that is at least 100 m long and whose tensile strength, in kN, is not less than one quarter of the total power, in kW, of the main engine (s). (2006/87/EC Article 10.02.2(b))

Record the size and strength of the towing wire(s) on board.

10.8 Does minimum breaking load (MBL) of the towing wire/coupling wire(s) size correspond to the maximum bollard pull of the tug?

The minimum breaking load of the towing/coupling wire should be 2.5 times the maximum bollard pull of the tug.

10.9 Does the tow/coupling wire arrangement appear to be in satisfactory condition?

If the craft are joined together with cables the pusher craft shall be equipped with at least two special winches or equivalent coupling devices for tensioning the cables. (2006/87/EC Article 16.01.2)

10.10 Are the tow/coupling connections between tugs to barges and between barges being maintained in a satisfactory condition?

The coupling devices shall enable a rigid assembly to be formed with the pushed craft. Where convoys consist of a pusher craft and a single pushed craft the coupling devices may permit controlled articulation. (2006/87/EC Article 16.01.3)

Identify type of connecting system being used.

10.11 Is a manufacturer's certificate provided for the towing wire(s)/coupling wire(s) on board?

Certificates will be provided for towing wires carried on tugs.

10.12 Is a spare towing wire/coupling wire or hawser on board?**10.13 Is the towing/coupling winch in a satisfactory condition and does it show evidence of proper maintenance?**

Identify type of winch, single, double drum, coupling etc.

10.14 If fitted is the towing winch brake periodically tested?

The towing winch brake tests should be conducted in accordance with the Manufacturer's design parameters. Vessel operator should have a policy with respect to periodic testing of the winch brake and results recorded.

Record date of last test and frequency of testing.

10.15 If fitted, does the winch have an alarm indicating wire pay-out, is this operational?**10.16 Is a record of inspection of the towing/coupling wire maintained?****10.17 Is the towing/coupling arrangement protected from chafing at the deck edge?****10.18 If fitted, is the synthetic shock line at least 1.3 times the strength of the main tow wire/hawser?****10.19 Does the operator have a policy/procedure regarding retirement criteria for towing/coupling wires?**

Record the policy for retirement criteria.

10.20 Is the towing wire termination in good condition and free of damage, deformation, or significant corrosion?**10.21 If manned, do the barge personnel maintain 24 hour communications with the tug?****10.22 If fitted are electrical/communication connections between tug and barge in good order.****10.99 Additional comments**

If the Inspector has comments in respect of the subject matter covered by the Chapter additional to those which the Inspector may make in response to the specific questions in the Chapter, the Inspector should include such additional comments in this section.

Chapter 11. Machinery Spaces

1 Machinery

11.1 Is the general cleanliness and housekeeping in the machinery spaces satisfactory?

All spaces should be free of leaks from pipework and machinery. In addition, these spaces should be clean and tidy. Deck plates in machinery spaces should be secured and free of any oil residues and be clear of any machinery or equipment that impedes safe access.

11.2 Is a planned maintenance system being followed, and is it up to date?

Evidence should indicate that a planned maintenance system is being conducted.

11.3 Are the machinery spaces free from visible safety deficiencies?

11.4 Are all electrical wiring and plugs/sockets in good order?

Sockets should be provided with a purpose made cover.

11.5 Are the machinery spaces adequately lit?

The dimensions, arrangement and layout of interior working spaces shall be in keeping with the work to be carried out and shall meet the health and safety requirements. They shall be equipped with sufficient non-dazzle lighting and with sufficient ventilation arrangements. (2006/87/EC Article 11.08.1)

11.6 Is all loose gear in the machinery spaces, stores and steering compartment properly secured?

11.7 If the vessel is provided with an emergency diesel generator, is it in satisfactory operational condition?

The emergency generator should be tested at weekly intervals and personnel should be able to satisfactorily demonstrate its use. Are there records with the PMS that indicate that the emergency generator has been tested under full load conditions? Emergency generator should be provided with two methods of starting. Where electrical start is provided then a second starter motor should be available.

11.8 If fitted is the emergency generator reserve fuel tank provided with sufficient fuel?

The fuel tank for the emergency generator should be filled to more than 90% of its maximum capacity, and the fuel should be suitable for all ambient conditions likely to be encountered.

11.9 If provided with an emergency generator are concise starting instructions clearly displayed?

These instructions are not for the use of the qualified engineering personnel, but for others who might be required to start the generator in an emergency and ensure there is instruction on how to put power on the emergency switchboard if not an automatic system.

11.10 Where an emergency generator is not fitted, are emergency batteries in good order and fully charged?

Where craft are fitted with an electrical system, that system shall in principle have at least two power sources in such a way that where one power source fails the remaining source is able to supply the power consumers needed for safe navigation for at least 30 minutes. (2006/87/EC Article 9.02.1)

11.11 Is the equipment in the machinery spaces in a satisfactory operational condition?

11.12 Are the emergency fuel stops prominently marked and operational and records available of their testing?

Emergency fuel stops should be operational and not inhibited.

11.13 If fitted, are the boiler fuel emergency stops operational and records available of their testing?

Boiler refers to cargo heating unit.

11.14 Are the fire pump(s) in satisfactory condition and operational?

The fire main, fire pump, and sea chest valves should be clearly marked and labelled

Where practical, permanently installed fire pumps should be provided on a scale which will ensure adequate reserve capacity to allow for contingencies, such as fire pump maintenance, repairs or breakdowns during emergencies. (ISGINTT 19.5.3.2)

11.15 Are safety devices and alarms fitted to the main and auxiliary engines operational?

Verify testing through planned maintenance system records.

The following shall be monitored by suitable devices which trigger an alarm once a critical level has been reached:

- (a) the temperature of the main-engine cooling water;*
- (b) the lubricating-oil pressure for the main engines and transmissions;*
- (c) the oil and air pressure of the main engine reversing units, reversible transmissions or propellers.* (2006/87/EC Article 8.03.2)

11.16 Where fitted are bilge alarms operational and records available of their testing?

Record frequency of testing.

11.17 Is the emergency steering gear operational and records available of its testing?

Responsible persons should be familiar with emergency steering gear, and demonstrate operation.

11.18 Are the machinery space alarms operational?

The following shall be monitored by suitable devices which trigger an alarm once a critical level has been reached:

- (a) the temperature of the main-engine cooling water;*
- (b) the lubricating-oil pressure for the main engines and transmissions;*
- (c) the oil and air pressure of the main engine reversing units, reversible transmissions or propellers.* (2006/87/EC Article 8.03.2)

11.19 Is the machinery space instrumentation in operational condition?

11.20 Is all machinery provided with effective guards?

All rotating machinery should be fitted with adequate guards. Any hot/cold surface should be provided with adequate insulation.

11.21 Are gauge glass closing devices on oil tanks of a self-closing, fail-safe type and not inhibited?

The spring loaded closing mechanism should be free and not held in the open position.

Glass gauges shall be effectively protected against impacts, shall be fitted with an automatic closing device at their base and their upper end shall be connected to the tanks above their maximum filling level. (2006/87/EC Article 8.05.9)

11.22 Are self-closing sounding devices to double bottom tanks in good order and closed?

Sounding pipes terminating in an engine or boiler room shall be fitted with suitable self-closing devices. (2006/87/EC Article 8.05.9)

11.23 Are sea/river water pumps, water chests and associated pipework in good order and free of hard rust and temporary repairs, particularly outboard of the ship-side valves?

11.24 Are hazard/warning notices posted?

11.25 If fitted, are the emergency escape exits clearly marked, unobstructed and adequately lit?

Spot check that escape hatches work properly. Lighting includes emergency lighting. Photoluminescence signage is optional on non-SOLAS class vessel.

Where one of the exits is an emergency exit, it shall be clearly marked as such. 2006/87/EC Article 11.06.1)

11.26 Are all tanks associated with the machinery space and drums clearly labelled?

Filling connections should also be clearly labelled.

11.27 Are flammable/combustible/hazardous materials properly stored?

MSDS data sheets should be available on board.

To store flammable liquids with a flash point of less than 55°C there shall be a ventilated cupboard made of non-combustible material on deck. On its outside there shall be a symbol 'Fire, naked flame and smoking prohibited' with a diameter of at least 10 cm. (2006/87/EC Article 11.13)

11.28 Are bilges clean, free of oil, rubbish and sediment?

11.29 If fitted, is the oily water separator arrangement and overboard discharge operated correctly?

The overboard discharge valves on the bilge and oily water separator system must be closed and secured (lock/lashed) with a notice posted, warning against opening without proper authority. The unit should be operational, not by passed.

11.30 Is all electrical equipment including junction boxes and cable runs in good order?

Class rules require a minimum insulation resistance of 1 megohm (1 million ohms). Good practice suggests that a much higher standard, as near to infinity as possible, but not less than 5 megohms, should be aimed for.

11.31 Is the operation of the steering equipment satisfactory?

All components of the steering gear should be in a satisfactory condition and operable. If fitted, communications with the emergency conning position and the wheelhouse should be checked and instructions posted. The steering gear emergency oil tank should be fully charged.

Record date of last external examination by authorised organisation.

11.32 Are main switchboards protected against water spray?

11.33 Is deck insulation provided to the front and rear of medium power (i.e. 220V and above) electrical switchboards and is it in good order?

Main and emergency switchboards should be provided with insulation matting in front and behind. Typically this is 7mm thick, however if the deck resin has equivalent insulation properties then matting is not required.

Insulation material used in engine rooms shall be protected against the intrusion of fuel and fuel vapours. (2006/87/EC Article 3.04.3)

11.34 Are all electric panels, switchboards and associated components clearly labelled?

Labels should be in the same language as the working language of the vessel.

11.35 Are detailed bunker transfer procedures available?

Companies should require that all bunkering operations are controlled under procedures that are incorporated in a Safety Management System.

These procedures should ensure that the risks associated with the operation have been assessed and that controls are in place to mitigate these risks. The procedures should also address contingency arrangements in the event of a spill. The Company should consider the following items when producing the procedures:

- Determining that there is adequate space for the volume of bunkers to be loaded.
- Establishing maximum loading volume for all tanks.
- Controls for the setting of bunker system valves.
- Determining loading rates for the start of loading, bulk loading and topping-off.
- Special precautions when loading into double bottom tanks.
- Arrangements of bunker tank ventilation.
- Overflow arrangements.
- Verification of gauging system operation and accuracy.
- Alarm settings on overflow alarm units.
- Bunker overflow protection (in general, the bunker overflow protection is an emergency stopping device only. It should not be used as a standard method of stopping bunkering).
- Communication between the supplier and receiver must be established before bunkering can be undertaken, including communication procedures for the bunkering operation and emergency stop.
- Manning requirements to execute the operation safely (including e.g. deck watch).
- Monitoring of the bunkering operation and checking it conforms to the agreed procedure.
- Changing over tanks during bunkering.
- Containment arrangements and clean-up equipment to be available. (ISGINTT Ch 25.2)

11.36 Are bunker tanks provided with an overfill protection system and is the system fully operational?

An overfill protection system should be provided and operational for loading bunkers and also for internal transfers. (Bunkers are defined as fuel used in main and auxiliary engines).

(a) Fuel tanks shall be safeguarded against fuel spills during bunkering by means of appropriate on-board technical devices which shall be entered in item 52 of the Community certificate.

(b) If fuel is taken on from bunkering stations with their own technical devices to prevent fuel spills on board during bunkering, the equipment requirements in (a) and paragraph 11 shall no longer apply.

(2006/87/EC Article 8.05.10)

If fuel tanks are fitted with an automatic shut-off device, the sensors shall stop fuelling when the tank is 97 % full; this equipment shall meet the 'failsafe' requirements

(2006/87/EC Article 8.05.11)

11.37 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?

Report which groups of oils are subject to testing programme and frequency of testing (i.e. Fuel oils, main engine lub oils, hydraulic oils, thermal oils etc. Verify the latest lube oil sample analysis is free from deficiencies. Record any deficiencies found.

11.99 Additional comments

If the Inspector has comments in respect of the subject matter covered by the Chapter additional to those which the Inspector may make in response to the specific questions in the Chapter, the Inspector should include such additional comments in this section.

Chapter 12. General Appearance

1 General appearance

12.1 Is the general condition, visual appearance and cleanliness of the hull satisfactory?

In the event of accidental or other exceptional discharge of oil, a statement shall be made in the Oil Record Book Part II or equivalent of the circumstances of, and the reasons for, the discharge.

Note: The hull should be free from oil staining, extensive coating breakdown or excessive marine growth.

Record in comments approximate percentage coating breakdown or areas of marine growth. The hull may be oil stained by passing through an area of oil and not be recorded in the Oil record book or deck log. If the hull is stained in this way, record of passing through oil areas should be recorded in the deck log book if such transit occurred during daylight hours.

12.2 If fendering is fitted is it in a satisfactory condition?

Small vessels are often fitted with permanent fendering in the form of steel round bar, wood or rubber straking.

12.3 Are hull markings clearly indicated and correctly placed?

The following should be clearly indicated, where applicable:-

- *The vessel's name;*
- *Vessel's identification number;*
- *Loadlines;*
- *Draft marks;*
- *Thruster warnings;*
- *Tug push points.*

The plane of maximum draught shall be indicated by means of highly visible, indelible draught marks. (2006/87/EC Article 4.04.2)

Vessels shall have at least three pairs of draught marks, of which one pair shall be centrally located and the two others located, respectively, at a distance from the bow and stern that is equal to roughly one-sixth of the length. (2006/87/EC Article 4.04.4)

12.4 Is the general condition, visual appearance and cleanliness of the weather decks satisfactory?

12.5 Do decks in working areas have clearly identified non-slip surfaces and are they in good condition?

Decks, side decks, engine-room floors, landings, stairways and the tops of side deck bollards shall have non-slip surfaces. (2006/87/EC Article 11.02.2)

The clear width of a side deck shall be at least 0.60 m. That figure may be reduced to 0.50 m at certain points that are necessary for the operation of the vessel such as deck-washing valves. It may be reduced to 0.40 m at bollards and cleats. (2006/87/EC Article 11.04.1)

12.6 Is the general condition of service pipework satisfactory and is it free from significant corrosion and pitting, soft patches or other temporary repairs?

Notes: The following deck pipework should be examined, particularly on the underside, for external indications of corrosion and for patching or accelerated wear caused by rope abrasion:

- *Hydraulic and pneumatic pipework;*
- *Fire mains and associated fittings;*
- *Deck steam lines;*
- *Compressed air lines;*
- *Tank cleaning lines.*

12.7 Are pipe stands, clamps, supports and expansion arrangements satisfactory?

Pipe securing arrangements should be intact and permit free movement of the pipes as necessary.

12.8 Are all deck openings, including weathertight doors and portholes, in good order and capable of being properly secured?

Doors shall be so arranged that they can be opened and closed safely from either side. They shall be protected against accidental opening or closing. (2006/87/EC Article 11.05.2)

12.9 Are fuel, ballast and other space vents and air pipes in good order and does visual evidence indicate regular maintenance?

Note: Vent heads should be regularly dismantled to prove that flame screens, where fitted are clean and in good order and that the closing device which prevents the ingress of water is also in good condition and operating correctly.

The open ends of the air pipes of all oil fuel tanks shall extend to not less than 0.50 m above the deck. Their open ends and the open ends of the overflow pipes leading to the deck shall be fitted with a protective device consisting of a gauze grid or by a perforated plate. (ADN 9.3.1/2/3.32.2)

12.10 Are all vents and air pipes clearly marked to indicate the spaces they serve?**12.11 Is the general condition, visual appearance and cleanliness of the external superstructure satisfactory?****Electrical Equipment:****12.12 Is deck lighting adequate and in good order?**

Notes: The level of deck lighting should be adequate to allow:

- *Sufficient visibility to permit safe access to all areas of the deck*
- *The safe use of mooring equipment;*
- *The monitoring of the deck area for spills and leakages;*
- *The monitoring of all deck areas and the adjacent surrounding areas to prevent unauthorised access.*

12.13 Is the general condition of electrical equipment, including conduits and wiring, satisfactory?**12.14 Are light fittings in gas-hazardous areas Ex'd' rated and in good order?**

Notes: Lights will be either explosion-proof or pressurised. The flame paths of explosion-proof lights should not be painted over. Fluorescent fittings will generally have flame paths at each end. The manufacturer's or Administration's certificate approving the fitting for use in gas-hazardous areas will be invalidated if the correct bolts for securing the cover, or the correct light bulb size, are not used.

Particular attention should be paid to the following:

- *Cracks in metal, cracked or broken glasses or failure of cement around cemented glasses in flameproof or explosion proof enclosures;*
- *Covers of flameproof enclosures to ensure that they are tight, that no bolts are missing, and that no gaskets are present between mating metal surfaces;*
- *Each connection to ensure that it is properly connected;*
- *Possible slackness of joints in conduit runs and fittings;*

Vent fan, cargo pump and cargo winch motors and lighting are likely to be found within gas-hazardous areas. An Ex'd' rating means that the equipment can withstand an internal explosion without igniting the outside atmosphere. Ex 'e' is an increased safety rating.

Only explosion-proof electrical equipment (certified safety) may be installed in spaces where potentially explosive gases or mixtures of gases are likely to accumulate, such as compartments dedicated for accumulators or the storage of highly inflammable products. No light switches or switches for other electrical appliances shall be installed in these space. (2006/87/EC Article 9.04)

12.15 If applicable, is electrical equipment capable of being isolated during cargo operations?

In some trading regions there is a requirement for certain electrical equipment to be isolated during cargo operations. Inspector to verify isolation and compliance with applicable regulations.

The electrical equipment which does not meet the requirements set out in 9.3.1.52.3 above together with its switches shall be marked red. The disconnection of such equipment shall be operated from a centralised location on board. (ADN 9.3.1/2/3.52.4)

Internal Spaces:

12.16 Are internal spaces and storerooms clean, free from debris and tidy?

Accommodation Areas:

12.17 Are alleyways free of obstructions and exits clearly marked?

External doors should have identification notices of their status.

12.18 Are public spaces, including smoke rooms, mess rooms, sanitary areas, food storerooms, food handling spaces, refrigerated spaces, galleys and pantries clean, tidy and in a hygienic condition?

Unburned fuel or fatty deposits in galley ranges, within flue pipes and in the filter cowls of galley vents can cause fire and must be maintained in a clean condition. Oil and deep fat fryers should be fitted with thermostats to cut off the electrical power and prevent overheating.

Record details of any areas which the inspector was not able to inspect, however certain cabins may not be accessible as watchkeepers may be sleeping.

12.19 If fitted, are laundries free of fire hazards?

Laundries should be kept in a clean and tidy condition, and filters should be regularly cleaned to prevent build-up of lint.

12.20 If fitted, is the Ship's Hospital clean and tidy and ready for use?

The Ship's hospital should be ready for immediate use. The Ship's hospital should not be used as an additional cabin or used as a store room.

12.21 Is the level of accommodation lighting satisfactory?

Interior working spaces shall be equipped with sufficient non-dazzle lighting and with sufficient ventilation arrangements. (2006/87/EC Article 11.08.1)

12.22 Is the condition of electrical equipment in the accommodation satisfactory?

12.23 If fitted are personnel alarms in refrigerated spaces in good order and operational?

12.99 Additional comments

If the Inspector has comments in respect of the subject matter covered by the Chapter additional to those which the Inspector may make in response to the specific questions in the Chapter, the Inspector should include such additional comments in this section.

Remarks should be recorded in Additional comments relating to the superficial condition of the coating and appearance of the hull, weather decks, superstructure and on the condition and cleanliness of the accommodation and living quarters including hygiene and sanitation.

Chapter 13. Packed Cargoes

1 Packed cargoes

13.1 Does the vessel have a cargo securing manual?

13.2 Is the vessel free of inherent stability problems?

13.3 Does the vessel have a stability plan approved by a competent authority to carry deck cargoes?
Vessels used for the transportation of packed cargoes or containers may not be purposely designed to carry them. Inspectors should pay particular attention to the vessels stability criteria to determine the suitability to carry deck cargoes or if appropriate, tank trucks. Look for evidence that stability calculations are being done.

13.4 Is the portable tank & framework certified for the carriage of product by a competent authority?
Securing points should be provided on tanks / framework and the vessel. Sufficient fixing points and securing devices (steel chains) should also be available. Earth bonding wires should be fitted.

13.5 If fitted, have portable tanks undergone all statutory tests.
Statutory testing should be carried out at 5 year intervals with Intermediate tests conducted at 2.5 year interval (+/-3 months) for leakage, operation of service equipment and undergone internal / external inspection of tank and fitting. In the case of portable tanks, the metal marking plate should be engraved to record the requirements of the IMDG Code Ref. Volume 1 (IMO number, Year of Manufacture, Test Pressure and the Date of the last test).

13.6 If the cargo is carried in ISO/IBC containers or their equivalent, are these in a satisfactory condition?
Containers should be earthed, and fitted with a metal marking plate showing the necessary details. P/V valves, if fitted, and ancillary pipework should be in a satisfactory condition.

13.7 If the cargo is carried in a tank vehicle, is the vehicle in sound structural condition and free of defects?

13.8 Is the tank vehicle properly secured in accordance with a Cargo Securing Manual?

13.9 Are tie-down attachments adequate to secure tank vehicles and prevent movement?

13.10 Are securing points on the vehicle adequate and adequately marked?

Vehicle Fixing Points:

- *The minimum number of securing points for the Gross Vehicle Mass (GVM) should be (3.5T = GVM - 2 securing points on each side of the vehicle);*
- *(20T < GVM = 30T - 3 securing points on each side of the vehicle);*
- *(30T < GVM = 40T - min 4 securing points on each side of the vehicle).*

13.11 Are drums and packages in satisfactory condition, free of leaks and clearly marked showing the cargo they contain?

Lifting equipment such as barrel chains, straps, winches, cranes and derricks should be free of defects. They should all have been load tested periodically and the results recorded.

Unless provided otherwise in ADN, the UN number corresponding to the dangerous goods contained, preceded by the letters "UN" shall be clearly and durably marked on each package. (ADN 5.2.1.1)

All package markings required;

(c) shall be readily visible and legible;

(d) shall be able to withstand open weather exposure without a substantial reduction in effectiveness. (ADN 5.2.1.2)

The consignor shall provide in the transport documents a statement regarding actions, if any that are required to be taken by the carrier. The statement shall be in the languages deemed necessary by the carrier concerned, and shall include at least the following information;

- (d) supplementary requirements for loading, stowage, carriage, handling and unloading of the package, over pack or container including any special stowage provisions for the safe dissipation of heat, or a statement that no such requirements are necessary;
- (e) Restrictions on the mode of carriage or vehicle or wagon and any necessary routeing instructions;
- (f) Emergency arrangements appropriate to the consignment. (ADN 5.4.1.2.5.2)

13.12 Are drums and packages stowed and lashed securely?

Drums should be stowed clear of the deck and securely lashed to prevent movement.

13.13 Are electric lights and fittings located in the vicinity of the packed cargo in satisfactory condition and are they of the explosion-proof type?

Light fittings must be assessed to ensure that they do not present an explosive hazard.

13.99 Additional comments

If the Inspector has comments in respect of the subject matter covered by the Chapter additional to those which the Inspector may make in response to the specific questions in the Chapter, the Inspector should include such additional comments in this section.

Chapter 14. Ice Operations.

This section is to be completed if the vessel has an Ice Class Notation or has a valid winterisation certificate. It should also be used if a vessel is operating in areas of first year ice or severe sub-zero conditions.

For the purpose of this chapter, cold weather is defined as a low temperature that affects the safe operation of the vessel and safety of the crew.

14.1 Are procedures available for operations in ice or in cold weather conditions?

Verify that procedures for operating in ice are available that will typically include the following information:

- Risk management and risk mitigation measures when preparing for and operating in ice
- Principal particulars of the vessel
- Operating limitations of the vessel, if applicable, based on the ice classification
- Loading procedures and limitations including any applicable restrictions on carrying pollutants in tanks and compartments against the hull
- Maximum load condition and distribution and stability criteria
- Contingency Plans and evacuation procedures
- Spill response procedures
- Procedures for checking hull integrity
- Procedures for passage assisted by an ice breaker or in ice convoy
- Procedures for towing operations in ice
- Guidance on passage planning
- Guidance on operating machinery and systems
- Guidance on manning e.g. bridge watchkeeping requirements

14.2 Has training specifically addressing navigation in ice/cold weather conditions been provided to members of the vessel's crew?

Training includes formal courses, in-house or on-board training and the regulated use of videos and Computer Based Training (CBT).

Record details of the training in Comments – e.g. course name, method of delivery, provider, who trained and date of training.

14.3 Are means in place on at least one sea/river water chest to prevent its freezing or clogging?

Methods employed to prevent freezing or clogging include heating, use of hot water or steam and a system designed to blow out any ice blockage.

Means employed should be recorded as a Comment.

14.4 Are procedures available for operations in cold weather conditions?

Verify that procedures for operating in cold weather conditions are available that will typically include the following information:

- Means to protect personnel from the effects of cold weather conditions, e.g. cold weather clothing, management of watch routines and duty periods.
- Arrangements for accommodation heating.
- Measures to maintain safe access and movement around the vessel.
- Arrangements to ensure operability of wheelhouse equipment and systems and the maintenance of an effective lookout.
- Procedures to ensure the operability of critical equipment and systems including firefighting systems and lifesaving appliances.
- The management of cargo and ballast systems. Means and/or procedures in place to ensure that air driven whistles and fog horns are operable in cold weather conditions

14.5 Are means in place to prevent the icing of wheelhouse windows?

Wheelhouse windows should be heated to prevent them from icing up. Heat may be provided by blowers or by heating elements within the glass. Unless they are heated and used in conjunction with heated windows, window wipers are not effective in cold weather conditions as the wipers may freeze to the windows or blur any ice that may be present. 'Clear view screens' consisting of a glass disc rotating at high speed may be effective if the screens are provided with heating.

- 14.6 Are means in place to ensure the operability of critical equipment and systems in cold weather conditions?**
Procedures should address the need to prepare critical equipment prior to entering the cold weather area. Particular attention should be given to ensuring the suitability of fuels used in systems such as those serving the emergency generator and lifeboat engine.
- 14.7 Are means in place aimed at ensuring the ready availability of lifesaving appliances?**
Procedures should include actions to ensure the ready availability of life saving appliances that include the following:
- *The need for Thermal Protective Aids and immersion suits should be addressed and equipment suitable for anticipated temperatures should be provided prior to the vessel entering cold areas.*
 - *Ensuring that fuel and engine oils used in lifeboats and rescue boats should be of a type suitable for operation in sub-zero temperatures. Where fitted, heating systems should be checked to be operational.*
 - *The need to move lifeboat water containers to an adjacent heated space.*
 - *The requirement to keep lifeboats and launching equipment free of ice accretion.*
 - *An ice removal mallet should be available in the vicinity of lifeboats and liferafts or electrical trace heating provided to protect critical items such as door seals.*
- 14.8 Are means in place aimed at ensuring the operability of firefighting and sprinkler systems?**
In cold weather, the freezing of fire-mains and hydrants should be prevented by continuously bleeding water overboard from hydrants at the extreme end of each fire-main. Alternatively, all low points of the fire-main may be kept drained. (ISGINTT 8.1.2)
- 14.9 Are means and/or procedures in place to ensure the proper functioning of air intakes and fire flaps?**
Record means used, e.g. regular checks, protected location, trace heating.
- 14.10 Are means and/or procedures in place to protect piping systems on deck from the risk of freezing?**
The piping system shall be so designed as to prevent accumulation of cargo or water in the pipeline under all normal conditions. However, in extreme cold conditions, residual water in the inert gas may freeze in the inert gas main. Operators should be aware of this and should therefore operate the system to minimise residual water and closely monitor the system's operation. (ISGINTT 7.1.11.1)
- 14.11 Are means and/or procedures in place to ensure the operability of ballast systems?**
Note: Means and procedures include for e.g. heating arrangements, air bubbling and ballast water exchange. The procedures should include guidance on ballast handling when loading cargoes at cold weather conditions. Air pipes and vent heads should also be protected. Record means used.
- 14.12 Are means or procedures in place to prevent the icing up of cargo tank primary and secondary venting arrangements?**
*If P/V valves are not provided with a heating system, a procedure should require that the valves are regularly checked by manual opening during cargo operations. The frequency of manual opening should be established to ensure continued operation of the valve and prevent restricted movement through ice formation. The IG deck water seal should be provided with an operational heating system. Procedures should require that it is regularly checked during operations to ensure a positive water flow and that inlet and outlet lines remain clear.
The P/V breaker should be filled with anti-freeze (glycol-based as opposed to methanol based) in accordance with manufacturer's guidance prior to entering the cold area. It is important that the correct concentration of ethylene glycol and water is used, excessive concentrations may reduce effectiveness. Essential valves on IG and venting systems should be protected with suitable grease and a canvas cover. Flame arrestors should be confirmed to be free of snow or ice before the start of cargo operation.
In extremely cold weather, ice may prevent the pressure/vacuum valves from operating and may block the flame screens on the pressure/vacuum valves and mast risers. (ISGINTT 7.1.11.3)*
- 14.13 Are means and/or procedures in place to prevent the icing up of air pipes to machinery space tanks required for the operation of the main propulsion plant and essential auxiliaries?**

If no heating arrangement is provided, verify that there is a procedure in place aimed at ensuring that the air pipes remain clear.

Means employed should be recorded as a Comment.

14.99 Additional comments

If the Inspector has comments in respect of the subject matter covered by the Chapter additional to those which the Inspector may make in response to the specific questions in the Chapter, the Inspector should include such additional comments in this section.

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