

# **BAHRIA CLASSIFICATION SOCIETY**



## **BCS-PR**

### **BCS-Procedural Requirements**

**JULY 2022**

These procedural requirements are prepared by embedding related IACS Procedural Requirements. In order to have consistency, the numbering of the procedural requirements are kept as the same with related IACS Procedural Requirements.

Unless otherwise specified, these Rules apply according to the implementation dates as defined in each procedural requirement. See Rule Change Summary on BCS website for revision details.

This latest edition incorporates all rule changes.

"General Terms and Conditions " of the respective latest edition will be applicable (see Rules for Classification and Surveys).

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# BCS-PR 1A Procedure for Transfer of Class

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1. This Procedural Requirement applies to requests for transfer of class received on or after 1 July 2020.

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## **PR1A**

### **Procedure for Transfer of Class**

#### **Application**

This Procedure contains procedures and requirements pertaining to transfer of class from one Society (i.e. losing Society) to another Society (i.e. gaining Society) and is applicable, unless stated otherwise, to vessels of over 100 GT of whatever type, self propelled or not, restricted or unrestricted service, except for "inland waterway" vessels.

The obligations of this Procedure apply to Classification Societies which are subject to verification of compliance with QSCS, for the vessels reported as compliant by the Losing Society.

#### **Definitions**

'At vessel's delivery' means that the new construction survey process is completed, the first Certificate of Class is delivered and the vessel has not departed from the yard.

'Compliant' ship means a ship classed with a Classification Society subject to verification of compliance with QSCS and in full compliance with all applicable and relevant IACS Resolutions.

'First Certificate of Class' means either Interim Certificate of Class or Full Term Certificate of Class or another Certificate serving the same purpose.

'Gaining Society' means a Classification Society which accepts a vessel for its classification only after all overdue surveys and overdue conditions of class previously issued against the vessel have been completed by or as specified by the losing Society.

'Interim Certificate of Class', or Interim Class Certificate, is the certificate issued immediately upon completion of the survey of the vessel to enable it to trade while the report of the classification surveys is processed by the gaining Society pursuant to issuing its full term Class Certificate.

'Losing Society' means the Classification Society from which class is being transferred. In the case of vessels classed by more than one Society, 'losing Society' means all Classification Societies from which class is being transferred.

'Outstanding' means still to be dealt with.

'Overdue' means overdue on the date the losing Society receives the request by the gaining Society for its current classification survey status.

'Conditions of Class' mean requirements to the effect that specific measures, repairs, surveys etc. are to be carried out within a specific time limit in order to retain Classification.

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## Section A - Procedural Requirements

### A.1 Obligations and reporting of the gaining Society

A.1.1 Whenever a Society is requested by an Owner to accept an existing vessel into class, the gaining Society is to immediately notify the Owner in writing that:

- .1 the relevant surveys specified in PR1A/B.2.1 are required to be satisfactorily completed for entry into class;
- .2 for vessels less than 15 years of age<sup>(Note 1)</sup>, an Interim Certificate of Class can be issued only after the gaining Society has completed: (i) all overdue surveys and (ii) all overdue conditions of class previously issued against the vessel as specified to the Owner by the losing Society;
- .3 for vessels 15 years of age and over, an Interim Certificate of Class can be issued only after the losing Society has completed: (i) all overdue surveys and (ii) all overdue conditions of class previously issued against the vessel.
- .4 any outstanding conditions of class are to be dealt with by their due dates;
- .5 the principles given in items .1, .2 and .3 above apply to any additional conditions of class issued against the vessel arising from surveys which were not included in the initial survey status provided to the gaining Society by the losing Society because the surveys were carried out in close proximity to the request for transfer of class. Such additional conditions of class if received after the issuance of the Interim Certificate of Class by the gaining Society and which are overdue are to be dealt with at the first port of call by the relevant Society depending on the age of the vessel;
- .6 copies of the plans listed in Section C are to be provided to the gaining Society as a prerequisite to obtaining a full term Class Certificate.

If the Owner is unable to provide all of the required plans, the gaining Society is to request that the Owner authorise the losing Society to transfer copies of such of these plans as it may possess directly to the gaining Society upon request from the gaining Society, with the advice that the losing Society will invoice the gaining Society and the gaining Society may, in turn, charge the associated costs to the Owner.

A.1.2 Prior to issuing an Interim Certificate of Class the gaining Society is to obtain:

- .1 from the Owner, a written request for transfer of class, containing an authorisation for the gaining Society to obtain the current classification status from the losing Society; and
- .2 the current classification survey status from the Headquarters of the losing Society or one of its designated control or management centres.

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(Note 1) To be calculated from the date of delivery to the "Date Request for Class was Received" in Form G Part A – Survey Status Request.



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A.1.3 Within two (2) working days of receipt of a written request from the Owner for transfer of class at a Society's Headquarters or one of its designated control or management centres, the gaining Society is to notify the losing Society of the requested transfer of class using the Form G in Annex 1 with Part A completed and attaching the Owner's authorisation for release of the survey status. If the gaining Society does not receive the classification survey status from the losing Society within three (3) working days from request, the gaining Society may utilise the losing Society's survey status information provided by the Owner and, after complying with the other relevant requirements of this Procedural Requirement, may issue an Interim Certificate of Class. In such cases, a statement is to be included in or with the Interim Certificate of Class reminding the Owner that the conditions of A.1.1 are still applicable.

A.1.4 The gaining Society is not to issue an Interim Certificate of Class, or other documents enabling the vessel to trade:

1. Until all overdue surveys and all overdue conditions of class previously issued against the subject vessel as specified to the Owner by the losing Society, have been completed and rectified by:
  - a) the gaining Society, for vessels less than 15 years of age;
  - b) the losing Society, for vessels 15 years of age and above; and
2. Until all relevant surveys specified in PR1A/B.2.1 have been satisfactorily completed; when facilities are not available in the first port of survey, an Interim Certificate of Class may be issued to allow the vessel to undertake a direct voyage to a port where facilities are available to complete surveys required in PR1A/B.2.1 In such cases:

The surveys specified in PR1A/B.2.1 are to be carried out to the maximum extent practicable at the first port of survey, but in no case less than the scope of annual hull survey and machinery surveys as required in B.2.1.2;

3. before giving the opportunity to the Flag Administration to provide any further instructions within three (3) working days.<sup>(Note 2)</sup>

A.1.5 The validity of the Interim Certificate of Class and the subsequent Class Certificate is subject to any outstanding conditions of class previously issued against the vessel being completed by the due date and as specified by the losing Society. Any outstanding conditions of class with their due dates are to be clearly stated on the:

1. Interim Certificate of Class or an attachment to the Interim Certificate of Class, and/or class survey record available on board; and
2. survey status when the full term Class Certificate is issued.

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(Note 2) In compliance with the requirements of Art. 10.5 of the Regulation (EC) No 391/2009 as amended.



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A.1.6 The gaining Society is, within one (1) month from issuing its Interim Certificate of Class, to advise the losing Society of the date of issuing this certificate and confirm the date, location and action taken to satisfy each overdue survey and overdue condition of class, if any, issued against the subject vessel as specified to the Owner by the losing Society. The report Form G in Annex 1, with Parts A and B duly completed is to be used.

A.1.7 Any additional information regarding outstanding surveys or conditions of class received from the losing Society in accordance with A.2.3 is to be dealt with in accordance with A.1.4 and A.1.5, as applicable, and reported to the losing Society with Form G in Annex 1 with Part B-1 duly completed within one (1) month from the completion of the survey. If this additional information is received after the Interim Certificate of Class has been issued, any surveys or conditions of class which are overdue are to be dealt with at the first port of call:

- .1 by the gaining Society in vessels less than 15 years of age; or
- .2 by the losing Society in vessels 15 years of age or over.

If this is not accomplished, the Interim Certificate of Class is to be withdrawn immediately unless the Owner agrees to proceed directly, without further trading, to a suitable port where any overdue surveys or overdue conditions of class are to be carried out by the relevant Society based on the age of the vessel.

A.1.8 Prior to final entry into class the gaining Society's obligation is:

- .1 to carry out and document the review, of class survey records, of the losing Society, by an authorised person considering the items specified in Annex 3;
- .2 to advise the losing Society in writing of the anticipated date of final entry into class and that Form G with Parts A, B and B-1 (when applicable) duly completed has been sent<sup>(Note 3)</sup>.

A.1.9 The gaining Society may, if deemed necessary, carry out the review of class survey records of other Societies, which had previously classed the vessel.

A.1.10 Within one (1) month of the date of final entry into class, the gaining Society is to dispatch Form G in Annex 1, with Parts A, B, B-1 (when applicable) and C duly completed, to the losing Society. In cases where the losing Society has reported conditions of class on the vessel, the gaining Society is to provide to the losing Society, together with Form G, an itemised list of actions taken with the date and location and actions to be taken, to satisfy each condition of class. The gaining Society is to confirm in writing the date of final entry into class to the flag State within one (1) month of the date of final entry into class.

A.1.11 The reporting by gaining Society to losing Society required in A.1.6, A.1.7 and A.1.10 is to be done in accordance with the Harmonisation of Reporting in Annex 2.

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(Note 3) In compliance with the requirements of Art. 10.6 of the Regulation (EC) No 391/2009 as amended.

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## **A.2 Obligations and reporting of the losing Society**

A.2.1 If an Owner advises the losing Society of an intention to transfer class, the losing Society is to immediately confirm to the Owner any overdue surveys and outstanding conditions of class, together with any outstanding fees.

A.2.2 The losing Society:

- .1 within two (2) working days of receipt of a written request at its Headquarters or one of its designated control or management centres, is to notify the gaining Society the latest class details in its possession including a full list of overdue surveys and conditions of class - with the respective due dates - issued against the subject vessel. For vessels under Enhanced Survey Programme, the following documentation is also to be provided:
  - (i) the most recent Condition Evaluation Report/Executive Hull Summary Reports;
  - (ii) any available Survey Planning Document for the forthcoming special or intermediate survey, regardless of whether the gaining Society intends to credit or not class entry surveys as periodical surveys for maintenance of classification.

In cases where the class status is received in a language not readily understood by the gaining Society or contains vague or unclear descriptions, the losing Society is to provide additional detailed information in English language on request of the gaining Society. The losing Society is obliged to advise the gaining Society of the possibility of further conditions of class arising from surveys which the losing Society knows have been carried out but for which reports have not yet been received. The report Form L in Annex 1 with Part A completed is to be used by the losing Society to report on the class status. Details may be amplified, if necessary, in accompanying documents.

- .2 is obliged to make available, within one (1) month of the receipt of the request referred to in .1 above, all class survey records including thickness measurement reports from the last special survey and in addition, any subsequent thickness measurements including areas with substantial corrosion, to the gaining society for record review and relevant reporting, to the extent this information is in the possession of the losing Society, to enable the gaining Society to retain the Vessel's Records as outlined in Annex 3, in accordance with A.1.8.
- .3 alternatively to .2 above, upon request is obliged to provide, within one (1) month of the receipt of the request referred to in .1, a copy of all the class survey records including thickness measurement reports from the last special survey and in addition, any subsequent thickness measurements including areas with substantial corrosion, to the gaining Society, to enable the gaining Society to retain the Vessel's Records as outlined in Annex 3, in accordance with A.1.8. These survey records will be transferred electronically if electronic files are available.
- .4 is also to submit, within one (1) month of the receipt of the request referred to in .1 above, any Vessel's Records regarding class items (see Annex 3) available from prior transfers of class performed after 1 July 2001.

A.2.3 The losing Society has one (1) month from issuance of its survey status to the gaining Society as per A.2.2 to forward to the gaining Society:



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- .1 the additional information on outstanding surveys and/or conditions of class arising from surveys performed proximate to the date of Owner's written request for transfer of class which were not included in said status, by dispatching Form L in Annex 1 with Part A-1 duly completed;

A.2.3bis The losing Society is to forward to the gaining Society:

- .1 the standard structural diminution allowances which were applying to the vessel, by dispatching Form L in Annex 1 with Parts A and A-1 (when applicable) duly completed, within five working days from the receipt of the request for transfer of class from gaining Society;
- .2 the UR-S19/31 assessment reports (when applicable) within twelve working days from the receipt of the request for transfer of class from gaining Society.

A.2.3ter For CSR vessels, the Owner is to submit to the Gaining Society plans showing, for each structural element, both as-built and renewal thicknesses and any thickness for "voluntary addition". (refer to C.1.2)

A.2.4 To ensure mutual exchange of information on vessels transferring class and on the survey status of such vessels, the losing Society is, on completion of a withdrawal of class, to dispatch Form L in Annex 1, with Parts A, A-1 (when applicable) and B duly completed, to the TOC database and to the gaining Society.

A.2.5 Should the losing Society, upon receiving information from the gaining Society pursuant to the disposition of the transfer of class, have clear grounds for believing that the gaining Society did not fulfil its obligations as specified in A.1, the losing Society is to notify the gaining Society of its concerns and attempt to resolve any differences.

A.2.6 Societies who had classed the vessel prior to the losing Society have the same obligations as the losing Society which are given in A.2.2.2 or A.2.2.3, if so requested by the gaining Society, in accordance with A.1.9.

### **A.3 Transfer of class at vessel's delivery**

A.3.1 The procedural requirements for transfer of class at vessel's delivery are applicable when the Society which has carried out the new construction technical review and surveys (i.e. Losing Society) has issued its first Certificate of Class.

#### **Obligations and reporting of the Gaining Society**

A.3.2 Whenever a Society is requested by an Owner to accept a vessel into class at its delivery, that Society, i.e. the gaining Society, is to immediately notify the Owner in writing that:

- .1 any outstanding conditions of class are to be dealt with by their due dates;
- .2 copies of the plans listed in Section C are to be provided to the gaining Society as a prerequisite to obtaining a Full Term Certificate of Class.

If the Owner is unable to provide all of the required plans, the gaining Society is to request that the Owner authorise the losing Society to transfer copies of such of these plans as it may possess directly to the gaining Society upon request from the gaining Society, with the advice

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that the losing Society will invoice the gaining Society and the gaining Society may, in turn, charge the associated costs to the Owner.

A.3.3 Prior to issuing an Interim Certificate of Class on the date of the vessel's delivery, the gaining Society is to obtain:

- .1 from the Owner, a written request for transfer of class at vessel's delivery, containing an authorisation for the gaining Society to obtain a copy of the first Certificate of Class, from the losing Society; and
- .2 the first Certificate of Class from the Headquarters of the losing Society or one of its designated control or management centres or from the attending Surveyor at the yard of the builder including any outstanding conditions of class and information normally contained in the classification status.

A.3.4 After receipt of a written request from the Owner for transfer of class at a Society's Headquarters or one of its designated control or management centres, the gaining Society is to notify the losing Society of the requested transfer of class using the Form G in Annex 1 with Part A completed and attaching the Owner's authorisation for release of the first Certificate of Class, including the list of any conditions of class - with the respective due dates - issued against the subject vessel and information normally contained in the classification status.

If the gaining Society does not receive the above documents from the losing Society on the date of the vessel's delivery, the gaining Society may utilise the losing Society's said documents provided by the Owner and, after complying with the other relevant requirements of this Procedural Requirement, may issue an Interim Certificate of Class on the date of the vessel's delivery. In such cases, a statement is to be included in or with the Interim Certificate of Class issued by the Gaining Society reminding the Owner that the conditions of A.3.2 are still applicable.

A.3.5 The Gaining Society is not to issue an Interim Certificate of Class, or other documents enabling the vessel to trade:

- .1 until all relevant surveys specified in PR1A/B.2.1 have been satisfactorily completed; and
- .2 before giving the opportunity to the Flag Administration to provide any further instruction within three (3) working days<sup>(Note 4)</sup>.

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(Note 4) In compliance with the requirements of Art. 10.5 of the Regulation (EC) No 391/2009 as amended.



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A.3.6 The validity of the Interim Certificate of Class and the subsequent full term Certificate of Class issued by the Gaining Society is subject to any outstanding conditions of class previously issued against the vessel being completed by the due date and as specified by the losing Society. Any outstanding conditions of class with their due dates and information normally contained in the classification status are to be clearly stated on the:

- .1 First Certificate of Class or an attachment to the First Certificate of Class and/or class survey record available onboard.
- .2 Survey status when the full term Certificate of Class is issued.

A.3.7 The gaining Society is, within one (1) month from issuing its Interim Certificate of Class, to advise the losing Society of the date of issuing this certificate. The report Form G in Annex 1, with Parts A and B duly completed is to be used.

A.3.8 Within one (1) month of the date of final entry into class, the gaining Society is to dispatch Form G in Annex 1, with Parts A, B, and C duly completed to the losing Society. In cases where the losing Society has reported conditions of class on the vessel, the gaining Society is to provide to the losing Society, together with Form G, an itemised list of actions taken with the date and location and actions to be taken, to satisfy each condition of class.

A.3.9 The reporting by gaining Society to losing Society required in A.3.8 is to be done in accordance with the Harmonisation of Reporting in Annex 2.



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## **Obligations and reporting of the losing Society**

A.3.10 Upon receipt of a written request at its Headquarters or one of its designated control or management centres and on the date of the vessel's delivery, the losing Society is to submit to the gaining Society its first Certificate of Class, including the list of any conditions of class - with the respective due dates - issued against the subject vessel and the list of any information normally contained in the classification status. The report Form L in Annex 1 with Part A completed is to be used by the losing Society. Details may be amplified, if necessary, in accompanying documents.

A.3.11 The losing Society has one (1) month from issuance of its first Certificate of Class to the gaining Society to forward to the gaining Society:

- .1 the structural diminution allowances which were applying to the vessel, by dispatching Form L in Annex 1 with Parts A and A-1 duly completed.

A.3.12 To ensure mutual exchange of information on vessels transferring class, the losing Society is, on completion of a withdrawal of class, to dispatch Form L in Annex 1, with Parts A, A-1 and B duly completed, to the TOC database and to the gaining Society.

A.3.13 Should the losing Society, upon receiving information from the gaining Society pursuant to the disposition of the transfer of class, have clear grounds for believing that the gaining Society did not fulfil its obligations, the losing Society is to notify the gaining Society of its concerns and attempt to resolve any differences.

## **A.4 Other requirements**

A.4.1 The obligations of the gaining and losing Societies continue to apply when a vessel's class is suspended and for six (6) months following withdrawal of a vessel's class, irrespective of class status in the meantime.

A.4.2 As the ship may be laid up, the gaining Society is to check the classification status from the previous Society in order to verify if PR1A is applicable.

A.4.3 Any differences which cannot be settled privately between the gaining and losing Societies, are to be solved under the IACS Procedures, Volume 3, Annex 4 "IACS Procedure for handling a complaint".

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## **Section B - Technical Requirements**

For transfer of class from one Society to another, the following minimum technical requirements are to be applied.

### **B.1 Plans and information**

B.1.1 The gaining Society is to request copies of plans showing the main scantlings and arrangements of the actual vessels and machinery, together with any proposals for alterations being dealt with, from the Owner. Receipt of plans listed in Section C, or equivalent, alternative technical data in lieu of specific plans or items, is to be identified to the Owner as a prerequisite to issuance of a full term Class Certificate by the gaining Society. However, having made a good faith effort to obtain the information, if it proves not practicable to acquire certain plans as listed in Section C, or equivalent, alternative technical data, the gaining Society may issue the full term Class Certificate provided that its classification records document that the vessel is being accepted into class on the basis of a recorded internal review of the circumstances prevailing with respect to availability of plans.

### **B.2 Class Entry Surveys<sup>(Note 1)</sup>**

B.2.1 Notwithstanding the records indicating that all surveys are up-to-date, a class entry survey is to be held by the gaining Society, the minimum extent of which is to be based on the age of the vessel and the losing Society's class status as follows:

#### **.1 Hull Class Entry Survey:**

- i) for vessels of age less than 5 years the survey is to take the form of an Annual Survey;
- ii) for vessels between 5 and 10 years of age the survey is to include an Annual Survey and inspection of a representative number of ballast spaces;
- iii) for vessels of 10 years of age and above but less than 20 years of age, the survey is to include an Annual Survey and inspection of a representative number of ballast spaces and cargo spaces, except for:
  - For gas carriers, in lieu of internal inspection of cargo spaces, the following applies:
    - 1) Inspection of surrounding ballast tank(s) and void spaces, including external inspection of independent cargo tank(s) and associated supporting systems as far as possible;
    - 2) Review of cargo log books and operational records to verify the correct functioning of the cargo containment system.

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<sup>(Note 1)</sup> Class entry surveys may be, but are not required to be, credited as periodical surveys for maintenance of classification. Conditions of class due for compliance at a specified periodical survey for maintenance of classification need not be carried out/complied with at a class entry survey unless the class entry survey is credited as the specified periodical survey for maintenance of classification or the condition of classification is overdue.



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- For chemical carriers of 10 years of age and above but less than 15 years of age, in lieu of an internal inspection of cargo tanks without internal stiffening and framing, inspections of surrounding ballast tank(s) and void spaces and deck structure, are to be applied.
- iv) for vessels subject to UR Z10.1, Z10.2, Z10.3, Z10.4 or Z10.5 which are 15 years of age and above but less than 20 years of age, the survey is to have the scope of a Special Survey or an Intermediate Survey, whichever is due next;
- v) for all vessels, which are 20 years of age and above, the survey is to have the scope of a Special Survey<sup>(Note 2)</sup>;
- vi) in lieu of the requirements in items i) through v), the following apply for site specific purpose-built Floating Production and/or Storage Vessels:
- for vessels of age less than 5 years, the survey is to have the scope of an Annual Survey;
  - for vessels of age between 5 and 10 years, the survey is to include an Annual Survey and inspection of twenty percent of ballast spaces;
  - for vessels of age between 10 and 20 years, the survey is to include an Annual Survey and inspection of twenty percent of ballast spaces and twenty percent of cargo spaces.
  - for vessels over 20 years of age, the survey is to have the scope of a Special Survey.
- vii) for site specific Floating Production and/or Storage Vessels which have been converted from other vessels, the survey is to take the form of an Annual Survey and also include inspection of twenty percent of ballast spaces and twenty percent of cargo spaces until 20 years have elapsed since conversion. After 20 years the survey is to have the scope of a Special Survey.
- viii) in the context of applying items iv) and v) above, if a dry-docking of the vessel is not due at the time of transfer, consideration can be given to carrying out an underwater examination in lieu of dry-docking.
- ix) in the context of applying items iv) and v), as applicable, the anchors and anchor chain cables ranging and gauging for vessels over 15 years of age is not required to be carried out as part of the class entry survey unless the class entry survey is being credited as a periodical survey for maintenance of class. If the class entry survey is to be credited as a periodical survey for maintenance of class, consideration may be given by the gaining society to the acceptance of the anchors and anchor chain cables ranging and gauging carried out by the losing society provided they were carried out within the applicable survey window of the periodical survey in question.

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(Note 2) The requirement of item v) is also applicable to the vessels having their hull under continuous survey.

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x) in the context of applying items i) to viii) above, as applicable,

- if the class entry survey is to be credited as a periodical survey for maintenance of class consideration may be given by the gaining society to the acceptance of thickness measurements taken by the losing society provided they were carried out within the applicable survey window of the periodical survey in question.
- if the class entry survey is not to be credited as a periodical survey for maintenance of class, consideration may be given by the gaining society to the acceptance of thickness measurements taken by the losing society provided they were carried out within 15 months prior to completion of class entry survey when it is in the scope of a Special Survey, within 18 months prior to completion of class entry survey when it is in the scope of an Intermediate Survey.

In both cases, the thickness measurements are to be reviewed by the gaining society for compliance with the applicable survey requirements, and confirmatory gauging are to be taken to the satisfaction of the gaining society.

xi) In the context of applying iii) to viii) above, as applicable, tank testing for vessels over 15 years of age is not required to be carried out as part of the class entry survey unless the class entry survey is being credited as a periodical survey for maintenance of class. If the class entry survey is to be credited as a periodical survey for maintenance of class, consideration may be given by the gaining society to the acceptance of the tank testing carried out by the losing society provided they were carried out within the applicable survey window of the periodical survey in question.

xii) In the context of applying i) to viii) above, as applicable, compliance with IACS Unified Requirements that require compliance at the forthcoming due periodical surveys (such as S26 and S27) are not required to be carried out/completed as part of the class entry survey unless the class entry survey is credited as a periodical survey for maintenance of class.

2 Machinery Class Entry Survey, a general examination of all essential machinery is to be held and is to include:

- i) examination under working conditions of oil fuel burning equipment of boiler, economisers and steam/steam generators. The adjustment of safety valves of this equipment is to be verified by checking the records on the vessel;
- ii) all pressure vessels;
- iii) insulation resistance, generator circuit breakers, preference tripping relays and generator prime mover governors are to be tested and paralleling and load sharing to be proved;
- iv) in all cases, navigating lights and indicators are to be examined and their working and alternative sources of power verified;
- v) bilge pumps, emergency fire pumps and remote control for oil valves, oil fuel pumps, lubricating oil pumps and forced draught fans are to be examined under working conditions;
- vi) recirculating and ice clearing arrangements, if any;



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vii) the main and all auxiliary machinery necessary for operation of the vessel at sea together with essential controls and steering gear is to be tested under working conditions. Alternative means of steering are to be tested. A short sea trial is to be held at the Surveyors discretion if the vessel has been laid up for a long period;

viii) initial start arrangements are to be verified;

ix) in the case of oil tankers, the cargo oil system and electrical installation in way of hazardous spaces are to be checked for compliance with the gaining Society's Rule requirements. Where intrinsically safe equipment is installed, the Surveyors are to satisfy themselves that a recognised authority has approved such equipment. The safety devices, alarms and essential instruments of the inert gas system are to be verified and the plant generally examined to ensure that it does not constitute a hazard to the vessel.

Note: For the transfer of class or adding class at ship's delivery, items iii) and ix) may be verified by reviewing the ship's record.



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## **Section C - Plans to be submitted by the Owner to the Gaining Society**

### **C.1 Plans to be submitted**

#### **C.1.1 Main Plans**

- General Arrangement
- Capacity Plan
- Hydrostatic Curves
- Loading Manual, where required.
- Damage Stability calculation, where required.

#### **C.1.2 Steel plans**

- Midship Section
- Scantling Plan
- Decks
- Shell Expansion
- Transverse Bulkheads
- Rudder and Rudder Stock
- Hatch Covers
- For CSR vessels, plans showing, for each structural element, both as-built and renewal thicknesses and any thickness for "voluntary addition".

#### **C.1.3 Machinery plans**

- Machinery Arrangement
- Intermediate, Thrust- and Screw Shafts
- Propeller
- Main Engines, Propulsion Gears and Clutch Systems (or Manufacturer make, model and rating information)
- For Steam Turbine Vessels, Main Boilers, Superheaters and Economisers (or Manufacturer make, model and rating information) and Steam Piping
- Bilge and Ballast Piping Diagram
- Wiring Diagram
- Steering Gear Systems Piping and Arrangements and Steering Gear Manufacturer make and model information

### **C.2 Torsional vibration calculations**

C.2.1 For vessels less than two (2) years old, torsional vibration calculations are to be submitted.

### **C.3 Additional requirements for vessels with ice class notation**

C.3.1 Plans for flexible couplings and/or torque limiting shafting devices in the propulsion line shafting (or manufacturer make, model and rating information) are to be submitted.

### **C.4 Additional plans required for oil tankers**

C.4.1 Pumping arrangement at the forward and after ends and drainage of cofferdams and pump rooms are to be submitted.

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**C.5 Additional plans required for unattended machinery space notation**

C.5.1 The following additional plans are to be submitted:

- Instrument and Alarm List
- Fire Alarm System
- List of Automatic Safety Functions (e.g. slowdowns, shutdowns, etc.)
- Function Testing Plan.

C.6 Additional Documents required for approval of Alternative Design and Arrangements

C.6.1 Document(s) of Approval of Alternative Design and Arrangements are to be submitted, if any.

Notes:

- (1) Additional information may be necessary according to Flag State requirements.
- (2) Alternative technical data may be accepted by the gaining Society in lieu of specific items of the listed documentation not being available at the time of the transfer.

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# **BCS-PR1B Procedure for Adding, Assigning, Maintaining or Withdrawing Double or Dual Class**

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Notes:

1. This Procedural Requirement applies when adding, maintaining or withdrawing double or dual class on or after 1 February 2021.



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## **PR1B**

### **Procedure for Adding, Assigning, Maintaining and Withdrawing Double or Dual Class**

#### **Application**

This Procedure contains procedures and requirements pertaining to adding, assigning, maintaining or withdrawing a double or dual class and is applicable, unless stated otherwise, to vessels of over 100 GT of whatever type, self propelled or not, restricted or unrestricted service, except for "inland waterway" vessels.

The obligations of this Procedure apply to Classification Societies which are subject to verification of compliance with QSCS, for the vessels reported as compliant by the First Society.

#### **Definitions**

'Compliant' ship means a ship classed by a Classification Society subject to verification of compliance with QSCS and in full compliance with all applicable and relevant IACS Resolutions.

'Double class vessel' is a vessel which is classed by two Societies and where each Society works as if it is the only Society classing the vessel, and does all surveys in accordance with its own requirements and schedule.

'Dual class vessel' is a vessel which is classed by two Societies between which there is a written agreement regarding sharing of work.

'First Society' is a Society classing a vessel which, under request of the Owner, enters a double or dual class arrangement with another Society.

'Interim Certificate of Class', or Interim Class Certificate, is the certificate issued immediately upon completion of the survey of the vessel to enable it to trade while the report of the classification surveys is processed by the gaining Society pursuant to issuing its full term Class Certificate.

'Outstanding' means still to be dealt with.

'Overdue' means overdue on the date the first or losing Society receives the request by the second or remaining Society for its current classification survey status.

'Conditions of Class' mean requirements to the effect that specific measures, repairs, surveys etc. are to be carried out within a specific time limit in order to retain Classification.

'Remaining Society' is a Society which keeps an existing vessel in class, when the class by the other Society involved in the double or dual class arrangement is suspended or withdrawn.

'Second Society' is a Society which is requested by an Owner to accept an existing vessel already classed by another Society into its class under double or dual class arrangement.

'Withdrawing Society' is a Society which withdraws its class to an existing vessel in class under double or dual class arrangement.<sup>(Note 1)</sup>

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(Note 1) In this Procedure, Form G and L in Annex 1, Annex 2 and Annex 3, the withdrawing Society is sometimes referred to simply as the "losing", when the context is obvious.



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## **Section A - Adding class of a Second Society to a vessel classed by First Society**

### **A.1 Obligations of the second Society**

A.1.1 Whenever a Society (i.e. second Society) is requested by an Owner to accept an existing vessel already classed by another Society (i.e. first Society) into its class under double or dual class arrangement, the second Society is to immediately notify the Owner in writing that:

- .1 the second Society only accepts a vessel that is free from any overdue surveys or conditions of class;
- .2 the Owner is to inform first Society of his request to second Society;
- .3 the Owner is to authorise first Society to submit to second Society its current classification status and documents as listed in Annex 3 for information and use by second Society in conducting its class entry surveys;
- .4 when the Owner decides to leave the double or dual class arrangement and prior to withdrawing from the class of one of two Societies the Owner is to inform the Societies of his intended actions;
- .5 when the Owner is advised that one of the Societies involved in double or dual class arrangement suspends or withdraws class the Owner is to inform the remaining Society of the action taken by the other Society without delay;
- .6 copies of the plans listed in Section C of PR1A are to be provided to second Society as a prerequisite to obtaining a full term Class Certificate. If the Owner is unable to provide all of the required plans, the second Society is to request that the Owner authorise the first Society to transfer copies of such of these plans as it may possess directly to the second Society upon request from the second Society, with the advice that the first Society will invoice the second Society and the second Society may, in turn, charge the associated costs to the Owner.

A.1.2 Within two (2) working days of receipt of a written request from the Owner for entry into second Society's class at a Society's Headquarters or one of its designated control or management centres, the second Society is to notify the first Society of the requested entry into class using Form G in Annex 1 with its Part A duly completed and attaching the Owner's authorisation for release of survey status.

A.1.3 Prior to issuing an Interim Certificate of Class the second Society is to:

- .1 obtain from the Owner, a written application for entry into second Society's class, containing an authorisation for second Society to obtain the current classification status from the first Society;
- .2 obtain the current classification survey status from the Headquarters of the first Society or one of its designated control or management centres;
- .3 for double class: carry out its class entry survey in accordance with the requirements of Section B of PR1A taking account of the conditions of class in the status provided by the first Society;
- .4 for dual class: carry out an initial survey having the scope of an annual survey as a minimum.

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The second Society is, within one month from issuing its Interim Certificate of Class, to advise the first Society of the date of issuing this certificate. The report Form G in Annex 1, with Parts A and B duly completed is to be used.

Any additional information regarding outstanding surveys or conditions of class received from the first Society in accordance with A.2.2 is to be taken into account in accordance with A.1.3.3, as applicable, and reported to the first Society with Form G in Annex 1 with Part B-1 duly completed within one (1) month from the completion of the survey.

A.1.5 Prior to final entry into the second Society's class, the second Society is obligated to:

- .1 carry out and document the review of class survey records, of the first Society, by an authorised person considering the items specified in Annex 3;
- .2 obtain plans and information in accordance with the requirements of Section B of PR1A.

A.1.6 To ensure mutual exchange of information on vessels adding class and on the survey status of such vessels, the second Society is, on completion of final entry into class, to dispatch Form G in Annex 1, with Parts A, B, B-1 (when applicable) and C duly completed to the TOC database and to the first Society.

## **A.2 Obligations of the first Society**

A.2.1 The first Society:

- .1 within two (2) working days of receipt of a written request at its Headquarters or one of its designated control or management centres is to notify the second Society the current classification status including a full list of surveys and conditions of class. The most recent condition evaluation report/executive hull summary reports and survey planning document for the commenced Special Survey for vessels under Enhanced Survey Programme are also to be provided. In cases where the class status is received in a language not readily understood by the second Society or contains vague or unclear descriptions the first Society is to provide additional detailed information in English language on request of the second Society. The first Society is obliged to advise the second Society of the possibility of further conditions of class arising from surveys, which the first Society knows have been carried out but for which reports have not yet been received. The report Form L in Annex 1 with Part A completed is to be used by the first Society to report on the class status; details may be amplified, if necessary, in accompanying documents;
- .2 is obliged to make available, within one (1) month of receipt of request referred to in .1, all class survey records to the second Society for record review and relevant reporting, to the extent this information is in possession of the first Society, to enable the second Society to retain the Vessels Records outlined in Annex 3, in accordance with A.1.5.1 of this Procedure;
- .3 alternatively to .2 above, upon request is obliged to provide, within one (1) month of receipt of the request referred to in .1, a copy of all the class survey records to the second Society, to enable the second Society to retain the Vessels Records outlined in Annex 3, in accordance with A.1.5.1 of this Procedure. These survey records will be transferred electronically if electronic files are available;



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is also to submit, within one month of receipt of the request referred to in .1 above, any Vessel's Records regarding class items (see Annex 3) available during the present class and from prior transfers of class performed after 1 July 2001.

A.2.2 The first Society has one month from issuance of its classification status to the second Society as per A.2.1 to forward to the second Society:

- .1 the additional information on outstanding surveys and/or conditions of class arising from surveys performed proximate to the date of Owner's written request for adding class which were not included in said status, by dispatching Form L in Annex 1 with Part A-1 duly completed; and
- .2 the structural diminution allowances which were applying to the vessel, by dispatching Form L in Annex 1 with Parts A and A-1 (when applicable) duly completed.



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## **Section B**

### **B.1 Adding class of a Second Society to a vessel classed by First Society at vessel's delivery**

B.1.1 The procedural requirements for adding class at vessel's delivery are applicable when the Society which has carried out the new construction technical review and surveys (i.e. First Society) has issued its first Certificate of Class.

#### **Obligations and reporting of the second Society**

B.1.2 Whenever a Society (i.e. Second Society) is requested by an Owner to accept a vessel already classed by another Society (i.e. first Society) into its class under double or dual class arrangement at vessel's delivery, the second Society is to immediately notify the Owner in writing that:

- .1 the Owner is to inform first Society of his request to second Society;
- .2 the Owner is to authorise first Society to submit to second Society its Certificate of Class;
- .3 when the Owner decides to leave the double or dual class arrangement and prior to withdrawing from the class of one of two Societies the Owner is to inform the Societies of his intended actions;
- .4 when the Owner is advised that one of the Societies involved in double or dual class arrangement suspends or withdraws class the Owner is to inform the remaining Society of the action taken by the other Society without delay;
- .5 copies of the plans listed in Section C of PR1A are to be provided to second Society as a prerequisite to obtaining a full term Certificate of Class. If the Owner is unable to provide all of the required plans, the second Society is to request that the Owner authorise the first Society to transfer copies of such of these plans as it may possess directly to the second Society upon request from the second Society, with the advice that the first Society will invoice the second Society and the second Society may, in turn, charge the associated costs to the Owner.

B.1.3 After receipt of a written request from the Owner for entry into second Society's class at a Society's Headquarters or one of its designated control or management centres, the second Society is to notify the first Society of the requested entry into class using Form G in Annex 1 with its Part A duly completed and attaching the Owner's authorisation for release of the first Certificate of Class, including the list of any conditions of class - with the respective due dates - issued against the subject vessel and the list of any information normally contained in the classification status.

B.1.4 Prior to issuing an Interim Certificate of Class on the date of the vessel's delivery, the second Society is to:

- .1 obtain from the Owner, a written request for entry into second Society's class at vessel's delivery, containing an authorisation for second Society to obtain a copy of the first Certificate of Class, from the first Society;
- .2 obtain the first Certificate of Class from the Headquarters of the first Society or one of its designated control or management centres or from the attending Surveyor at the

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yard of the builders, including any outstanding conditions of class and information normally contained in the classification status.

.3 carry out and satisfactorily complete all relevant surveys specified in PR1A/B.2.1.

B.1.5 The second Society is, within one month from issuing its Interim Certificate of Class, to advise the first Society of the date of issuing this certificate. The report Form G in Annex 1, with Parts A and B duly completed is to be used.

B.1.6 Prior to final entry into the second Society's class, the second Society is obligated to:

.1 obtain plans and information in accordance with the requirements of Section B of PR1A.

B.1.7 To ensure mutual exchange of information on vessels adding class and on the survey status of such vessels, the second Society is, on completion of final entry into class, to dispatch Form G in Annex 1, with Parts A, B and C duly completed to the TOC database and to the first Society.

### **Obligations and reporting of first Society**

B1.8 Upon receipt of a written request at its Headquarters or one of its designated control or management centres and on the date of the vessel's delivery, the first Society is to notify the second Society its first Certificate of Class, including the list of any conditions of class - with respective due dates - issued against the subject vessel and the list of any information normally contained in the classification status. The report Form L in Annex 1 with Part A completed is to be used by the first Society; details may be amplified, if necessary, in accompanying documents;

B.1.9 The first Society has one month from issuance of its Certificate of Class to the second Society to forward to the second Society:

.1 the structural diminution allowances which were applying to the vessel, by dispatching Form L in Annex 1 with Parts A and A-1 duly completed.



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## **Section C – Assigning and Maintaining Class in a Double or Dual Class Arrangement**

### **C.1 Double class**

C.1.1 Each Society acts independently while an existing vessel or a vessel under construction is in double class.

### **C.2 Dual class**

C.2.1 In case of an existing vessel:

- .1 each Society acts on behalf of the other Society in accordance with the bilateral agreement adopted by the two Societies. This agreement shall clearly define the scope of work of each Society.
- .2 each Society is to review whether the work undertaken by other Society on its behalf has been completed as agreed.

C.2.2 In case of a vessel under construction:

- .1 each Society acts on behalf of the other Society in accordance with the trilateral agreement adopted by the two Societies and the shipyard. This agreement shall clearly define modalities such as submission of plans, rules to be applied, harmonizing and resolution of plan approval comments between societies;
- .2 each Society is to perform review and approval of plans as appropriate in accordance with the trilateral agreement;
- .3 each Society is to perform the survey during fabrication, construction and testing of the vessel in accordance with the trilateral agreement, and/or the bilateral agreement adopted by the two Societies, if any;
- .4 each Society is to share information and records related to new construction such as plan approval including following up and closing of comments imposed, surveys, inspection, witnesses and tests etc., to perform the surveys and verify compliance with the relevant requirements; and
- .5 each Society is to issue a certificate of classification for the vessel upon satisfactory completion of new construction survey process.



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## Section D - Withdrawing Class of a Society from a Double Class Arrangement

### D.1 Obligations of the remaining Society maintaining its class

D.1.1 Whenever a Society (i.e. the remaining Society) being in a double class arrangement with another Society receives a written request from an Owner pertaining to his intention to withdraw from class of the other Society (i.e. withdrawing Society), or information that her class has been withdrawn by the other Society, the remaining Society is to immediately notify the Owner in writing that:

- .1 the validity of the remaining Society's Class Certificate is subject:
  - i) for vessels less than 15 years of age<sup>(Note 2)</sup>, to completion by the remaining Society of all overdue conditions of class of the withdrawing Society at the first port of call at which surveys can be carried out and to completion by the remaining Society of all outstanding conditions of class of the withdrawing Society by the due date;
  - ii) for vessels of 15 years of age and over, to completion by the withdrawing Society of all overdue conditions of class and to completion by the remaining Society of all outstanding conditions of class of the withdrawing Society by the due date;
- .2 the Owner is to authorise remaining Society to request from withdrawing Society its current classification status;
- .3 principles given in item .1 above apply to any additional conditions of class issued against the vessel, which were not included in the initial survey status provided to the remaining Society by the withdrawing Society because they have arisen from the surveys carried out in close proximity to the request for withdrawal from class. Such additional conditions of class, if received after the issuance of the Interim Certificate of Class by the remaining Society and which are overdue, are to be dealt with at the first port of call at which surveys can be carried out by the relevant Society, depending on the age of the vessel.

D.1.2 The remaining Society is to obtain from the Owner a written confirmation of intention to withdraw from the other Society's class, containing an authorisation for remaining Society to obtain the current classification status from the Headquarters of the withdrawing Society or one of its designated control or management centres.

D.1.3 Within two (2) working days of receipt of a written confirmation of intention from the Owner to withdraw from the other Society's class at the remaining Society's Headquarters or at one of its designated control or management centres, the remaining Society is to request the withdrawing Society, on the basis of Owner's authorisation, to release the survey status using Form G in Annex 1 with its Part A duly completed and attaching the Owner's authorisation for release of survey status. However, if the remaining Society does not receive the classification survey status from the withdrawing Society within three (3) working days from the request, the remaining Society may utilise the withdrawing Society's survey status

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(Note 2) To be calculated from the date of delivery to either the date of notification by the Owner of his intention to withdraw from class or the date of advice by the withdrawing Society to the Remaining Society (date of Form L) that class has been withdrawn, not at the request of the Owner.



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information provided by the Owner and, after complying with the other relevant requirements of this Procedural Requirement, may confirm the validity of its Class Certificate.

D.1.4 The remaining Society is to suspend the validity of its Class Certificate or other documents enabling the vessel to trade, if any overdue conditions of class previously issued against the subject vessel by the withdrawing Society have not been satisfactorily completed by the relevant Society, depending on the age of the vessel, at the first port of call where surveys can be carried out.

When repair facilities are not available in the first port of survey, a direct voyage to a repair port may be accepted to complete surveys for overdue conditions of class. In that case, the remaining Society is to inform the owner and withdrawing Society of the decision taken, e.g. direct voyage conditions agreed and port of repairs.

D.1.5 The validity of remaining Society's Class Certificate is subject to any outstanding conditions of class previously issued against the vessel by the withdrawing Society being completed by the due date and as specified by the withdrawing Society. Any outstanding conditions of class with their due dates are to be clearly stated on the:

- .1 class survey record if available on board; and
- .2 survey status.

D.1.6 Within one (1) month from the completion of the survey, the remaining Society is to advise the withdrawing Society of the actions taken with dates and locations to satisfy each overdue condition of class, if any, issued against the subject vessel as specified to the Owner by the withdrawing Society. The report Form G in Annex 1, with Parts A and B duly completed is to be used. A list of dates, locations and actions taken to satisfy each overdue condition of class as specified to the Owner by the withdrawing Society is to be attached to the copy sent to the withdrawing Society.

Where no overdue items are provided by the withdrawing Society, this form with Parts A and B, duly completed, is to be sent to the withdrawing Society and to the TOC database within one (1) month from the date of sending Form L Part A.

D.1.7 Any additional information regarding outstanding conditions of class received from the withdrawing Society in accordance with D.2.3 is to be dealt with in accordance with D.1.4 and D.1.5, as applicable, and reported to the withdrawing Society with Form G in Annex 1 with Part B-1 duly completed within one (1) month from the completion of the survey. When this additional information is received any conditions of class which are overdue are to be dealt with at the first port of call at which surveys can be carried out by the relevant Society, depending on the age of the vessel. If this is not accomplished, the Class Certificate is to be suspended immediately unless the Owner agrees to proceed directly, without further trading, to a suitable port where any overdue conditions of class are to be dealt with for completion.

D.1.8 The remaining Society is, within one (1) month of completion of a transfer of vessel into single class, to dispatch Form G in Annex 1, with its Parts A, B, B-1 (when applicable) and C duly completed, to the TOC database and to the withdrawing Society. In cases where the withdrawing Society has reported conditions of class on the vessel, the due dates of which are yet to come, the remaining Society is to provide to the withdrawing Society, together with the Form G, an itemised list of the actions taken with dates and locations and actions to be taken, to satisfy each condition of class.

D.1.9 The reporting by remaining Society to withdrawing Society required in D.1.8 is to be done in accordance with the Harmonisation of Reporting in Annex 2.



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D.1.10 The remaining Society is to carry out and document the review of class survey records of the withdrawing Society during the period of double class arrangement, by an authorised person considering the items specified in Annex 3.

## **D.2 Obligations of the withdrawing Society**

D.2.1 If an Owner advises a Society in writing of an intention to withdraw from its class or class is withdrawn by the withdrawing Society, the withdrawing Society is to immediately confirm to the Owner any overdue surveys and outstanding conditions of class, together with any outstanding fees. The remaining Society is to be informed of the actual or intended withdrawal of class using Form L in Annex 1, completed as applicable.

D.2.2 The withdrawing Society:

- .1 within two (2) working days of receipt of a written request from the remaining Society at its Headquarters or one of its designated control or management centres, is to notify the remaining Society the latest class details in its possession including a full list of overdue surveys and conditions of class - with the respective due dates - issued against the subject vessel. The most recent Condition Evaluation / Executive Hull Summary Reports and Survey Planning Document for the commenced Special Survey for vessels under Enhanced Survey Programme, if any during the period of double class arrangement, are also to be provided. In cases where the class status is received in a language not readily understood by the remaining Society or contains vague or unclear descriptions, the withdrawing Society is to provide additional detailed information in English language on request of the remaining Society. The withdrawing Society is obliged to advise the remaining Society of the possibility of further conditions of class arising from surveys, which the withdrawing Society knows have been carried out but for which reports have not yet been received. The report Form L in Annex 1 with Part A completed is to be used by the withdrawing Society to report on the class status. Details may be amplified, if necessary, in accompanying documents;
- .2 is obliged to make available, within one month of receipt of the request referred to in 2.1, all class survey records to the remaining Society for record review and relevant reporting during the period of double class arrangement to the extent this information is in the possession of the withdrawing Society to enable the gaining Society to retain the Vessel's Records as outlined in Annex 3, in accordance with D.1.10;
- .3 alternatively to .2 above, the withdrawing Society is obliged to provide, within one month of receipt of the request referred to in .1, a copy of all class survey records to the remaining Society upon request.

D.2.3 The withdrawing Society has one (1) month from issuance of its survey status to the remaining Society per paragraph D.2.2.2 to forward to the remaining Society the additional information on outstanding surveys and/or conditions of class arising from surveys performed proximate to the date of Owner's written request to withdraw from class which were not included in said status to the Owner, by dispatching Form L in Annex 1 with Part A-1 duly completed.

D.2.4 For vessels of 15 years of age and over, the withdrawing Society is, within one (1) month from completion of any overdue conditions of class imposed by the withdrawing Society, to confirm to the remaining Society the date, location and action taken to satisfy each item. The report Form L in Annex 1, Part A duly completed, is to be used. The reporting by



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the withdrawing Society to the remaining Society is to be done in accordance with the Harmonisation of Reporting in Annex 2.

D.2.5 To ensure mutual exchange of information on vessels transferring class and on the survey status of such vessels, the withdrawing Society is, on completion of a withdrawal of class, to dispatch Form L in Annex 1, with its Parts A, A-1 (when applicable) and B duly completed, to the TOC database and to the remaining Society.

D.2.6 Should the withdrawing Society, upon receiving information from the remaining Society pursuant to the disposition of the withdraw of class, have clear grounds for believing that the remaining Society did not fulfil its obligations as specified in D.1, the withdrawing Society is to notify the remaining Society of its concerns and attempt to resolve any differences.

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## **Section E - Withdrawing Class of a Society from a Dual Class Arrangement**

E.1 In the case of dual classed vessels, the withdrawing Society - according to agreement between the two Societies - is to inform the remaining Society that the class has been withdrawn using the first part and Part B of Form L.

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## **Section F - Other Requirements**

F.1 The obligations of the withdrawing and remaining Societies continue to apply when a vessel's class is suspended and for six (6) months following withdrawal of a vessel's class.



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# **BCS-PR 1C      Procedure for Suspension and Reinstatement or Withdrawal of Class in Case of Surveys or Conditions of Class Going Overdue**

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- B.1      Notification to Owners and Flag States

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Notes:

1. This Procedural Requirement applies to the suspension and reinstatement or withdrawal of class in case of surveys, conditions of class or recommendations going overdue on or after 1 July 2020.

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## **PR1C**

### **Procedure for Suspension and Reinstatement or Withdrawal of Class in Case of Surveys or conditions of class Going Overdue**

#### **Application**

This Procedure contains procedures and requirements pertaining to suspension and reinstatement or withdrawal of class and is applicable, unless stated otherwise, to vessels of over 100 GT of whatever type, self propelled or not, restricted or unrestricted service, except for "inland waterway" vessels.

The obligations of this Procedure apply to Classification Societies which are subject to verification of compliance with QSCS.

#### **Definitions**

'Disclassed' means class has been suspended or withdrawn.

'Dual class vessel' means a vessel which is classed by two Societies between which there is a written agreement regarding sharing of work.

'Conditions of Class' mean requirements to the effect that specific measures, repairs, surveys etc. are to be carried out within a specific time limit in order to retain Classification.

'Exceptional circumstances' means unavailability of dry-docking facilities; unavailability of repair facilities; unavailability of essential materials, equipment or spare parts; or delays incurred by action taken to avoid severe weather conditions.

'Force Majeure' means damage to the ship; unforeseen inability of the Society to attend the vessel due to the governmental restrictions on right of access or movement of personnel; unforeseeable delays in port or inability to discharge cargo due to unusually lengthy periods of severe weather, strikes or civil strife; acts of war; or other force majeure.



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## **Section A - Procedure for Suspension and Reinstatement or Withdrawal of Class**

### **A.1 Suspension and reinstatement of class in the case of overdue surveys**

A.1.1 Owners are to be notified that the 5-year Class Certificate expires, and classification is automatically suspended, from the certificate expiry date in the event that the Special (Renewal) Survey has not been completed or is not under attendance for completion prior to resuming trading, by the due date, or by the expiry date of any extension granted in A.1.1.1.

Classification will be reinstated upon satisfactory completion of the surveys due. The surveys to be carried out are to be based upon the survey requirements at the original date due and not on the age of the vessel when the survey is carried out. Such surveys are to be credited from the date originally due. However, the vessel is disclassified from the date of suspension until the date class is reinstated.

A.1.1.1 Under "exceptional circumstances", the Society may grant an extension not exceeding three (3) months to allow for completion of the Special Survey provided that the vessel is attended and the attending Surveyor(s)<sup>1</sup> so recommend(s) after the following has been carried out:

- a) annual survey;
- b) re-examination of conditions of class;
- c) progression of the Special Survey as far as practicable;
- d) in the case where dry docking is due prior to the end of the class extension, an underwater examination is to be carried out by an approved diving company. An underwater examination by an approved company may be dispensed with in the case of extension of dry-docking survey not exceeding 36 months interval provided the ship is without outstanding condition of class regarding underwater parts.

A.1.1.2 In the case that the Class Certificate will expire when the vessel is expected to be at sea, an extension to allow for completion of the Special Survey may be granted provided there is documented agreement to such an extension prior to the expiry date of the certificate, and provided that positive arrangements have been made for attendance of the Surveyor at the first port of call, and provided that the Society is satisfied that there is technical justification for such an extension. Such an extension is to be granted only until arrival at the first port of call after the expiry date of the certificate. However, if owing to "exceptional circumstances" the special survey cannot be completed at the first port of call, A.1.1.1 may be followed, but the total period of extension shall in no case be longer than three months after the original due date of the special survey.

A.1.2 Annual Surveys: Owners are to be notified that the Class Certificate becomes invalid, and classification is automatically suspended, if the Annual Survey has not been completed within three (3) months of the due date of the annual survey, unless the vessel is under attendance for completion of the Annual Survey.

Classification will be reinstated upon satisfactory completion of the surveys due. Such surveys are to be credited from the date originally due. However, the vessel is to be disclassified from the date of suspension until the date class is reinstated.

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<sup>1</sup> See Procedural Requirement 20 'Procedural Requirement for certain ESP surveys'



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A.1.3 Intermediate Surveys: Owners are to be notified that the Class Certificate becomes invalid, and classification is automatically suspended, if the Intermediate Survey has not been completed within three (3) months of the due date of the third annual survey in each periodic survey cycle, unless the vessel is under attendance for completion of the Intermediate Survey.

Classification will be reinstated upon satisfactory completion of the surveys due. Such surveys are to be credited from the date originally due. However, the vessel is to be disclassified from the date of suspension until the date class is reinstated.

A.1.4 Continuous Survey Item(s): Continuous survey item(s) due or overdue at time of annual survey is to be dealt with. The vessel's class will be subject to a suspension procedure if the item(s) is not surveyed, or postponed by agreement.

A.1.5 Vessels laid-up in accordance with the Society's Rules prior to surveys becoming overdue need not be suspended when surveys addressed above become overdue.

However, vessels which are laid-up after being suspended as a result of surveys going overdue, remain suspended until the overdue surveys are completed.

A.1.6 When a vessel is intended for a demolition voyage with any periodical survey overdue, the vessel's class suspension may be held in abeyance and consideration may be given to allow the vessel to proceed on a single direct ballast voyage from the lay up or final discharge port to the demolition yard. In such cases a short term Class Certificate with conditions for the voyage noted may be issued provided the attending surveyor finds the vessel in satisfactory condition to proceed for the intended voyage.

A.1.7 Force Majeure: If, due to circumstances reasonably beyond the owner's or the Society's control as defined above, the vessel is not in a port where the overdue surveys can be completed at the expiry of the periods allowed above, the Society may allow the vessel to sail, in class, directly to an agreed discharge port, and if necessary, hence, in ballast, to an agreed port at which the survey will be completed, provided the Society:

- a) exams the ship's records;
- b) carries out the due and/or overdue surveys and examination of conditions of class at the first port of call when there is an unforeseen inability of the Society to attend the vessel in the present port, and
- c) has satisfied itself that the vessel is in condition to sail for one trip to a discharge port and subsequent ballast voyage to a repair facility if necessary. (Where there is unforeseen inability of the Society to attend the vessel in the present port, the master is to confirm that his ship is in condition to sail to the nearest port of call.)

The surveys to be carried out are to be based upon the survey requirements at the original date due and not on the age of the vessel when the survey is carried out. Such surveys are to be credited from the date originally due.

If class has already been automatically suspended in such cases, it may be reinstated subject to the conditions prescribed in this paragraph.

A.1.8 When a vessel is intended for a single voyage from laid-up position to a repair yard or another place of lay-up with any periodical survey overdue, the vessel's class suspension may be held in abeyance and consideration may be given to allow the vessel to proceed on a single direct ballast voyage from the site of lay up to a repair yard or another place of lay-up,

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upon agreement with the Flag Administration, provided the Society finds the vessel in satisfactory condition after surveys, the extent of which are to be based on surveys overdue and duration of lay-up. A short term Class Certificate with conditions for the intended voyage may be issued. This is not applicable to vessels whose class was already suspended prior to being laid-up.

## **A.2 Suspension and reinstatement of class in the case of overdue conditions of class**

A.2.1 Each condition of class will be assigned a due date for completion. Owners will be notified of these dates and that the vessel's class will be subject to a suspension procedure if the item is not dealt with, or postponed by agreement, by the due date.

A.2.2 Classification will be reinstated upon verification that the overdue condition of class has been satisfactorily dealt with. However, the vessel is to be disclassified from the date of suspension until the date class is reinstated.

## **A.3 Suspension and reinstatement of class of dual classed vessels**

A.3.1 When a vessel is dual classed and in the event that one of the Societies involved takes action to suspend the class of the vessel for technical reasons, the Society concerned will advise the other Society of the reasons for such action and the full circumstances within five (5) working days.

A.3.2 The other Society will, upon receipt of this advice, also suspend the class of the vessel, unless it can otherwise document that such suspension is incorrect.

A.3.3 When either Society decides to reinstate class, it is to inform the other Society.

## **A.4 Withdrawal of class**

A.4.1 When class of a vessel has been suspended for a period of six (6) months due to overdue surveys and/or conditions of class, the class is to be withdrawn. A longer suspension period may be granted when the vessel is not trading as in cases of lay-up, awaiting disposition in case of a casualty or attendance for reinstatement.



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## **Section B - Notification and Reporting**

### **B.1 Notification to Owners and Flag States**

B.1.1 The Society is to confirm in writing the suspension of class and reinstating of the vessel's class to the Owner and to the Flag State.

B.1.2 The Society is to confirm in writing the withdrawal of class to the Owner and to the Flag State.

B.1.3 For vessels to which SOLAS applies, the letters according to B.1.1 and B.1.2 are to state that certain statutory certificates are implicitly invalidated by the suspension / withdrawal of class.

Notes:

- (1) The Class Certificate is to include as a minimum:
  - an expiry date based on the five year Special Survey (Renewal Survey);
  - an endorsement section to record the completion of Annual [and Intermediate] Surveys;
  - a statement to indicate that the Class Certificate becomes invalid and classification is automatically suspended, if:
    - i) the Annual Survey has not been completed within three (3) months of the due date of the annual survey; or
    - ii) the Intermediate Survey has not been completed within three (3) months of the due date of the third annual survey in each periodic survey cycle,unless the vessel is under attendance for completion of the relevant survey; or alternatively, a reference to the class suspension requirement contained in the Classification Society's Rules.
- (2) At the discretion of each Society, the following types of vessels may be exempted from compliance with this Procedural Requirement provided the Society has procedures for the suspension and withdrawal of their class:
  - Mobile Offshore Drilling Units;
  - Mobile Offshore Units;
  - Floating Production and/or Storage Vessels;
  - Military vessels or commercial vessels owned or chartered by Governments, which are utilised in support of military operations or service; or
  - Vessels in lay-up;
  - Fishing vessels.

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## Addendum Notice to PR1C

### Procedure for Suspension and Reinstatement or Withdrawal of Class in Case of Surveys, Conditions of Class or Recommendations Going Overdue

For the duration as shown in the validity section below, Paragraph A.1.7 in this document overrides that shown in BCS-PR1C

**A.1.7 Force Majeure:** If, due to circumstances reasonably beyond the owner's or the Society's control as defined above, the vessel is not in a port where the surveys can be completed at the expiry of the periods allowed above, BCS may allow the vessel to sail, in class, for a period not exceeding three (3) months, to allow for completion of the surveys, provided BCS:

- a) examines the ship's records.
- b) carries out the due and/or overdue surveys and examination of conditions of class at the first opportunity where BCS is reasonably able to attend to complete the surveys, and
- c) has satisfied itself that the vessel is in condition to satisfactorily continue in service for the agreed period, and
- d) receives a signed statement from the master to confirm that their ship is in a condition to satisfactorily continue in service for the agreed period.

BCS may postpone the surveys and issue interim/short term certificates as appropriate.

The surveys to be carried out are to be based upon the survey requirements at the original date due and not on the age of the vessel when the survey is carried out. Such surveys are to be credited from the date originally due.

If class has already been automatically suspended in such cases, it may be reinstated subject to the conditions prescribed in this paragraph.

Notwithstanding the above, should the circumstances that preclude vessel attendance by BCS continue after the initial Force Majeure period of three (3) months has elapsed, then BCS may consider another Force Majeure extension up to further three (3) months upon satisfactory re-evaluation of aforementioned points a) through d) above and subject to the vessel's flag Administration's concurrence.

#### Validity Notice

Valid until 30 June 2022

To be reviewed by BCS in the beginning of June 2022 and decide whether to further extend the validity or to revoke the notice.

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## **PR1 ANNEX    Annexes to PR1A, PR1B and PR1C**

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Notes:

1. This Annex applies to the requests for transfer of class, or requests for adding class, or requests from an Owner pertaining to his intention to withdraw from class from another Society, or advice by the withdrawing Society that class has been withdrawn, received on or after 1 July 2020.

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## **Annex 1 - Reporting Forms G and L**

### **Form G**

Form G is to be created and updated on the on-line TOC database maintained by the IACS Permanent Secretariat. The Form is then to be faxed or e-mailed to the other Society in accordance with the Notes below.

Form G is to be used:

**I) by the gaining Society for reporting transfer of class from another Society**  
(refer to A.1 and A.3 of PR1A) using the following Notes:

1. This form with Part A, duly completed, is to be sent to the losing Society within two (2) working days of receipt of a written request for transfer of class by the gaining Society at its Headquarters or one of its designated control or management centres.

In the case of transfer of class at vessel's delivery, the two (2) working days do not apply.

2. This form with Parts A and B, duly completed, is to be sent to the losing Society within one (1) month of the date of issuing an Interim Certificate of Class to a vessel which is transferring from another Society.

When not required to have been dealt with by the losing Society, a list of dates, locations and actions taken to satisfy each overdue survey and overdue condition of class as specified to the Owner by the losing Society is to be attached to the copy sent to the losing Society.

3. This form with Parts A, B and B-1 duly completed, is to be sent to the losing Society within one (1) month from the completion of the survey to confirm that additional overdue surveys and overdue conditions of class have been dealt with.

A list of dates, locations and actions taken to satisfy each additional overdue survey and additional overdue condition of class as specified to the Owner by the losing or first or withdrawing Society is to be attached.

4. The gaining Society is, within one (1) month of the date of final entry into class, to dispatch this form, with Parts A, B, B-1 (when applicable) and C duly completed to the losing Society.

In cases where the losing Society has reported conditions of class on the vessel a list of actions taken with dates and locations and actions to be taken to satisfy each condition of class within the due dates as specified to the owner by the losing Society is to be attached to the copy sent to the losing Society.

**II) by the second Society for reporting addition of class to a vessel already classed by another Society** (refer to A.1 and B.1 of PR1B) using the following Notes:

1. This form with Part A, duly completed, is to be sent to the first Society within two (2) working days of receipt of a written request for addition of class by the second Society at its Headquarters or one of its designated control or management centres.

In the case of adding class at vessel's delivery, the two (2) working days do not apply.

- 
2. This form with Parts A and B, duly completed, is to be sent to the first Society within one (1) month of the date of issuing an Interim Certificate of Class.
  3. This form with Parts A, B and B-1 duly completed, is to be sent to the first Society within one (1) month from the completion of the survey to confirm that additional information regarding outstanding surveys or conditions of class have been taken into account.
  4. The second Society is, on completion of final entry into class, to dispatch this form, with Parts A, B, B-1 (when applicable) and C duly completed, to the first Society.

**III) by the remaining Society for reporting maintenance of class when one class has been withdrawn from double class** (refer to D.1 of PR1B) using the following Notes:

1. This form with Part A duly completed, is to be sent to the withdrawing Society within two (2) working days of receipt of a written request for withdrawal of class by the remaining Society at its Headquarters or one of its designated control or management centres.
2. This form with Parts A and B, duly completed, is to be sent to the withdrawing Society within one (1) month from the completion of the survey to confirm that overdue conditions of class have been dealt with. Where no overdue items are provided by the withdrawing Society, this form with Parts A and B, duly completed, is to be sent to the withdrawing Society within one (1) month from the date of sending Form L Part A.

When not required to have been dealt with by the withdrawing Society, a list of dates, locations and actions taken to satisfy each overdue condition of class as specified to the Owner by the withdrawing Society is to be attached to the copy sent to the withdrawing Society.

3. This form with Parts A, B and B-1 duly completed, is to be sent to the withdrawing Society within one (1) month from the completion of the survey to confirm that additional overdue surveys and overdue conditions of class have been dealt with.

In cases where the withdrawing Society has reported conditions of class on the vessel, a list of actions taken with dates and locations and actions to be taken to satisfy each condition of class within the due dates as specified to the owner by the withdrawing Society is to be attached to the copy sent to the withdrawing Society.

4. On completion of a transfer of vessel into single class, this form, with Parts A, B, B-1 (when applicable) and C, duly completed is to be sent to the withdrawing Society to report the date of completion of transfer to single class from double class if not yet reported in case a) above.

**IV) by Societies for reporting reassignment of class to a vessel which had its class previously withdrawn** (refer to A.4 of PR1A) using the following Note:

This form, with Parts B and C duly filled in the fields relevant to a reassignment of class, is to be completed on the on-line TOC database maintained by the IACS Permanent Secretariat within one (1) month of final entry into class when class is reassigned to a vessel class withdrawn previously due to a reason other than transfer of class amongst Societies.

Form G attached.



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**FORM G**

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**(Tick all check boxes as appropriate)**

- ☐ **GAINING SOCIETY'S TRANSFER OF CLASS**  
☐ **REASSIGNMENT OF CLASS**  
☐ **ADDING CLASS OF A SECOND SOCIETY TO A VESSEL CLASSED BY ANOTHER (FIRST) SOCIETY**  
☐ **MAINTENANCE OF CLASS WITH THIS (REMAINING) SOCIETY WHEN WITHDRAWING FROM DOUBLE CLASS**

<b>To:</b>	Losing or first or withdrawing Society:	Fax No./e-mail address:
	TOC database	on-line database

<b>From:</b>	Gaining or second or remaining Society	Fax. No./e-mail address :
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Gaining or second or remaining Society's Vessel Data		
Name of Vessel		ID No.
Vessel Type	<input type="checkbox"/> OT Oil Tanker	Flag
	<input type="checkbox"/> CT Chemical Tanker	
	<input type="checkbox"/> GT Gas Tanker	
	<input type="checkbox"/> LC Other Bulk Liquid Carrier	
	<input type="checkbox"/> BC Bulk Carrier (all combinations OB, OBO, OO)	
	<input type="checkbox"/> GC General Cargo Vessel (including Ro-Ro Cargo, Container, Reefer, HSC Cargo)	
	<input type="checkbox"/> PS Passenger Vessel (including Passenger / General Cargo, Passenger / Ro-Ro, Passenger HSC)	
	<input type="checkbox"/> ZZ Other Vessel Type	
Owner		

Part A - Survey Status Request (See Note 1)				
Name of Vessel (Prior to Transfer of Class or Adding Class or Withdrawing Class)		ID No. (losing or first or withdrawing Society's, if known)		
Gross Tonnage		IMO No.		
<p>In accordance with PR1A or PR1B, please provide details of the current survey status, including a full list of overdue surveys and conditions of class with respective due dates for the vessel identified above.</p> <p>In case of transfer of class or adding class at vessel's delivery, please provide details of the first Certificate of Class, including the list of any conditions of class and the list of any information normally contained in the classification status.</p> <p>Attached hereto is a copy of the Owner's authorization for release of the information requested to the gaining or second or remaining Society named on this form.</p> <p><input type="checkbox"/> We request the facility for record review in accordance with PR1A, A.2.2.2 or PR1B, D.2.2.2.</p> <p><input type="checkbox"/> We request a copy of the records in accordance with PR1A, A.2.2.3 or PR1B, D.2.2.3.</p>				
Date request for class was received		Date	DD	MM YYYY
Signature		Date	DD	MM YYYY

## FORM G

### Part B - Report on Issue of Interim Certificate of Class or maintenance of Class (See Note 2)

Date Survey Status, or first Certificate of Class in case of transfer of class or adding class at ship's delivery, received		DD	MM	YYYY
Change of Owner	<input type="checkbox"/> Yes <input type="checkbox"/> No	Change of Flag <input type="checkbox"/> Yes <input type="checkbox"/> No		
Reason for Class Entry	<input type="checkbox"/> Transfer from another Society			
	<input type="checkbox"/> Reassignment of class to a vessel class withdrawn previously due to a reason other than transfer of class amongst Societies			
	<input type="checkbox"/> Adding class as double class			
	<input type="checkbox"/> Adding class as dual class			
Maintenance of Class	<input type="checkbox"/> (when withdrawing from double class)			
<input type="checkbox"/> Survey status not received within three working days of request <input type="checkbox"/> For transfer of class or adding class at vessel's delivery, first Certificate of Class not received from losing / first Society on the day of vessel's delivery. <input type="checkbox"/> A list of dates, locations and actions taken to satisfy each overdue survey and overdue condition of class as specified to the Owner by the losing or withdrawing Society is attached <input type="checkbox"/> No relevant items provided by the losing or withdrawing Society				
Date of Issue of Interim Certificate of Class	Date	DD	MM	YYYY
Signature	Date	DD	MM	YYYY



**Part B-1 - Report on Additional Information received by the losing or first or withdrawing Society (See Note 3)**  
 (to be completed only if Part A-1 of Form L is received)

- ☐ A list of dates, locations and actions taken to satisfy each additional overdue survey and additional overdue outstanding condition of class as specified to the Owner by the losing or first or withdrawing Society is attached
- ☐ No relevant items provided by the losing or first or withdrawing Society

Signature

Date DD MM YYYY

**Part C - Report on Final Entry into Class or Completion of Transfer to Single Class**  
(See Note 4)Date of Final Entry into Class or  
Completion of Transfer to Single  
Class from Double Class DD MM YYYY

- ☐ A list of dates, locations and actions which have been or will be taken to satisfy each condition of class within the due dates as specified to the Owner by the losing or first Society is attached
- ☐ No relevant items provided by the losing or first Society

Signature

Date DD MM YYYY

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## Form L

Form L is to be created and updated on the on-line TOC database maintained by the IACS Permanent Secretariat. The Form is then to be faxed or e-mailed to the other Society in accordance with the Notes below.

Form L is to be used:

- I) **by the losing Society for reporting withdrawal of class due to a transfer of class to another Society** (refer to A.2, A.3 and A.4 of PR1A);
- II) **by the first Society in connection with adding the class of a second society to a vessel already classed by the first Society** (refer to A.2 and B.1 of PR1B); and
- III) **by the withdrawing Society for advising the remaining Society when withdrawing from double or dual class** (refer to D.2 and E of PR1B)

using the following Notes:

1. This form, with Part A duly completed, is to be sent by fax or e-mail to the gaining/second/remaining Society within two (2) working days of receipt of the gaining/second/remaining Society's Survey Status Request. A full list of overdue surveys and conditions of class with the respective due dates for the vessel is to be attached to the copy sent to the gaining/second/remaining Society. Surveys and conditions of class which have not been completed by their due date (including window period), when a ship is laid-up in accordance with the Society's rules prior to such due date (including window period), are not to be declared as overdue within the scope of the information to be included in Form L. In the case of transfer of class/adding class at vessel's delivery, the two (2) working days do not apply.
2. If the fourth box of Part A is ticked, this form, with Part A-1 duly completed, is to be sent to the gaining/second/remaining Society within one (1) month from issuance of the losing/first/withdrawing Society's survey status for advising additional survey status information which has not been provided in the previous reporting to the gaining/second/remaining Society.  
  
If the eighth box of Part A is ticked, this form, with Part A-1 duly completed, is to be sent to the gaining/second/remaining Society within five (5) working days from issuance of the losing/first/withdrawing Society's survey status for advising additional survey status information which has not been provided in the previous reporting to the gaining/second/remaining Society.
3. This form, with Parts A, A-1 (when applicable) and B duly completed, is to be sent to the gaining/remaining Society when class has been withdrawn from a vessel which has transferred to another Society or withdrawn from double class.

Form L attached.



(Tick all check boxes as appropriate)

- ☐ LOSING SOCIETY'S TRANSFER OF CLASS  
☐ ADDING CLASS OF A SECOND SOCIETY TO A VESSEL CLASSED BY THIS (FIRST) SOCIETY  
☐ ADVICE TO THE REMAINING SOCIETY WHEN WITHDRAWING FROM DOUBLE OR DUAL CLASS

<b>To:</b>	Gaining or second or remaining Society:	Fax No./e-mail address:
	TOC database	on-line database
<b>From:</b>	Losing or first or withdrawing Society:	Fax. No./e-mail address:

Vessel Data									
Name of Vessel					ID No.				
Gross Tonnage					IMO No.				
Flag					Year of build				
Vessel Type	<input type="checkbox"/>	OT	Oil Tanker						
	<input type="checkbox"/>	CT	Chemical Tanker						
	<input type="checkbox"/>	GT	Gas Tanker						
	<input type="checkbox"/>	LC	Other Bulk Liquid Carrier						
	<input type="checkbox"/>	BC	Bulk Carrier (all combinations OB, OBO, OO)						
	<input type="checkbox"/>	GC	General Cargo Vessel (including Ro-Ro Cargo, Container, Reefer, HSC Cargo)						
	<input type="checkbox"/>	PS	Passenger Vessel (including Passenger / General Cargo, Passenger / Ro-Ro, Passenger HSC)						
	<input type="checkbox"/>	ZZ	Other Vessel Type						
Build Yard & No.									
Owner									
Equipment Number					Date of entry into the losing or first or withdrawing Society			DD MM YY	
Society during Construction									
Record of Previous Transfer of Class, if available									
Society	Date Classed		Society	Date Classed		Society	Date Classed		
	DD	MM	YY		DD	MM	YY		DD MM YY
Status of compliance with IACS Resolutions									
Confirmation of vessel's compliance								<input type="checkbox"/>	
Status of compliance with URs S19/22/23/26/27/30/31, if applicable									
Information already included in the survey status								<input type="checkbox"/>	
	Applicable	Due date for compliance			Date initial compliance verified				
URs S19/S22/S23	<input type="checkbox"/>	DD	MM	YY	DD	MM	YY		
URs S26	<input type="checkbox"/>	DD	MM	YY	DD	MM	YY		
URs S27	<input type="checkbox"/>	DD	MM	YY	DD	MM	YY		
URs S30	<input type="checkbox"/>	DD	MM	YY	DD	MM	YY		
URs S31	<input type="checkbox"/>	DD	MM	YY	DD	MM	YY		

## Part A – Survey Status Information (See Note 1)

Date Survey Status Request, or request for first Certificate of Class in case of transfer of class or adding class at ship's delivery, received DD MM YYYY

- ☐ A full list of overdue surveys / outstanding conditions of class with the respective due dates for the vessel identified above is attached.
- ☐ In case of transfer of class or adding class at vessel's delivery, details of the first Certificate of Class, including the list of any conditions of class and the list of any information normally contained in the classification status for the vessel identified above is attached.
- ☐ There is no overdue survey nor outstanding condition of class.
- ☐ There is/are survey report(s) outstanding. (if this box is ticked, then Part A-1 is applicable)
- ☐ There is no survey report outstanding.
- ☐ Structural diminution allowances are attached.
- ☐ Structural diminution allowances: see document circulated by letter Ref. ....Date .....
- ☐ Structural diminution allowances will be sent within five (5) working days. (if this box is ticked, then Part A-1 is applicable)

☐ Class is **not** suspended, nor withdrawn

☐ Class is suspended, with effect from (date) DD MM YYYY

Reason for suspension:

- ☐ a = Survey Overdue
- ☐ b = Non-compliance with conditions of class
- ☐ c = Other Safety Related
- ☐ d = Pending Disposition of Casualty
- ☐ e = Other Non-Safety Related

☐ Class was withdrawn, with effect from (date) DD MM YYYY

Reason for withdrawal:

- ☐ 0 = Transfer of class amongst Societies holding a QSCS certificate
- ☐ 1a= At the Owner's request due to the reasons other than identified in 1b, 1c or 2
- ☐ 1b= Scrapped/Sold for Scrap
- ☐ 1c= Casualty
- ☐ 2 = Transferred to a Society not holding a QSCS certificate
- ☐ 3a= Overdue Surveys
- ☐ 3b= Non-compliance with conditions of class
- ☐ 3c= Safety Related other than identified in 3a or 3b
- ☐ 4 = Other Non-Safety Related or Unidentified

Signature: \_\_\_\_\_

Date: DD MM YYYY \_\_\_\_\_

**Part A-1 – Additional Survey Status Information (See Note 2)**

- ☐ A list of additional overdue surveys and additional outstanding conditions of class which were not included in Part A is attached.
- ☐ Structural diminution allowances are attached.
- ☐ No further information.

Signature:

Date: DD MM YYYY



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**FORM L**

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<b>Part B – Report on Withdrawal of Class on Transfer to, or maintenance of class with another Society</b> (See Note 3)				
Date Class Withdrawn	DD	MM	YYYY	
Signature:	Date:	DD	MM	YYYY

## Annex 2 - Harmonisation of Reporting

ITEM	ACTION	LOCATION	DATE	GAINING SOCIETY'S REPORT REQUIREMENTS
Overdue Survey	Commenced	Port	Survey Date	List items credited and items remaining to be credited, if any. Explain why the entire survey was not completed at this port. List conditions for direct voyage to port where survey will be completed, including the need to discharge current cargo if applicable.
Overdue Survey	Continued	Port	Survey Date	In cases where surveys are continued at the port where the current cargo is discharged, list items credited and items remaining to be credited, if any. Explain why the entire survey was not completed at this port. List conditions for direct voyage to port where survey will be completed.
Overdue Survey	Completed	Port	Survey Date	List place and date where survey was completed.
Overdue condition of class	Cleared	Port	Survey Date	Explain actions taken to complete overdue condition of class as specified by the losing Society.
Overdue condition of class	Commenced	Port	Survey Date	In cases where overdue conditions of class are postponed or partly postponed at the port where the current cargo is discharged, list items credited and items remaining to be credited, if any. Explain why the overdue condition of class was not completed at this port. List conditions for discharge voyage to port where condition of class will be completed as specified by losing Society.
Overdue condition of class	Cleared	Port	Survey Date	List date, place and actions take for completion of overdue conditions of class.

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### **Annex 3 - Items to be considered in the review of Vessel's Records**

- \* 1. Damages
- \* 2. Major repairs / rectifications
- \* 3. Conversion of hull-dates
- \* 4. Major alterations of machinery installation-dates
- 5. Condition evaluation / hull summary report if applicable
- \* 6. History of conditions of class
- 7. Thickness measurements from last Special Survey and subsequent thickness measurements, including areas with substantial corrosion
- 8. Report of last Special Survey and subsequent periodical reports
- \* 9. Information on coating condition of water ballast tanks (including non ESP vessels)
- 10. Restrictions / limitations in navigation area
- 11. Optional photos when available

\* As retained by the losing Society



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#### **Annex 4 - List of Societies' Contact Points**

Refer to the IACS Website:

[www.iacs.org.uk](http://www.iacs.org.uk), located under:

- Publications
- Procedural Requirements

and the Transfer of Class (TOC) Database.

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# BCS-PR 3 Transparency of Classification and Statutory Information

## 1 Type of Information

The actual types of information are as follows:

Standing documentation

Ship related information

Newbuildings

Ships in Operation Class Services

Ships in Operation Statutory Services

Other information

SCF – Ship Construction File as indicated in SOLAS Ch.II-1/3-10, Paragraph 4.

## 2 The Receivers of Information

The receivers are:

Owners

Flag States

Port States

Insurance Companies

## 3 Release of Information

The Table 1 indicates release of information and is applicable to all types of ships with the exception of Tankers and Bulk Carriers subject to SOLAS Chapter II-1 Part A-1 Regulation 3-10 (Goal-based ship construction standards for bulk carriers and oil tankers).

The Table 2 indicates release of information and is applicable to Tankers and Bulk Carriers subject to SOLAS Chapter II-1 Part A-1 Regulation 3-10 (Goal-based ship construction standards for bulk carriers and oil tankers).

The footnotes describe the conditions of release.

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Note:

1. This Procedural Requirement applies from 1 July 2020.

Table 1

Information in Question	Information available to:				
	Owners	Flag State	Port State	Insurance Company*	Ship Yards
<b>1. Class Societies Standing Documents:</b>					
Rules and Guidelines (Class and statutory requirements)	1	1	1	1	1
Instructions to Surveyors		1			
Quality Manual	1	1	1	1	1
Register Book	1	1	1	1	1
<b>2. Ship Related Information:</b>					
<b>A. New buildings</b>					
Approved Drawings	6	1			7
Formal Approval Letters	1				7
Certificates of Important Equipment	2				7
<b>B. Ships in Operation:</b>					
<b>Class Services</b>					
Date (month and year) of all Class Surveys	7	1	1	1	
Expiry Date of Class Certificate	7	7**	1	1	
Certificates/Reports	7	1	6	5	
Overdue Surveys	7	7**	1	1	
Text of Conditions of Class	7	1	1	5	
Text of Overdue Conditions of Class	7	1	1	1	
Executive Hull Summary	7	3	3	3	
<b>Statutory Services</b>					
Due Dates of Statutory Surveys	7	7**	1	1	
Expiry Date of Statutory Certificates	7	7**	1	1	
Registered Statutory Condition	7	7**	1	5***	
Overdue Statutory Condition	7	7**	1	1***	
<b>3. Other Information:</b>					
Correspondence File with Yard and/or Owner	6	6		5&6	
Audit of Class Societies QA System	4	4	4	4	
Class Transfer Reporting	7	7	7	7	
Class Withdrawal Information	7	7	7	7	

\* Insurance Company means P&I Clubs and Hull Underwriters.

\*\* If stated in Agreement.

\*\*\* Unless prevented by the agreement with the flag State.

KEY:

1. Available upon request.
2. At delivery of the ship by Shipyard.
3. Available under visit on board.
4. Result of audit available on request.
5. When accepted by Owners - or through special clause in insurance contract.
6. When accepted by Owner (Master) or Shipyard as applicable.
7. Automatically available.



Table 2

Information in Question	Information available to:				
	Owners	Flag State	Port State	Insurance Company*	Ship Yards
<b>1. Class Societies Standing Documents:</b>					
Rules and Guidelines (Class and statutory requirements)	1	1	1	1	1
Instructions to Surveyors		1			
Quality Manual	1	1	1	1	1
Register Book	1	1	1	1	1
<b>2. Ship Related Information:</b>					
<b>A. New buildings</b>					
Approved Drawings	1	1			7
Formal Approval Letters	1	1			7
Certificates of Important Equipment	2	1			7
SCF	2	8			7
Formal Review Letters in relation with SCF	2	2			7
<b>B. Ships in Operation:</b>					
<b>Class Services</b>					
Date (month and year) of all Class Surveys	7	1	1	1	
Expiry Date of Class Certificate	7	7**	1	1	
Certificates/Reports	7	1	6	5	
Overdue Surveys	7	7**	1	1	
Text of Conditions of Class	7	1	1	5	
Text of Overdue Conditions of Class	7	1	1	1	
Executive Hull Summary	7	3	3	3	
<b>Statutory Services</b>					
Due Dates of Statutory Surveys	7	7**	1	1	
Expiry Date of Statutory Certificates	7	7**	1	1	
Registered Statutory Condition	7	7**	1	5***	
Overdue Statutory Condition	7	7**	1	1***	
<b>3. Other Information:</b>					
Correspondence File with Yard and/or Owner	1	1		5&6	
Updated modifications to SCF	7****	8			
Audit of Class Societies QA System	4	4	4	4	
Class Transfer Reporting	7	7	7	7	
Class Withdrawal Information	7	7	7	7	

\* Insurance Company means P&I Clubs and Hull Underwriters.

\*\* If stated in Agreement.

\*\*\* Unless prevented by the agreement with the flag State.

\*\*\*\* By Owner or Shipyard.

KEY:

1. Will be available upon request.
2. At delivery of the ship by Shipyard.
3. Available under visit on board.
4. Result of audit available on request.
5. When accepted by Owners - or through special clause in insurance contract.
6. When accepted by Owner (Master) or Shipyard as applicable.
7. Automatically available.
8. Available through Owner upon request.

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# BCS- PR 5 Definition of Exclusive Surveyor and Non-Exclusive Surveyor and Procedure for Employment and Control of Non-Exclusive Surveyors

## 1. Exclusive Surveyor

An exclusive surveyor is a person solely employed by BCS, who is duly qualified, trained and authorized to execute all duties and activities incumbent upon his employer, within his level of work responsibility. Such an exclusive surveyor is not permitted to undertake other employment.

An exclusive surveyor of BCS may also be regarded as an exclusive surveyor to another Classification Society in those cases where the relevant Societies have agreed to share survey resources.

A secondment surveyor from an organization may be regarded as an exclusive surveyor to BCS subject to the basis of a long term secondment contract from the organization to the Classification Society. The secondment surveyor must be duly qualified, trained, authorized and directly controlled by that Society for the performance of the duties and activities being delegated, in accordance with the relevant quality system requirements of the Classification Society. Such a secondment surveyor is only permitted to execute duties on behalf of that Classification Society.

## 2. Non-Exclusive Surveyor

A non-exclusive surveyor is a person who enters into an agreement with a Society to act on its behalf and who is also free to work on behalf of other organizations.

### 2.1 Employment

- (i) The employment of non-exclusive surveyors should be limited to locations not easily served by exclusive surveyors. This should, however, not prevent the hiring of non-exclusive surveyors who, on a case-by-case basis, may be needed to assist during periods of high work loading at exclusive offices.
- (ii) The suitability of the non-exclusive surveyor is to be determined before engagement, either:
  - (a) by a previously demonstrated capability to provide a proper service, or,
  - (b) by direct assessment by a suitably qualified senior exclusive surveyor.

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Note:

This Procedural Requirement applies from 1 July 2009.

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- (iii) The qualifications of a non-exclusive surveyor should include:
    - (a) a degree or equivalent from an institution recognised within a relevant field of engineering or physical science, or a qualification from a suitable marine or nautical institution and relevant seagoing experience as a certified ship officer,
    - (b) suitable work experience relevant to the processes he or she is authorised to perform.
  - (iv) In assessing suitability and qualifications, the following may also be taken into account:
    - (a) Experience from class-related work as stated in a CV or other document.
    - (b) Mandatory training given by BCS in accordance with the documented Scheme.
  - (v) Proposals for the employment of non-exclusive surveyors together with a CV giving details of education and experience are to be forwarded to BCS for consideration, including final approval by authorised senior staff.
  - (vi) Records are to be kept of the justification for engagement.
  - (vii) Non-exclusive surveyors are to fulfill the qualification and training requirements of the quality system procedures and process instructions relevant to the tasks that each is authorised to perform.
  - (viii) The non-exclusive surveyor is to be engaged by means of a contract giving conditions of service, general instructions, and the scope of surveys which may be undertaken.
  - (ix) Depending on the extent of their employment, non-exclusive surveyors are to be supplied with copies of:
    - (a) the society's Register of Ships,
    - (b) a set of the society's Rules and Regulations for the Classification of Ships,
    - (c) codes, standards and/or specifications related to the processes they are authorised to perform,
    - (d) advice in writing detailing the service required on a job-by-job basis by a controlling exclusive office,
    - (e) quality system procedures and process instructions (controlled copies) relevant to the tasks non-exclusive surveyor is authorised to perform.

## **2.2 Control**

- (i) Effective controls are to be maintained over the non-exclusive surveyor by the controlling office by means of:
  - (a) examination of survey reports, and
  - (b) activity monitoring in accordance with Procedural Requirement 6



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- (ii) Surveys by non-exclusive surveyors may be subject to a subsequent confirmatory survey being carried out by an exclusive surveyor.
  - (iii) A comprehensive list of non-exclusive surveyors is to be maintained centrally, while a list of verification dates is to be maintained by the controlling exclusive office.

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# **BCS-PR 6 Procedure for Activity Monitoring of Surveyors, Plan Approval Staff and Auditors/Inspectors**

## **1 Purpose**

The purpose of Activity Monitoring is:

- To determine whether the individuals maintain the competence and capability to satisfactorily perform the work for which they are qualified, consistent with BCS's policies and practices.
- To identify needs for continual improvement in aligning the technical services across the organisation.
- To identify need for improvements in the guidance, processes, training and supporting tools provided for the technical staff.

## **2 Definitions**

### **2.1 Activity Monitoring**

Activity Monitoring is an assessment by BCS of BCS's technical staff, conducted by a monitor, for plan approval or in the course of a survey, audit or MLC inspection.

### **2.2 Monitor**

"Monitor" is the designated person who carries out the Activity Monitoring.

### **2.3 Technical Staff**

Technical staff are personnel qualified to carry out surveys, or plan approvals (see BCS - PR 7) or Marine Management Systems Audits (see also BCS -PR 10) and MLC Inspections (see also BCS-PR10B).

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Note:

1. This Procedural Requirement applies from 1 January 2021.
2. For the purpose of this PR, assessment of ship yards and service suppliers are not considered as 'Marine Management System Audits'.

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## **2.4 Field of work**

The field of work encompasses various processes and different types of surveys, audits, MLC inspections and plan approvals. The exact content may vary with a Society's system, but for the purposes of this procedure the following three fields of work are to be addressed:

1. Plan approval
2. Surveys
  - a. of materials and equipment, or
  - b. during construction and installation, or
  - c. during service
3. Audits
  - a. Marine Management Systems audits, or
  - b. MLC Inspections.

The above fields cover class and statutory scope of work, as applicable.

## **3 Activity Monitoring**

### **3.1 Initiating of Activity Monitoring**

Activity Monitoring may be initiated by headquarters, regional or local offices as per Society's structure.

### **3.2 Designation of Monitors**

Activity Monitoring shall be carried out by designated persons who are qualified in plan approval, survey, or audit/inspection being monitored, as appropriate.

Alternatively, a specialist (i.e., an individual with appropriate knowledge and experience) from the relevant department in the activity being monitored, who is designated by the responsible headquarters department or regional management can also carry out the Activity Monitoring.

### **3.3 Frequency of Activity Monitoring**

Activity Monitoring shall be carried out at least once every other calendar year for each field of work for which the individual is qualified. Only one type of survey (see 2.4.2) for a qualified surveyor and one type of audit/inspection (see 2.4.3) for a qualified auditor/MLC inspector need be monitored within the two-year cycle. Failure to complete the Activity Monitoring within the required timeframe will result in the individual not being permitted to carry out any activity in the field of work until the Activity Monitoring is satisfactorily completed.

The individual whose Activity Monitoring is overdue, may be assigned to carry out the next activity job, only if that activity job is monitored.

Control of any exceptions to this should be documented in the society's procedures.

### **3.4 Selection of the activity**

The activity within the field of work selected for Activity Monitoring shall be representative of the work of the individual being monitored and therefore be sufficient to enable the Monitor to effectively assess the performance of the individual against his/her qualifications.



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### **3.5 Preparation**

Preparation for Activity Monitoring shall include familiarisation with the processes, requirements and tools (e.g. software) associated with the activity to be monitored.

### **3.6 Scope of Activity Monitoring**

The scope of the Activity Monitoring shall be sufficient to effectively evaluate the performance of the individual at work. Activity Monitoring may be conducted through, but should not be limited to, reviewing report and certificate accuracy, meeting objectives, received complaints, PSC detention feedback. Plan approval Activity Monitoring may be carried out after completion of plan approval work.

Activity Monitoring is to include, as applicable, but not limited to, an evaluation of the individual's:

- personal safety awareness and adherence to the Society's safety policy;
- professional behaviour and performance;
- preparation, execution and follow-up of the activity;
- understanding and application of the relevant requirements;
- technical capabilities, including proper judgement and decision making;
- reporting and communication, both internal and external.

Activity Monitoring may be combined with a vertical contract audit<sup>1</sup>.

## **4 Reporting**

The report shall include evaluation of the performance of the individual at work as indicated in 3.6.

Any deviation from the required activities is considered to be a variance and is to be reported along with the proposed course of action to correct it.

The report shall also include conclusions with respect to:

- whether the individuals maintain the competence and capability to satisfactorily perform the work for which they are qualified, consistent with the Society's policies and practices (including particularly positive aspects);
- any areas for improvement;
- any recommended training requirements.

The completed report is to be sent to the individual's line manager.

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<sup>1</sup> Ref.: IACS Procedures Volume 3

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## **5 Evaluation**

The appropriate management, which may vary with a Society's system, shall review the completed report and where necessary will ensure that the proposed course of action, as appropriate, is implemented.

Results of Activity Monitoring shall be taken into account as part of the individual's annual performance review (see BCS-PR 7) and ongoing training needs.

The society shall, annually analyse the results of all Activity Monitoring for each field of work, to identify possible improvements across the organisation. The society shall categorise variances or adopt an equivalent methodology to facilitate analysis and to identify trends, if any.

## **6 Documents and records**

The Society is to:

- 6.1 document the Activity Monitoring methodology, including how it is reported.
- 6.2 document how Monitors are designated.
- 6.3 document the consequence(s) and action(s) to be taken if Activity Monitoring is not completed within the required timeframe.
- 6.4 maintain records to demonstrate that all personnel required to be monitored have been monitored within the required timeframe.
- 6.5 maintain records on the analysis of the results of Activity Monitoring for possible improvements across the organisation.

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## **Addendum Notice to PR 6**

### **Procedure for Activity Monitoring of Surveyors, Plan Approval Staff and Auditors/Inspectors**

For the duration as shown in the validity section below, Paragraph 3.3 & 3.6 in this document overrides that shown in PR 6

#### **3.3 Frequency of Activity Monitoring**

Activity Monitoring shall be carried out at least once every other calendar year for each field of work for which the individual is qualified. Only one type of survey (see 2.4.2) for a qualified surveyor and one type of audit/inspection (see 2.4.3) for a qualified auditor/MLC inspector need be monitored within the two-year cycle. Failure to complete the Activity Monitoring within the required timeframe will result in the individual not being permitted to carry out any activity in the field of work until the Activity Monitoring is satisfactorily completed.

The individual whose Activity Monitoring is overdue, may be assigned to carry out the next activity job, only if that activity job is monitored.

Control of any exceptions to this should be documented in the society's procedures.

In case of extraordinary circumstances during the COVID-19 pandemic in 2020 beyond the control of BCS, where it will not be possible to carry out the activity monitoring of an individual by the December 2020 due date, an extension until 30 June 2021 may be allowed to complete the activity monitoring provided:

- a) BCS has verified the report of the previous activity monitoring, where available, and has confirmed that any actions required for identified areas of improvement or recommended training have been satisfactorily carried out.
- b) The reporting officer (the Monitor) has confirmed, based on his judgement, that the individual has the competence and capability to satisfactorily perform the work, considering the previous performance of the individual

Where an extension is provided as above, the individual whose monitoring is overdue may be permitted to carry out activity in the field of work during the period of extension and the requirement for monitoring the activity job may be suspended until the end of extension period.

Record of any such extensions granted are to be retained by BCS.

#### **3.6 Scope of Activity Monitoring**

The scope of the Activity Monitoring shall be sufficient to effectively evaluate the performance of the individual at work. Activity Monitoring may be conducted through, but should not be limited to, reviewing report and certificate accuracy, meeting objectives, received complaints, PSC detention feedback. Plan approval Activity Monitoring may be carried out after completion of plan approval work.



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Activity Monitoring is to include, as applicable, but not limited to, an evaluation of the individual's:

- personal safety awareness and adherence to BCS's safety policy;
- professional behaviour and performance;
- preparation, execution and follow-up of the activity;
- understanding and application of the relevant requirements;
- technical capabilities, including proper judgement and decision making
- ; - reporting and communication, both internal and external.

Activity Monitoring may be combined with a vertical contract audit.

In case of extraordinary circumstances during the pandemic and force measures in 2020 beyond the control of BCS, Activity Monitoring may be accomplished by remote means.

### **Validity of Notice**

Enter into force date: 1 January 2021  
Valid until 31 December 2021

To be reviewed by BCS in the beginning of December 2021 to decide whether to further extend the validity or to revoke the notice.

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## **BCS-PR 7 Procedure for the Training and Qualification of Survey and Plan Approval Staff**

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### **Notes:**

1. This Procedural Requirement applies from 1 January 2021.

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## 1. Purpose and application

1.1 This Procedural Requirement defines the common training and qualification requirements for survey and plan approval staff in accordance with the requirements of IMO "Code for Recognized Organizations" (RO Code) adopted by the Organization by Resolutions MSC.349(92) and MEPC.237(65), as amended, ISO 9001:2015 and ISO/IEC 17020:2012 standards.

1.2 The overall objective of this PR is to provide training and qualification requirements for personnel engaged in classification of ships and offshore installations in respect of both new building and existing ships and offshore installations and statutory work carried out on behalf of the appropriate national Administrations, as well as survey and certification of materials and products, in compliance with the requirements of BCS Rules and Regulations, IACS Procedural Requirements and International Conventions and Codes specifically IMO Resolution A.1140(31), as amended.

1.3 In applying this PR, BCS has the flexibility to adopt teaching methods which are the most appropriate for the particular educational background, work experience and general culture of trainees, or methods provided by BCS in their procedures and instructions.

1.4 The requirements of this PR do not apply to support staff assisting in the performance of classification or statutory work. Such staff may carry out tasks to assist Surveyors or Plan Approval staff but the Surveyor or Plan Approval Staff are responsible for the work of the support staff and the technical content of the service. However support staff should have education, training and supervision commensurate with the tasks they are authorized to perform.

## 2. Definitions

2.1 **Survey staff** are exclusive and non-exclusive surveyors as defined in BCS-PR5 authorized to carry out surveys and to conclude whether or not compliance has been achieved.

2.2 **Plan approval staff** are personnel authorized to carry out design assessment and to conclude whether or not compliance has been achieved.

2.3 **Trainee** is a person receiving theoretical and practical training under the supervision of a trainer/tutor.

2.4 **Trainer** is a designated person having experience within a relevant area or a proficient expert in a special field recognized by BCS to give theoretical training through classroom teaching, special seminars or individual training.

2.5 **Tutor** is a qualified and designated person from among the BCS's staff having appropriate experience and capability in the relevant areas of activities in which they assist, coach and supervise the practical training of a trainee until the latter is qualified.

## 3. Trainee entry requirements

Personnel newly employed by BCS to be qualified as survey and/or plan approval staff of BCS, shall have as a minimum the following formal educational background:

- a degree or equivalent qualifications from a tertiary institution recognised within a relevant field of engineering or physical science (minimum two years' program), or



- 
- relevant qualifications from a marine or nautical institution and relevant sea-going experience as a certified ship officer, and
  - proficiency in the English language commensurate with their future work.

#### **4. Modules**

4.1 BCS shall define the required competence criteria for each relevant type of survey and plan approval activity to be performed.

BCS shall define the necessary theoretical and practical training modules to cover the competence criteria defined for survey and plan approval staff. The training modules shall cover as a minimum:

- learning and competence objectives,
- scope of training,
- evaluation criteria and pass requirements.

4.2 Through studying the training modules, trainees shall acquire and develop general knowledge and understanding applicable to different types of ships and types of work according to the flag State requirements, BCS Rules and Regulations, IACS Procedural Requirements and International Conventions and Codes specifically the IMO RO Code and Resolution A.1140(31), as amended.

#### **5. Theoretical training for survey and plan approval staff**

5.1 The objective of theoretical training is to ensure that familiarization with rules, technical standards or statutory regulations and any additional requirements specific to the type of survey or ships is sufficient for the areas of activity.

5.2 Theoretical training shall include:

- General modules for theoretical training, and
- Special modules for theoretical training in the particular speciality.

5.3 General modules for theoretical training shall include general subjects with respect to:

- 1) Activity and functions of IMO and Maritime Administrations,
- 2) Activity and functions of BCS,
- 3) Classification of ships and offshore installations,
- 4) Types of certificates and reports issued on completion of class and statutory surveys,
- 5) Quality Management System,
- 6) Personal Safety regulations, and
- 7) Legal and ethical issues.

5.4 The theoretical training for survey and plan approval staff shall be documented in a training plan and developed according to the areas of activity (types or categories of surveys, types of ships, subjects such as hull, machinery, electrical engineering etc.).

5.5 In case of an existing gap in the formal educational background in some particular area of activity, theoretical training shall be extended.

5.6 In case survey or plan approval staff have obtained particular qualifications through their previous work experience prior to their joining BCS, the training plan may be reduced.

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5.7 Extensions or reductions in the individual training plans shall be documented.

5.8 Theoretical training may be received through courses, seminars, meetings or other learning methods (e.g. blended learning, e-learning, self-study, simulators, mobile learning etc.).

## **6. Practical training for survey and plan approval staff**

Practical training shall provide the trainee with the necessary knowledge and shall ensure his/her proficiency to carry out survey or plan approval work independently. In case survey or plan approval staff have obtained particular qualifications through their previous work experience prior to their joining BCS, the training may be reduced and shall be documented.

### **6.1 Survey staff**

6.1.1 Practical training shall be commensurate with the complexity of the survey (types or categories of surveys, types of ships, specific subjects e.g. hull, machinery, and electrical engineering) and shall be carried out under the supervision of a tutor.

6.1.2 Selection of particular surveys depends on the speciality/qualification to be granted and shall include classification and statutory types of surveys of the following as appropriate:

- new construction,
- ships and offshore installations in operation,
- materials and equipment.

6.1.3 Practical training carried out shall be recorded.

### **6.2 Plan approval staff**

6.2.1 Practical training shall be commensurate with the complexity of design assessment (review of technical design of ships, review of technical documentation on materials and equipment) and shall be carried out under the supervision of a tutor.

6.2.2 Practical training carried out shall be recorded.

## **7. Examinations and tests**

7.1 Competence gained through the theoretical training shall be demonstrated through written or oral examination or through suitable computer tests.

7.2 Examinations and tests shall cover the sets of modules attended by the trainee, as applicable.

7.3 With respect to competence gained through practical training being demonstrated by:

7.3.1 a surveyor, this shall be accomplished by the surveyor satisfactorily completing the survey(s) and demonstrating a satisfactory level of understanding associated with the competence whilst under the supervision of the tutor. The surveyor would be expected to be able to answer associated technical questions raised as thought necessary by the tutor to confirm levels of understanding. The results of the tutor's review shall be annotated and recorded on the respective training record.



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7.3.2 a plan approval staff member, this shall be accomplished by the staff member satisfactorily completing the appraisal of drawings against the relevant classification rules and statutory regulations as verified through a review by the tutor. The results of the tutor's review shall be annotated and recorded on the respective training record.

7.4 During examinations and tests, use of the relevant working documents (Rules, Conventions, checklists, etc.) by the trainee is considered allowable.

## **8. Qualification**

8.1 The criteria adopted by BCS for granting qualifications shall be documented in the appropriate QMS documents.

8.2 After completion of the theoretical and practical training, with positive results, the trainee is granted the appropriate authorizations to work independently. The activities which they are qualified to perform (types of surveys, types of ships, types of design approval, etc .) are identified.

## **9. Assessment of training effectiveness**

9.1 The criteria adopted by BCS for training effectiveness assessment shall be documented in the appropriate BCS QMS documents.

9.2 Documented assessment of training effectiveness shall be done on short and long term basis.

9.3 Short term assessment may be a test/interview, course evaluation etc. at the end of a training initiative.

9.4 Long term assessment may be done as part of the annual performance review and / or through Activity Monitoring, ref. BCS-PR6.

## **10. Maintenance of qualification**

10.1 The criteria adopted by BCS for maintenance or updating of qualifications shall be in accordance with and documented in the appropriate BCS QMS documents.

10.2 Maintenance of qualifications in accordance with these criteria is to be verified at annual performance review and during Activity Monitoring, ref. BCS-PR6.

10.3 Maintenance and updating of qualifications may be done through any or a combination of the following methods:

- 1) Training courses, seminars or meetings,
- 2) Practical Training (on-the-job),
- 3) Other learning methods (e.g. blended learning, e-learning, self-study, simulators, mobile learning etc.).



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10.4 Maintenance of qualification may also require relevant training for individuals as determined by:

- Activity Monitoring, or
- long time absence of practical experience from the following two fields of work as defined in BCS-PR6: survey and/or plan approval,
- annual performance review, or
- any other means.

## **11. Records**

Records shall be maintained for each surveyor/plan approval staff member, indicating:

- 1) Formal education background,
- 2) Professional experience prior to joining BCS
- 3) Evidence of theoretical training completed,
- 4) Evidence of practical training completed,
- 5) Evidence of examinations and tests,
- 6) Professional experience during employment at BCS
- 7) Periodical updating of knowledge.

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# BCS-PR 9 Procedural Requirements for ISM Code Certification

## INTRODUCTION

The IACS "Procedural Requirements for ISM Code Certification" reflect, as applicable, IMO Resolution A.1118(30) "Revised guidelines on the implementation of the International Safety management (ISM) Code by Administrations" and IMO Resolution A.741(18) "International Safety Management (ISM) Code" as amended.

This document and its Annexes provide the Classification Societies with procedures and criteria for the conduct of audits to verify compliance with the requirements of the ISM Code and for the issuance of the corresponding Documents of Compliance (DOCs) and Safety Management Certificates (SMCs), including short term and interim DOCs and SMCs. Also provided are procedures governing the actions to be taken by Classification Societies when deficiencies associated with the ISM Code are identified by Port State Control Officers (PSCOs).

Where a Recognized Organization (RO) performs verification audits on behalf of an Administration, any certificates issued must comply with the format required by the ISM Code and the Administration.

The "Code for Recognized Organizations" (RO Code) adopted by the Organization by resolutions MSC.349(92) and MEPC.237(65), which was made mandatory by Chapter XI-1/1 of SOLAS 74 is applicable when Classification Societies act on behalf of the Administrations.

When acting as an RO, ISM Code certification services are to be provided by the Classification Society itself and not by one of its subsidiaries.

Where two or more ROs are involved in the ISM Code certification of a single Company, arrangements shall be made for appropriate communications between them to ensure the exchange of the relevant information.

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### Note:

1. This procedural requirement applies from 1 January 2021.

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## **1. GENERAL**

### **1.1 Definitions**

1.1.1 "Audit" means a process of systematic and independent verification, through the collection of objective evidence, to determine whether the SMS complies with the requirements of the ISM Code and whether the Safety Management System (SMS) is implemented effectively to achieve the Code's objectives.

1.1.2 "Auditor" means a person trained, qualified and authorised in accordance with Procedural Requirement 10 (BCS-PR10) to carry out ISM audits and to conclude whether compliance has been achieved.

1.1.3 "Lead auditor" means an auditor who is authorised to lead a team of two or more auditors.

1.1.4 "Branch Office" means a shore-based location identified by the Company responsible under the ISM Code which may perform safety management system related tasks and is operating under the same SMS of the Company.

1.1.5 "Observation" means a statement of fact made during a safety management audit and substantiated by objective evidence. It may also be a statement made by the auditor referring to a weakness or potential deficiency in the SMS which, if not corrected, may lead to a non-conformity in the future.

1.1.6 "Safety Management Manual" is the documentation used to describe and implement the SMS.

1.1.7 "Technical deficiency" means a defect in, or failure in the operation of, a part of the ship's structure or its machinery, equipment or fittings.

1.1.8 "Non-conformity" means an observed situation where objective evidence indicates the non-fulfilment of a specified requirement.

1.1.9 "Major non-conformity" means an identifiable deviation that poses a serious threat to the safety of personnel or the ship or a serious risk to the environment that requires immediate corrective action or the lack of effective and systematic implementation of a requirement of the ISM Code.

### **1.2 Scope and Application**

1.2.1 This document establishes basic procedures for:

- (i) the conduct of interim, initial, scheduled and additional shore-based and shipboard audits against the ISM Code;
- (ii) the issue of ISM certificates to Companies and ships and their subsequent endorsement.

1.2.2 This document applies to BCS when they are acting as ROs on behalf of Administrations under the provisions of SOLAS Chapter IX, and, except for paragraph 2.1, to BCS when conducting audits for the issue of voluntary ISM Code Certificates.

1.2.3 This document also establishes basic procedures for ROs to follow when potential failures of the shipboard SMS are identified by Port State Control Officers.



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## **2. VERIFYING COMPLIANCE WITH THE ISM CODE**

### **2.1 Responsibilities of the RO**

2.1.1 Criteria for verification of compliance with the requirements of the ISM Code shall be in accordance with the applicable sections of IMO Resolution A.1118(30) "Revised guidelines on the implementation of the International Safety Management (ISM) Code by Administrations" and IMO Resolution A.741(18) "International Safety Management (ISM) Code" as amended.

2.1.2 A RO performing verification of compliance with the ISM Code shall have, within its organisation, competence in relation to:

- (i) the rules and regulations with which Companies must comply;
- (ii) the approval, survey and certification activities relevant to maritime certificates;
- (iii) the terms of reference of the SMS required by the ISM Code;
- (iv) practical experience of ship operations;
- (v) the assessment of management systems.

2.1.3 A RO performing verification of compliance with the provisions of the ISM Code shall ensure that personnel providing ISM-related consultancy services and personnel providing the certification are entirely independent.

2.1.4 Management of ISM Code certification services shall:

- (i) be carried out by those who have practical knowledge of ISM Code certification procedures and practices;
- (ii) ensure that the auditor(s) comply with the requirements relating to education, training, work experience and audit experience specified;
- (iii) ensure that the qualification and experience of auditors are adequate and appropriate for the size and complexity of the Company or ship to be audited

2.1.5 A RO performing ISM Code certification shall have implemented a documented system for the qualification and continuous updating of the knowledge and competence of personnel who perform verification of compliance with the ISM Code.

This system shall provide for:

- (i) theoretical training covering all the competence requirements specified in BCS- PR10 and the application of the procedures governing the certification process;
- (ii) supervised practical training as specified in BCS-PR10;
- (iii) the creation and maintenance of records of the theoretical and practical training undertaken by each trainee.

2.1.6 A RO performing ISM Code certification shall have implemented a documented system ensuring that the certification process is performed in accordance with this procedure . This system shall include procedures and instructions for the following:

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- (i) the establishment of contracts for the provision of ISM certification services;
  - (ii) the planning, preparation and conduct of ISM audits;
  - (iii) the reporting of ISM audits;
  - (iv) the issuance of DOCs and SMCs including interim DOCs and interim SMCs;
  - (v) the evaluation and follow-up of corrective actions, including action to be taken in response to major non conformities. (Refer to Article 5 of Appendix to IMO Res. A.1118(30) and MSC/Circ.1059/MEPC/Circ.401).

## **2.2 The ability of the SMS to meet safety management objectives**

### **2.2.1 The purpose of an audit is to verify that:**

- (i) the SMS complies with the requirements of the ISM Code;
- (ii) the SMS is being implemented effectively and in such a way as to ensure that the objectives of the ISM Code are met.

2.2.2 All records having the potential to facilitate verification of compliance with the ISM Code shall be open to scrutiny during an audit. For this purpose, the Company shall provide auditors with statutory and classification records relevant to actions taken by the Company to ensure that compliance with mandatory rules and regulations is maintained. In this regard, records may be examined to substantiate their authenticity and veracity. The Company shall ensure that the auditor has access to statutory and classification records during audits, also when these records are issued by another Classification Society, other RO or the Administration itself.

2.2.3 The audit is based upon a sampling process. Where no non-conformities have been reported, it shall not be assumed that none exists.

## **3. THE CERTIFICATION PROCESS**

### **3.1 Certification Activities**

#### **3.1.1 Document of Compliance (DOC)**

3.1.1.1 A DOC shall be issued to a Company following an initial or renewal verification of compliance with the requirements of the ISM Code.

3.1.1.2 The Company shall make available copies of the DOC to each office location and each ship covered by the SMS.

3.1.1.3 On completion of the audit, a DOC with validity not exceeding five (5) years may be issued by the auditor. A certificate of shorter validity may be issued in accordance with RO's procedures and flag State requirements.

#### **3.1.2 Safety Management Certificate (SMC)**

3.1.2.1 A SMC shall be issued to a ship following an initial or renewal verification of compliance with the requirements of the ISM Code.



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3.1.2.2 A copy of the SMC shall be available at the Company's Head Office.

3.1.2.3 The issue of a SMC is conditional upon:

- (i) the existence of a DOC (not interim), valid for that type of ship;
- (ii) the maintenance of compliance with the requirements of a Classification Society which meets the requirements of RO Code, as may be amended, or with the national regulatory requirements of a flag State which provide an equivalent level of safety; and
- (iii) the maintenance of valid statutory certificates.

3.1.2.4 On completion of the audit, an SMC with validity not exceeding five (5) years may be issued by the auditor. A certificate of shorter validity may be issued in accordance with RO procedures and flag State requirements.

## **3.2 Interim and initial verification**

3.2.1 Interim verification for the issue of an interim DOC to a Company and an interim SMC for a ship is carried out as described in ISM Code Section 14. The interim verification for issuance of an interim DOC includes a review of the safety management system documentation.

3.2.2 Initial verification for the issue of a DOC to a Company consists of the following steps:

- (i) A satisfactory review of any changes made to the documented SMS since the interim DOC was issued;
- (ii) Verification of the effective functioning of the SMS, including objective evidence that the Company's SMS has been in operation for at least three (3) months on board at least one ship of each type operated by the Company. The objective evidence shall include records from the internal audits performed by the Company ashore and on board and the statutory and classification records for at least one ship of each type operated by the Company.

3.2.3 The initial verification for issuing a SMC to a ship consists of the following steps:

- (i) Verification that the Company holds a valid DOC applicable to the ship type and that the other provisions of paragraph 3.1.2.3 are complied with. Only after on-board confirmation of the existence of a valid DOC can the verification proceed;
- (ii) Verification of the effective functioning of the SMS, including objective evidence that the SMS has been in operation for at least three (3) months on board the ship. The objective evidence shall also include records of the internal audits performed by the Company.

## **3.3 Annual verification or renewal of the Document of Compliance**

3.3.1 The purpose of these audits is, inter alia, to verify:

- (i) the effective functioning of the SMS;



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- (ii) that any modifications made to the SMS comply with the requirements of the ISM Code;
  - (iii) that corrective action has been implemented;
  - (iv) that statutory and classification certificates are valid and that no surveys are overdue.

3.3.2 The statutory and classification certification for at least one ship of each type identified on the DOC shall be verified.

### **3.4 Intermediate verification or renewal of Safety Management Certificates**

3.4.1 The purpose of these audits is, inter alia, to verify:

- (i) the effective functioning of the SMS;
- (ii) that any modifications made to the SMS comply with the requirements of the ISM Code;
- (iii) that corrective action has been implemented;
- (iv) that statutory and classification certificates are valid and that no surveys are overdue.

### **3.5 Preparing the audit**

3.5.1 The auditor(s) in co-operation with the Company or Ship shall produce an audit plan.

3.5.2 The audit plan shall be designed to be flexible in order to permit changes in emphasis based on information gathered during the audit, and to permit the effective use of resources. This plan shall be communicated to all those involved in the audit.

The audit plan shall include:

- (i) identification of the individuals or organizational units having significant direct responsibilities within the SMS;
- (ii) identification of the auditor(s) and Company representative(s);
- (iii) the language of the audit;
- (iv) the date and place where the audit is to be conducted;
- (v) the schedule of meetings to be held with Company's management.

3.5.3 Initial, intermediate and renewal shipboard verification audits shall be performed only under normal operating conditions, e.g. when the ship is not in dry dock or laid up. Interim audits may be conducted in circumstances other than normal operating conditions, provided that the ship is fully manned in accordance with its Safe Manning Certificate.

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### **3.6 Executing the audit**

3.6.1 All scheduled, routine DOC and SMC audits (initial, intermediate, annual and renewal) shall be fully scoped audits covering all elements of the ISM code and all aspects of the management of shipboard safety and pollution prevention.

3.6.2 The audit shall begin with an opening meeting, the purpose of which is to:

- (i) introduce the auditor(s) to the Company's or shipboard management;
- (ii) explain the scope and objective of the audit;
- (iii) provide a short summary of the methods and procedures to be used to conduct the audit;
- (iv) establish the official communication links between the auditor(s) and the Company or shipboard personnel;
- (v) confirm that the resources, documentation and facilities needed to perform the audit are available;
- (vi) confirm the time and date of the closing meeting and any possible interim meetings.

3.6.3 Working documents used to facilitate the audit and to document the results may include:

- (i) checklists used for evaluating SMS elements, and
- (ii) forms for reporting observations and documenting supporting evidence.

Working documents shall not restrict additional activities or investigations that may become necessary as a result of information gathered during the audit.

3.6.4 Consideration shall be given to the limitations that may be placed on the auditor's ability to gather information and collect objective evidence when audits are carried out during the hours of darkness or other similarly restrictive operational conditions.

When the activities are planned to be carried out under any restrictive operational conditions the auditor's ability to gather information is not to be impaired. In cases where it is not possible to complete the audit due to such limitations, audit plan may be changed as necessary to complete the audit when such limitations will be absent.

3.6.5 The auditor shall take into account any changes made to the SMS since the last external audit carried out.

3.6.6 The auditor(s) shall assess the SMS on the basis of the documentation presented by the Company and objective evidence of its effective implementation. Such evidence shall be collected through interviews, review of documentation and records, observation of activities and examination of the condition and operation of the ship and its equipment and technical systems.

3.6.7 Annual and renewal audits of the Company may include a review of non-conformities reported in relation to previous internal and external Company and shipboard audits. The auditor shall select a sample of the reported non-conformities and audit the Company's



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investigation, analysis, and resolution of the non-conformities in accordance with the requirements of sections 9 and 12 of the ISM Code.

3.6.8 When auditing a Company managing ships classed by another society, or for which the Administration or another RO performs the statutory surveys, the auditor shall review the statutory and classification survey records for at least one ship of each ship type to which the DOC is to apply. These records shall be made available at the Company's office (refer to 2.2.2).

3.6.9 When auditing a ship, as a part of the audit process the auditor shall review the statutory and classification survey records (refer to 2.2.2).

3.6.10 The auditor is entitled to acquire information from other Classification Societies, ROs or the Administration, in order to check the veracity of the information presented to the auditor by the Company (refer to 2.2.2).

3.6.11 During shipboard audits, the auditor shall visit the deck, engine, bridge and accommodation areas, the purpose of which is to:

- i) gain an overall impression of housekeeping and the condition of the ship and equipment
- ii) observe shipboard operations being conducted
- iii) observe emergency drills as appropriate
- iv) conduct interviews with ship's crew as appropriate.

Where weather conditions prevent safe access to certain areas this shall be documented in the report.

3.6.12 Audit findings shall be documented in a clear, concise manner and supported by objective evidence. These shall be reviewed by the auditor(s) in order to determine which are to be reported as major non-conformities, non-conformities, or observations.

3.6.13 At the end of the audit, prior to preparing the audit report, the auditor(s) shall hold a meeting with the senior management of the Company or ship and those responsible for the functions concerned. The purpose of the meeting is to present major non-conformities, non-conformities and observations to the Company or shipboard management in such a manner that they clearly understand the results of the audit.

### **3.7 Audit report**

3.7.1 The audit report shall be prepared by the lead auditor, based on information gathered by and discussed with the audit team members. It must be accurate and complete, reflect the content of the audit and shall include the following items:

- (i) the date of completion of the audit;
- (ii) the scope and objectives of the audit;
- (iii) auditor(s)
- (iv) all major non-conformities, non-conformities, and observations.



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(v) Audit Plan

3.7.2 The audit report shall be made available to the Company or ship as applicable.

3.7.3 The Company shall maintain reports and records of all audits performed both ashore and on board its ships (refer to 2.2.2).

### **3.8 Corrective Action Follow-up**

3.8.1 The non-conformity report (NCR) shall state clearly the act or situation identified as non-compliant with the Company's SMS or the ISM Code.

3.8.2 The content of the non-conformity report shall be complete and concise and written in such a manner as to be easily understood. Clarity shall not be sacrificed for the sake of brevity.

3.8.3 When writing NCRs auditors shall, whenever possible, include a reference to the applicable requirement of the Company's SMS, and when necessary for the sake of clarity, restate the requirement.

3.8.4 NCRs shall include a reference to the relevant clause or sub-clause of the ISM Code.

3.8.5 A DOC or SMC may be issued, endorsed or renewed before all identified non-conformities have been closed out provided that a schedule has been agreed between the Company and the auditor(s) for the implementation of the necessary corrective actions.

3.8.6 Additional audit(s) may be necessary to confirm the validity of a DOC and/or SMC depending on the nature of any non-conformities identified. The Company is responsible for applying for any follow-up audit required by the auditor.

3.8.7 The Company is responsible for formulating and implementing corrective actions for any non-conformity identified by the auditor(s). A corrective action plan shall be submitted to the auditor within an agreed time period. An acceptable corrective action plan shall include actions for correcting the non-compliance, its cause analysis and actions to prevent recurrence. A schedule not exceeding three (3) months from the date of completion of the audit shall be agreed for the implementation of the corrective actions. The effectiveness of the corrective actions shall be verified not later than the next scheduled audit (annual, intermediate, renewal) and may be verified at an additional audit if performed after the agreed schedule for implementation of the corrective action.

3.8.8 The review of the Company's responses to non-conformities described in paragraph 3.6.7 is applicable only to non-conformities that are not considered to be major.

3.8.9 Failure to implement the agreed Corrective Action may be treated as grounds for invalidation of the DOC or SMC.

### **3.9 Company responsibilities pertaining to safety management audits**

3.9.1 The verification of compliance with the requirements of the ISM Code does not relieve the Company, management, officers or seafarers of their obligation to comply with national and international legislation related to safety and protection of the environment.

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**3.9.2 The Company is responsible for:**

- (i) informing relevant employees or organizational units about the objectives and scope of the audit;
- (ii) appointing responsible members of staff to accompany the auditor(s);
- (iii) providing the resources needed by the auditor(s) to ensure an effective and efficient verification process;
- (iv) providing access and objective evidence as requested by the auditor(s);
- (v) co-operating with the auditor(s) to ensure that the audit objectives are achieved;
- (vi) informing the RO about significant changes to the SMS, which may need an additional audit by the RO. These include major restructuring of the system (for example, the establishment of Branch Offices) and changes in the operations that introduce new hazards;
- (vii) requesting additional audit, when required.

**3.10 Responsibilities of the audit team**

**3.10.1 The auditor is responsible for:**

- (i) planning and carrying out assigned responsibilities effectively and efficiently;
- (ii) complying with the applicable requirements and other appropriate directives;
- (iii) reporting any major obstacles encountered in performing the audit;
- (iv) organising specialist technical assistance required to fulfil the competence requirements of the audit when necessary;
- (v) clearly communicating non-conformities and observations to the Company or shipboard management immediately;
- (vi) reporting the full audit results clearly, conclusively and without undue delay;
- (vii) making the audit report available to the Company or shipboard management;
- (viii) verifying the effectiveness of corrective actions taken by the Company.

**3.10.2 Documents and information pertaining to the certification shall be treated in confidence.**

**3.10.3 An ISM auditor identifying a technical deficiency deemed to present a serious threat to safety or the environment or that requires attention by the responsible Classification Society or the Administration shall:**

- (i) establish if the Company has taken appropriate action to correct the technical deficiency. In every case the auditor shall establish that such technical deficiencies have been reported to the responsible Classification Society or Administration;



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- (ii) establish whether the technical deficiency constitutes or is symptomatic of a major non-conformity and, if so, follow the requirements of section 3.11.

### **3.11 Response to Major non-conformities**

3.11.1 A major non-conformity raised on a ship must be downgraded before the ship can sail. Downgrading may take place only after verifiable action has been taken to remove any serious threats to personnel, the ship or the environment. An acceptable plan for implementation not exceeding three (3) months shall be agreed for completion of the necessary corrective actions.

3.11.2 Following the downgrading of a major non-conformity raised on a ship, at least one additional audit should be carried out on a ship within the time frame indicated in the agreed corrective action plan to verify that effective actions have been implemented (refer to IMO Circular MSC/Circ.1059). In addition to the additional audit on a ship, an additional audit of the Company's shore-based operations may also be carried out if the auditor deems it necessary.

Following the downgrading of a major non-conformity raised during DOC audit, at least one additional audit of the Company's shore-based operations should be carried out within the time frame indicated in the agreed corrective action plan to verify that effective actions have been implemented.

3.11.3 If an audit is carried out later than the specified time window a major non-conformity shall be raised.

3.11.4 Where a major non-conformity has been raised because a DOC audit has not taken place within the specified time, the associated SMCs continue to remain in place without any additional verification provided that no other major non-conformity remains unresolved.

3.11.5 All major non-conformities, including those that are downgraded before the completion of the audit, shall be reported to the corresponding Administrations as follows:

- (i) Major non-conformities identified during office audits shall be reported to all Administrations on whose behalf DOCs have been issued and by which the RO is authorised.
- (ii) Major non-conformities identified during shipboard audits shall be reported only to the Administration of the ship concerned.

3.11.6 Where the corresponding DOC has been issued by a RO, major non-conformities identified during shipboard audits shall be reported to that RO.

3.11.7 A Certificate cannot be issued, endorsed, renewed or extended before any major non-conformity has been downgraded.

### **3.12 Withdrawal of Certification**

3.12.1 The Company shall be required to notify the affected ships immediately its DOC is withdrawn.

3.12.2 A Company whose Document of Compliance has been withdrawn shall not be issued with an Interim Document of Compliance. Furthermore, a new Document of Compliance shall not be issued unless an initial verification has been carried out. The expiry date of the new Document of Compliance shall be the same as that of the withdrawn document.



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3.12.3 Where the associated Safety Management Certificates are withdrawn as a result of the withdrawal of Document of Compliance caused by a major non-conformity, new Safety Management Certificates shall not be issued unless the Document of Compliance has been reinstated and a verification to the scope of an initial verification has been carried out on board a representative sample of the ships. At least one ship of each type operated by the Company shall be verified.

3.12.4 An Interim Safety Management Certificate shall not be issued to a ship from which the Safety Management Certificate has been withdrawn as a result of a major non-conformity. Furthermore, a new Safety Management Certificate shall not be issued unless an initial verification has been carried out on board the ship. In addition, depending on the nature of the major non-conformity raised against the Safety Management System implemented on board the ship, the validity of the Document of Compliance may also need to be verified by an audit, equivalent in scope to an annual audit, prior to the issue of the Safety Management Certificate. The new Safety Management Certificate shall have the same expiry date as the withdrawn certificate.

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## **Annex 1**

### **COMPANY BRANCH OFFICE VERIFICATION**

#### **1 General**

- 1) Where a Company assigns SMS responsibilities to Branch Offices, the verification shall include a representative sample of those offices. The sample selected shall be sufficient to ensure that all elements of the SMS and all requirements of the ISM Code can be assessed.
- 2) The audit of each Branch Office shall address each requirement of the ISM Code relevant to that office.
- 3) The Company shall have performed internal audits of all Branch Offices and relevant records shall be made available to the auditors.
- 4) Where the Company assigns SMS responsibilities to Branch Offices, the list of Branch Offices shall be indicated in an attachment to the DOC.

#### **2 Initial DOC audit**

- 1) Where the same activities are performed by all Branch Offices, the number of Branch Offices to be verified is:
  - a. two if the total number of Branch Offices is two or three;
  - b. three if the total number of Branch Offices is from four to six; and
  - c. to be agreed if the total number of Branch Offices is more than six.
- 2) Where different activities are performed by Branch Offices, the number of Branch Offices performing the same activities to be verified is:
  - a. two if the total number of Branch Offices performing the same activities is two or three;
  - b. three if the total number of Branch Offices performing the same activities is from four to six; and
  - c. to be agreed if the total number of Branch Offices performing the same activities is more than six.
- 3) Notwithstanding the above, if a Company nominates an office as its Head Office then it must be audited as part of the initial verification.

#### **3 Annual DOC audit**

- 1) Annual audit shall ensure that all Branch Offices are visited during the period of validity of the DOC. The audit of the Branch Offices shall be agreed with the Company. The frequency of Branch Office audits shall be determined based on the nature and extent of the activities undertaken by each Branch Office.
- 2) If an additional Branch Office is included by the Company in its SMS during the period of validity of the DOC, it shall be verified no later than at the next scheduled audit at which time the additional Branch Office shall be added to the list of Branch Offices.

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## **Annex 2**

### **COMMUNICATIONS WITH FLAG STATES AND BETWEEN ROs**

- 1) To ensure that the requirements of SOLAS Chapter I Regulation 6(d), SOLAS Chapter IX, IMO Resolution A.1118(30) and Resolution A.741(18) as amended are fulfilled, the following communication procedures must be followed when a DOC or SMC become invalid according to paragraph 3.11.
- 2) When a certificate is invalidated, the issuing RO shall without undue delay but not later than within 5 working days, from the decision to invalidate, inform the flag State and other ROs using the form "Notification of Invalidation of ISM Certification" attached to this document as Annex 7 or by other means including the same information.
- 3) The communication shall be limited to the identity of the ship, the Company, the substance of the major non-conformity and the date of audit.



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## **Annex 3**

### **PORT STATE CONTROL**

- 1) When attending a ship as a result of a Port State Control action, the RO that issued the SMC shall consider the objective evidence presented by the PSCO.
- 2) Where the auditor considers that the evidence indicates the presence of a major non-conformity, the major non-conformity shall be documented in the usual way, the Company shall be notified immediately and the auditor shall proceed as indicated in paragraph 3.11.
- 3) In the absence of any specific instructions to the contrary, the scope of any additional audit carried out following the detention of a ship that holds an interim SMC shall include, as a minimum, the deficiencies identified by PSCO. Implementation will be verified to the extent that the available evidence permits.
- 4) In cases where the PSCO alleges that there is evidence of a major non-conformity, and the auditor of the SMC-issuing RO considers that there is not, the PSCO, under the authority vested in the officer by the authorities of the port, will decide what further action is to be taken.
- 5) If the auditor of the SMC-issuing RO disagrees with the actions taken by the PSCO, the auditor is to provide the PSCO with a written explanation of the disagreement and inform the flag State.

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## **Annex 4**

### **SHIP TYPES ON ISM CERTIFICATES**

#### **1 Determination of ship types to be listed on DOCs and SMCs**

- 1) The ship types listed on DOCs and SMCs shall be consistent with the ship types defined in SOLAS IX Regulation 1 and on pertinent SOLAS documentation aboard ship.
- 2) Some ships are designed for use in multiple services (for example Oil Tanker/Chemical Tanker). The ship type(s) listed on the DOC and SMC shall reflect the service(s) in which the ship is fit to serve, and the safety management system shall include appropriate procedures for these ship types.

#### **2 Retention of ship types on DOCs**

- 1) The auditor shall determine at each scheduled (see 3.6.1) audit of the Company, the ship types operated by the Company at the time of the audit. If the auditor discovers that the Company no longer operates a ship type listed on the DOC, the auditor shall either document an observation to formally advise the Company that the ship type will be removed from the DOC if this situation persists at the next scheduled audit or immediately remove the ship type no longer operated from the existing DOC.
- 2) If, at a scheduled audit, the auditor determines that the Company has not been operating ships of a particular type since a previous scheduled audit the DOC(s) shall be replaced with new DOC(s) without the ship type no longer operated. If however, the Company continues to manage ships of a particular type within its fleet then, unless otherwise instructed by the Administration, all DOC's may be endorsed for this ship type.

## Annex 5

### COMPANY CERTIFICATION SCENARIOS

	Scenario	Type of audit	Minimum scope of audit	Carried out by:	Certificate issued
1	Change of Company name and/or address	Verification on site	<ul style="list-style-type: none"> <li>- Verify that Company organisation and responsibilities remain essentially unchanged.</li> <li>- Ensure that necessary changes have been made to SMS documentation.</li> <li>- Verify that changes have been reported to Administration(s) to update the CSR for each vessel.</li> </ul>	Auditor	Reissue DOC and SMCs with new name. (expiry date as previous certificates)
2	Change to RO from a Classification Society not holding a QSCS certificate	Initial audit	<ul style="list-style-type: none"> <li>- Audit to address all elements of the ISM Code.</li> <li>- All corrective action to be verified and previous NCNs to be closed out by the gaining society.</li> </ul>	Auditor	DOC with validity not exceeding 5 years from audit completion date
3	Additional ship type on DOC	Interim audit on site	<ul style="list-style-type: none"> <li>- Review changes to SMS to accommodate new ship type.</li> <li>- Review plans to implement changes (minimum of 1 ship required).</li> </ul>	Auditor	Interim DOC for new ship type
4	Change from Interim DOC to DOC in Scenario 3	Additional audit on site	<ul style="list-style-type: none"> <li>- Verify additional requirements for ship type have been implemented.</li> <li>- Review results of internal audit.</li> </ul>	Auditor	DOC (expiry date as for existing ship type)
5	Minor change to SMS	Verify at next audit	<ul style="list-style-type: none"> <li>- Assess potential impact on SMS when advised and decide whether visit is required.</li> </ul>		No action
6	Major change to SMS	Verify on site	<ul style="list-style-type: none"> <li>- Verify changes are appropriate and adequate for new circumstances.</li> </ul>	Auditor	No action
7	Additional flag	Additional audit on site	<ul style="list-style-type: none"> <li>- Verify availability of flag State instructions and their incorporation into the management system.</li> </ul>	Auditor	DOC with same expiry date as the DOC issued on behalf of the other flag State(s)

Note: Above scenarios may be subject to flag State requirements and shall only be applied in the absence of any instructions from the Administration.



## Annex 6

### SHIP CERTIFICATION SCENARIOS

	Scenario	Condition	Action required	Scope of audit and certification
1	Change of ship's name	Conducted by a surveyor or an auditor	Verification on board	1. Verify correct ship's name on all Certificates and Documents. 2. Amend/reissue SMC with new ship's name, as appropriate. <i>Note: SMC must be amended by issuing RO or by special arrangement<sup>1</sup>. Replacement SMC shall have the same expiry date as the current SMC.</i>
2	Change of flag	Conducted by an auditor.	Interim audit on board	1. Interim audit as required by ISM Code, 14.4 2. Issue interim SMC.
3	Change in IMO ship type	Conducted by an auditor.	Interim audit on board	1. Interim audit as required by ISM Code, 14.4. 2. Issue Interim SMC with new ship type.
4	Adding IMO ship type (e.g. from bulk carrier to OBO)	Conducted by an auditor	Interim audit on board	1. Interim audit as required by ISM Code, 14.4. 2. Issue interim SMC with both ship types.
5	Change of ship type, dual to single (e.g. OBO to oil tanker)	Conducted by a surveyor or an auditor	Verification on board	1. Evidence of surrender of SOLAS or MARPOL related certificates for the original ship type. (e.g. surrender of IOPP Supp. B when going from OBO to bulk on permanent basis). 2. Amend/issue replacement SMC with appropriate ship type and same expiry date as the current SMC. <i>Note: SMC must be amended by issuing RO or by special arrangement<sup>1</sup>.</i>
6	Change to RO from a Classification Society not holding a QSCS certificate	Conducted by an auditor	Initial audit on board <sup>2</sup>	1. Audit to address all elements of ISM Code. 2. Issue SMC.
7	Ship out of service between 3 and 6 months <sup>3</sup>	Conducted by an auditor	Additional audit if required by the flag State	Endorse SMC as appropriate.
8	Ship out of service more than 6 months <sup>3</sup>	Conducted by an auditor	Interim audit on board	1. Interim verification. 2. Issue Interim SMC.
9	Intermediate audits requested after the end of the audit time window	Conducted by an auditor	Intermediate audit on board	1. Major NC raised that may be downgraded based on completion of audit. 2. Additional audit within 3 months required. 3. If reinstated, SMC to be endorsed with a statement (e.g. Validity reinstated with scope as initial). If re-issued, SMC to have same expiry date as previous certificate.
10	Change of Company name and/or address		Attendance on board not required	1. Verify DOC has been reissued with new Company name and address. 2. Reissue SMC with the new Company name and address.

Note: Above scenarios may be subject to flag State requirements and shall only be applied in the absence of any instructions from the Administration.

<sup>1</sup> The RO may with permission from the Administration authorize a surveyor from the vessel's Classification Society, if other than the ISM RO, to amend SMC.

<sup>2</sup> Vessels with interim SMC, and which are not yet ready for initial audit, shall be issued with an interim SMC with same validity as the certificate issued by the losing RO. The auditor shall take into account that there may not yet be records for all activities.

<sup>3</sup> These instructions do not apply to ships for which seasonal lay-ups are a normal part of their operational routine – refer to MSC-MEPC.7/Circ.9.

## NOTIFICATION OF INVALIDATION OF ISM CERTIFICATION

- ☐ Document of Compliance
- ☐ Safety Management Certificate

Ship's Name:		IMO No.	
Company Name and Address		Certificate No.	
		Issued by:	
The audit was conducted on behalf of the government of:			
Type of audit:	Annual (office) <input type="checkbox"/>	Intermediate (ship) <input type="checkbox"/>	Additional <input type="checkbox"/> Renewal <input type="checkbox"/>
(Tick as appropriate)			
REASON FOR INVALIDATION OF CERTIFICATION (specify):          			
Name:	Position:	Society:	Date:

**Distribution:**

- To Company
- Copy to Administration
- Copy to Port State Authority (if appropriate)
- Copies to ROs responsible for issue of SMCs (office audit)
- Copy to RO responsible for issue of DOC (ship audit)
- Copy to Classification Society (ship audit)

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## **Annex 8**

### **VERIFICATION OF COMPLIANCE WITH FLAG STATE REQUIREMENTS**

- 1) Unless otherwise instructed by the Administration, auditors shall verify compliance with flag State requirements by sampling in the same way that compliance with other mandatory requirements is verified.
- 2) Where Administrations have specified requirements to be verified at every scheduled audit, either on board or ashore, the RO may formulate an appropriate audit plan considering the additional time that may need to be added to the audit duration and inform the company/ship accordingly.



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## **BCS-PR 10    Procedure for the Selection Training, Qualification and Authorisation of Marine Management Systems Auditors**

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Note:

1.    This Procedural Requirement applies from 1 January 2021.

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  10. Update training
- Appendix 1. Detailed learning objectives

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## **1. General**

1.1 This Procedural Requirement describes the BCS requirements for the selection, training, qualification and authorisation of marine management systems auditors responsible for verifying compliance with the ISM and ISPS Codes. These requirements have been developed in accordance with the provisions outlined below.

1.2 Paragraph 4.2 of Appendix 1 of IMO Resolution A.739(18) *"Minimum standards for recognized organizations acting on behalf of the Administration"* requires Recognised Organisations to provide "a systematic training and qualification regime for professional personnel engaged in the safety management system certification process, to ensure proficiency in the applicable management criteria as well as adequate knowledge of the technical and operational aspects of shipboard operational management".

1.2bis Paragraph A2.3.5.2 of Appendix 2 of IMO Resolution MSC.349(92) *"Specifications on the survey and certification functions of recognized organizations acting on behalf of the flag State"* and MEPC.237(65) requires that "the system shall comply with the qualification and training requirements for ISM Code assessors contained in the Guidelines on Implementation of the International Safety Management (ISM) Code by Administrations".

1.3 Paragraphs 3 and 4 of the Appendix to IMO Resolution A.1118(30) *"Revised guidelines on the implementation of the International Safety Management (ISM) Code by Administrations"* contain standards of competence and qualification arrangements for those who are to participate in verification of compliance with the requirements of the ISM Code.

1.4 Paragraph 4.2 of Appendix 1 of IMO Circular MSC/Circ.1074 *"Interim guidelines for the authorization of Recognized Security Organizations acting on behalf of the Administration and/or Designated Authority of the Contracting Government"* requires "the provision of a systematic training and qualification regime for its professional personnel engaged in the maritime management system certification process to ensure proficiency in the applicable quality and security management criteria as well as adequate knowledge of the technical and operational aspects of maritime security management."

## **2. Competence requirements for marine management systems auditors**

2.1 Those responsible for verifying compliance with the requirements of the ISM and ISPS Codes must be able to demonstrate knowledge and understanding of:

1. The principles and practice of management systems auditing.
2. The requirements of the ISM and ISPS Codes and their interpretation and application.
3. Mandatory rules and regulations and applicable codes, guidelines and standards recommended by the IMO, Administrations, BCS and maritime industry organisations.
4. Basic shipboard operations including emergency preparedness and response.

See Appendix 1 for a more detailed list of learning objectives.



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2.2 In addition, they must demonstrate that they have the ability to apply such knowledge and understanding and that they are capable of carrying out effective verification audits of the shore-based and shipboard aspects of marine management systems against the ISM and ISPS Codes as applicable

The auditor must possess the competence to:

1. determine whether the management system elements conform or do not conform with the requirements of the applicable Code;
2. determine the effectiveness of the Company's safety management system, or that of the ship, in order to ensure compliance with rules and regulations as evidenced by the statutory and classification survey records;
3. assess the effectiveness of the safety management system to ensure compliance with other rules and regulations which are not covered by statutory and classification surveys and to enable verification of compliance with these rules and regulations; and
4. assess whether the safe practices recommended by the IMO, Administrations, BCS and maritime industry organizations have been taken into account.

2.3 The competences described above may be acquired as a result of any combination of the following:

1. Previous relevant qualifications and experience.
2. Theoretical training.
3. Practical training.

### 3. Selection Criteria

3.1 In order to be accepted for training as a marine management systems auditor, the candidate must hold, as a minimum:

**Either** a qualification from a tertiary institution recognised by the Administration or by BCS within a relevant field of engineering or physical science (minimum two-year programme);

**Or** a qualification from a marine or nautical institution and relevant seagoing experience as a certificated ship's officer.

3.2 In addition, the candidate must have at least five (5) years of experience in areas relevant to the technical or operational aspects of shipboard operational management. Such experience may be gained in the following ways:

- ship classification or statutory surveys; or
- sea-going service as a certificated watch-keeping officer; or
- employment in a technical role (for example: technical manager, superintendent, operations manager) in a ship management company; or
- any combination of these three.

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3.3 Exceptionally, alternative qualifications and experience may be considered provided that they can be shown to be at least equivalent to those specified in paragraphs 3.1 and 3.2 above, are an acceptable basis for marine auditor training and are sufficient to ensure the candidate's credibility in the eyes of the Administrations, the companies and the industry as a whole.

#### **4. Theoretical training**

4.1 Theoretical training should address all the areas listed in paragraph 2.1 above. The time spent on each topic and the level of detail that it is necessary to include will depend on the qualifications and experience of the trainees, their existing competence in each subject, and the number of training audits to be carried out.

4.2 A minimum of ten (10) days of theoretical training shall be provided. Where appropriate, some elements may be delivered by means such as distance learning and e-learning. One day of distance or e-learning is considered equivalent to one day of classroom training. However, at least fifty percent of the total theoretical training days shall be classroom-based in order to allow for discussion and debate and to allow candidates to benefit from the experience of the trainer. The training may be modular in structure, in which case the period over which the theoretical training is delivered must not exceed twelve (12) months.

#### **5. Examination**

5.1 Confirmation that the learning objectives have been met shall be demonstrated by written examination<sup>1</sup> at the end of the theoretical training, or at the end of each module if the training is not delivered in a single training course.

5.2 If the trainee fails the written examination, or any part thereof, a single resit will be permitted. A candidate who fails the resit will be required to undergo the corresponding theoretical training again before being allowed to make another attempt at the examination.

5.3 A candidate who passes a written examination shall receive a certificate, statement or other record indicating which of the competences specified in paragraph 2.1 have been addressed, and the dates on which the corresponding training took place.

#### **6. Practical training**

6.1 A person authorised to carry out ISM and ISPS audits must have completed at least five (5) training audits under supervision and in accordance with the following criteria:

1. At least four (4) of the audits must be ISM audits.
2. At least one (1) of the ISM audits must be a company audit.
3. At least one (1) of the ISM audits must be a shipboard audit.
4. At least one (1) of the audits must be an ISPS audit.
5. The training audits may be initial, renewal, annual or intermediate. Additional audits may be used, but only when they are full scoped audits covering all elements of the applicable Code and the relevant management system.

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<sup>1</sup> This can be done in paper or electronic format.



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6. All training audits must be completed under the supervision of suitably qualified and experienced auditors. Levels of participation of the trainee auditor may vary as training progresses, and shall be concluded in the trainee demonstrating the ability to plan, conduct and report an audit independently. The number of trainees participating in any training audit shall not exceed two (2).
  7. All training audits must be completed within twenty-four (24) months of the end of the theoretical training. Where this is not achieved for any reason, each Classification Society shall document the additional measures taken in order to complete the training.
  8. When fully scoped ISM and ISPS audits are carried out during the same visit they may be counted as individual ISM and ISPS audits for the purpose of arriving at the total number of audits carried out under supervision.

6.2 Training audits must include preparation and reporting.

6.3 The training audits described in paragraph 6.1 constitute the minimum requirement, and each Classification Society shall establish procedures for ensuring and demonstrating that the competence required by paragraph 2.2 has been achieved. The final number of training audits shall be sufficient not only to demonstrate competence, but also to ensure that the prospective auditor has had sufficient practice to provide the confidence necessary to work alone. Competence, sufficient practice and necessary confidence of the prospective auditor shall be confirmed by the trainer supervising the final training audit before authorization is granted to conduct audits independently. Final training audit before authorisation shall be used for granting the authorisation for one trainee only, regardless of whether a second trainee is also attending the same training audit.

6.4 In addition to the training audits described above, candidates must have completed a shipboard security plan (SSP) approval under supervision. This may be carried out as part of the theoretical classroom training. Amended SSPs may be used if the complete plan was sent for re-approval.

6.5 Where a Classification Society chooses to restrict an auditor's authorisation to ISM audits only, it is not necessary for the candidate to undergo the theoretical and practical training relevant to the ISPS Code and the related audit and certification activities. The total number of training days may be reduced accordingly.

## **7. Training (general)**

7.1 The total training must not be less than the minima specified in 4.2 and 6.1 above except in those cases in which theoretical and/or practical training are reduced based on the candidate's previous qualifications and experience or when the candidate's authorisation is to be restricted to ISM only.

7.2 Before participating in any SSP approvals or ISPS Code verifications, a candidate must have undergone a background security check completed by, or on behalf of, the Classification Society.

7.3 Every auditor who participates in SSP approvals or ISPS Code verifications shall be issued with a durable and tamper-proof identity card indicating his or her authorisation as a Maritime Security Auditor.



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## **8. Authorisation**

8.1 A record shall be maintained, indicating authorisation granted to candidates who have passed the written examination required by paragraph 5.1 and who have successfully completed the practical training described in paragraph 6.

8.2 Where BCS chooses to restrict an auditor's authorisation to ISM audits only, this must be clearly indicated in the record, and procedures must exist to ensure that no work is undertaken for which authorisation has not been given.

8.3 All ISPS auditors must be authorised as ISM auditors.

## **9. Maintenance of authorisation**

9.1 A qualified auditor who has not performed at least two (2) audits ) in any two (2) calendar year period shall be required to undergo two (2) revalidation audits under the supervision of a suitably qualified and experienced auditor. These audits may be ISM or ISPS , ship or office, addressing all aspects of the corresponding code. MLC inspections addressing all aspects of the Convention can be substituted for the maintenance of this authorisation.

9.2 A qualified auditor who has not performed any audits in any five-year period shall be required to undergo revalidation training to include a one-day refresher course, two ISM audits and one ISPS audit under the supervision of a suitably qualified and experienced auditor. For auditors who are authorised for ISM only, the supervised ISPS audit need not be included.

The one-day refresher course should include familiarisation with the latest version of the audit and certification procedures, changes in regulatory requirements, new or updated reporting systems, the most recent guidance on the interpretation and application of the Codes, etc. This course may be delivered by alternative learning methods (distance learning, video conference, webinars, etc.).

## **10. Update training**

10.1 BCS must ensure that its auditors are kept informed of all regulatory and procedural developments related to the ISM and ISPS Codes and that they receive guidance on matters of regulatory and procedural interpretation as these evolve.

## **11. Records**

11.1 Records shall be created and retained for each auditor indicating:

1. Qualifications and experience gained prior to training as a Marine Management Systems Auditor
2. Theoretical training received
3. Examination results
4. Practical training received
5. Authorisations granted
6. Update training received

7. Re-authorisation in the event of lapsed authorisations

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## **Appendix 1**

### **Detailed learning objectives**

Those responsible for verifying compliance with the ISM and ISPS Codes must be able to demonstrate knowledge and understanding of:

#### **1. The principles and practice of management systems auditing**

- The terminology used in management systems and their verification.
- General management systems principles and concepts.
- The design, implementation and administration of a documented management system.
- Continual improvement in a management system.
- Audit objectives.
- The roles, responsibilities and activities of the auditor.
- The preparation and planning of an audit.
- The execution of the audit.
- Audit reporting and follow-up.
- The management of an audit team.
- The content of the procedures and work instructions that govern the ISM and ISPS audit and certification process.

#### **2. The requirements of the ISM and ISPS Codes and their interpretation and application**

- The background to, and history of, the development of the ISM and ISPS Codes.
- The objectives of the ISM and ISPS Codes.
- The application of the ISM and ISPS Codes.
- The risk management and human element considerations that underpin the codes.
- The ISM Code as a management systems model.
- Certification requirements (certificate types and their validity, interim arrangements, withdrawal, special scenarios, etc.).
- The specific requirements of the ISM and ISPS Codes and their interpretation.
- The companies' responsibilities in relation to complying with the requirements of the ISM and ISPS Codes.

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**3. Mandatory rules and regulations and applicable codes , guidelines and standards recommended by the IMO, Administrations , BCS and maritime industry organisations**

- The roles and functions of Administrations, port state authorities, the IMO, the ILO, BCS, IACS and other industry bodies.
- Purpose and scope and general content of SOLAS 74, MARPOL 73/78, STCW 78 and other conventions and the associated guidelines, certificates and records.
- Applicable codes, guidelines and standards issued by BCS and other industry organisations.

**4. Shipboard operations and shipboard security including emergency preparedness and response**

- Roles, responsibilities and interrelationships of the participants in maritime operations (owner, manager, agent, manning agent, etc.).
- Shore-based and shipboard organisation and management structure of the Company.
- Roles, responsibilities and interrelationships of shore-based and shipboard staff. •

Shipboard operations (navigation, cargo and ballasting operations, engine room operations, routine and breakdown maintenance, passenger management , security measures, management of sewage and garbage), with particular reference to specific ship types.

- Security threats and patterns, weapons, dangerous substances and devices, security equipment and systems and their operational limitations, characteristics and behaviour of persons likely to pose a security threat.
- Operational and security risk assessment techniques.
- Identification of potential emergency situations and preparations for emergency responses with particular reference to specific ship types.



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## **Addendum Notice to PR 10**

# **Procedure for the Selection, Training, Qualification and Authorisation of Marine Management Systems Auditors**

For the duration as shown in the validity section below, Paragraph 4, 6 & 9 in this document overrides that shown in BCS-PR 10

### **4. Theoretical training**

4.2 A minimum of ten (10) days of theoretical training shall be provided. Where appropriate, some elements may be delivered by means such as distance learning and e-learning. One day of distance or e-learning is considered equivalent to one day of classroom training. However, at least fifty percent of the total theoretical training days shall be classroom-based in order to allow for discussion and debate and to allow candidates to benefit from the experience of the trainer. The training may be modular in structure, in which case the period over which the theoretical training is delivered must not exceed twelve (12) months.

In case of extraordinary circumstances beyond the control of BCS, "at least fifty percent of the total theoretical training days shall be classroom-based" may not be possible to carry out. Distance learning or e-learning based on modern network technique which has the function to allow discussion and debate between trainees and trainers, could be considered equivalent to the classroom-based training.

Records of the equivalence shall be maintained by BCS.

### **6. Practical training**

6.1 A person authorised to carry out ISM and ISPS audits must have completed at least five (5) training audits under supervision and in accordance with the following criteria:

1. At least four (4) of the audits must be ISM audits.
2. At least one (1) of the ISM audits must be a company audit.
3. At least one (1) of the ISM audits must be a shipboard audit.
4. At least one (1) of the audits must be an ISPS audit.
5. The training audits may be initial, renewal, annual or intermediate. Additional audits may be used, but only when they are full scoped audits covering all elements of the applicable Code and the relevant management system.
6. All training audits must be completed under the supervision of suitably qualified and experienced auditors. Levels of participation of the trainee auditor may vary as training progresses, and shall be concluded in the trainee demonstrating the ability to plan, conduct and report an audit independently. The number of trainees participating in any training audit shall not exceed two (2).

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7. All training audits must be completed within twenty-four (24) months of the end of the theoretical training. Where this is not achieved for any reason, BCS shall document the additional measures taken in order to complete the training.

8. When fully scoped ISM and ISPS audits are carried out during the same visit they may be counted as individual ISM and ISPS audits for the purpose of arriving at the total number of audits carried out under supervision.

...

## **9. Maintenance of authorisation**

9.1 A qualified auditor who has not performed at least two (2) audits in any two (2) calendar year period shall be required to undergo two (2) revalidation audits under the supervision of a suitably qualified and experienced auditor. These audits may be ISM or ISPS, ship or office, addressing all aspects of the corresponding code. MLC inspections addressing all aspects of the Convention can be substituted for the maintenance of this authorisation.

In case of extraordinary circumstances beyond the control of BCS, an extension of three (3) months beyond due date, may be allowed for the following cases:

- where it is not possible to complete all training audits of an individual under supervision of suitably qualified and experienced auditors within twenty-four (24) months of the end of the theoretical training, as required by para.6.1.7 of this PR ;
- where it is not possible for qualified auditor to perform at least two (2) audits in any two (2) calendar year period, as required by para.9.1 of this PR.

Record of any such extensions granted are to be maintained by

### **BCS. Validity of Notice**

Enter into force date: 01 January 2021  
Valid until 31 December 2021

To be reviewed by BCS in the beginning of December 2021 to decide whether to further extend the validity or to revoke the notice.

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**BCS-PR  
10B**

**Procedure for the Selection, Training,  
Qualification and Authorisation of Maritime  
Labour Inspectors**

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Note:

1. This procedural requirement applies from 1 January 2017.



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  11. Records
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---

## **1. General**

1.1 This Procedural Requirement describes the BCS requirements for the selection, training, qualification and authorisation of maritime labour inspectors responsible for verifying compliance with the Maritime Labour Convention, 2006 (MLC, 2006). These requirements have been developed in accordance with the provisions outlined below.

1.2 Paragraph 3 of Standard A5.1.4 of the MLC, 2006 *"Inspection and enforcement"* requires that "Adequate provision shall be made to ensure that the inspectors have the training, competence, terms of reference, powers, status and independence necessary or desirable so as to enable them to carry out the verification and ensure the compliance referred to in paragraph 1 of this Standard."

1.3 Paragraph 1 and subparagraph 1(b) of Standard A5.1.2 of the MLC, 2006 *"Authorization of recognized organizations"* requires that "the competent authority shall review the competency and independence of the organization concerned and determine whether the organization has demonstrated, to the extent necessary for carrying out the activities covered by the authorization conferred on it, that the organization has the ability to maintain and update the expertise of its personnel;"

1.4 Paragraph 4 of Guideline B5.1.2 of the MLC, 2006 *"Authorization of recognized organizations"* requires that "Each Member should require the recognized organizations to develop a system for qualification of staff employed by them as inspectors to ensure the timely updating of their knowledge and expertise."

## **2. Competence requirements**

2.1 Those responsible for verifying compliance with the requirements of the MLC, 2006 must be able to demonstrate:

1. Knowledge and understanding of the principles and practice of management systems auditing.
2. Knowledge and understanding of the requirements of MLC, 2006.
3. Awareness of applicable national laws and regulations and relevant international instruments.

See Appendix 1 for a more detailed list of learning objectives.

2.2 In addition, they must demonstrate that they have the ability to apply such knowledge and understanding and that they are capable of carrying out effective inspections of the seafarers' working and living conditions on board against the MLC, 2006.

2.3 The competences described above may be acquired as a result of any combination of the following:

1. Previous relevant qualifications and experience.
2. Theoretical training.
3. Practical training.

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### **3. Selection Criteria**

3.1 In order to be accepted for training as a maritime labour inspector, the candidate must be, as a minimum:

3.1.1 marine management systems auditor qualified in accordance with BCS-PR 10; or

3.1.2 survey staff qualified in accordance with BCS-PR 7. In addition, the candidate must have at least five years of experience in areas relevant to the technical or operational aspects of shipboard operational management. Such experience may be gained in the following ways:

- ship classification or statutory surveys; or
- sea-going service as a certificated watch-keeping officer; or
- employment in a technical role (for example: technical manager, superintendent, operations manager) in a ship management company; or
- any combination of these three.

3.2 Exceptionally, alternative qualifications and experience may be considered provided that they can be shown to be at least equivalent to those specified in paragraph 3.1 above and are an acceptable basis for maritime labour inspector.

### **4. Theoretical training**

4.1 Theoretical training should address all the areas listed in paragraph 2.1 above. The time spent on each topic and the level of detail that it is necessary to include will depend on the qualifications and experience of the trainees, their existing competence in each subject, and the number of training inspections to be carried out.

4.2 The training may be modular in structure, in which case the period over which the theoretical training is delivered must not exceed twelve months.

4.3 A minimum of five days of theoretical training shall be provided. Where appropriate, some elements may be delivered by means such as distance learning and e-learning. One day of distance or e-learning is considered equivalent to one day of classroom training. However, at least three days shall be classroom-based in order to allow for discussion and debate and to allow candidates to benefit from the experience of the trainer.

4.4 In addition, in case of candidate not qualified as a marine management systems auditor, the candidate must have attended at least one day of classroom-based training in the principles and practice of management system auditing.

### **5. Examination**

5.1 Confirmation that the learning objectives have been met shall be demonstrated by written examination<sup>1</sup> at the end of the theoretical training, or at the end of each module if the training is not delivered in a single training course.

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<sup>1</sup> This can be done in paper or electronic format.



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5.2 If the trainee fails the written examination, or any part thereof, a single resit will be permitted. A candidate who fails the resit will be required to undergo the corresponding theoretical training again before being allowed to make another attempt at the examination.

5.3 A candidate who passes a written examination shall receive a certificate, statement or other record indicating which of the competences specified in paragraph 2.1 have been addressed, and the dates on which the corresponding training took place.

## **6. Practical training**

6.1 A person authorised to carry out maritime labour inspection must have completed under supervision and in accordance with the following criteria at least:

1. one inspection within the scope of maritime labour initial, intermediate or renewal inspection for a qualified marine management systems auditor; or
2. two inspections within the scope of maritime labour initial, intermediate or renewal inspection for a survey staff not qualified as a marine management systems auditor.

6.2 All training inspections stated in 6.1 above must be carried out under the supervision of qualified inspectors and inspections must be completed within twenty-four months of the end of the theoretical training.

6.3 The duration of each maritime labour inspection is to include preparation and reporting time but not travel time.

6.4 The training inspections described in paragraph 6.1 constitute the minimum requirement, and each society should establish procedures for ensuring and demonstrating that the competence required by paragraph 2.2 has been achieved. The final number of training inspections should be sufficient not only to demonstrate competence, but also to ensure that the prospective inspector has had sufficient practice to provide the confidence necessary to work alone.

6.5 In addition to the training inspections described above, candidates must have completed a Declaration of Maritime Labour Compliance (DMLC) Part II review under supervision. This may be carried out as part of the theoretical classroom training. Amended DMLC Part II may be used if the complete DMLC Part II was sent for re-review.

## **7. Training (general)**

7.1 The total training must not be less than the minima specified in 4.3, 4.4 and 6.1 above except in those cases in which theoretical and/or practical training are reduced based on the candidate's previous qualifications and experience.

## **8. Authorisation**

8.1 A record shall be maintained, indicating authorisation granted to candidates who have passed the written examination required by paragraph 5.1 and who have successfully completed the practical training described in paragraph 6.

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## **9. Maintenance of authorisation**

9.1 A qualified inspector who has not performed at least one maritime labour inspection, addressing all aspects of the MLC, 2006 in any twenty-four-month period shall be required to undergo revalidation training of one maritime labour inspection under the supervision of a qualified inspector. ISM/ISPS audits can be substituted for the maintenance of this authorisation.

9.2 A qualified inspector who has not performed any maritime labour inspection in any five-year period shall be required to undergo revalidation training to include a one-day refresher course and one maritime labour inspection under the supervision of a qualified inspector. The refresher course should include familiarisation with the latest version of the inspection and certification procedures, changes in national regulatory requirements, new or updated reporting systems, the most recent guidance on the interpretation and application of the MLC, 2006. This course may be delivered by alternative learning methods (distance learning, video conference, webinars, etc.).

## **10. Update training**

10.1 Each society must ensure that its inspectors are kept informed of all regulatory and procedural developments related to MLC, 2006 and that they receive guidance on matters of regulatory and procedural interpretation as these evolve.

## **11. Records**

11.1 Records shall be created and retained for each inspector indicating:

1. Qualifications and experience gained prior to training as a maritime labour inspector
2. Theoretical training received
3. Examination results
4. Practical training received
5. Authorisations granted
6. Update training received
7. Re-authorisation in the event of lapsed authorisations

---

## **Appendix 1**

### **Detailed learning objectives**

Those responsible for verifying compliance with the MLC, 2006 must be able to demonstrate knowledge and understanding of:

#### **1. The principles and practice of management systems auditing**

- The terminology used in management systems and their verification.
- General management systems principles and concepts.
- The design, implementation and administration of a documented management system.
- Continual improvement in a management system.
- Audit objectives.
- The roles, responsibilities and activities of the auditor.
- The preparation and planning of an audit.
- The execution of the audit.
- Audit reporting and follow-up.
- The management of an audit team.

NOTE: Marine management systems auditors, including ISO qualified auditors, are deemed to have met above requirements.

#### **2. The requirements of the Maritime Labour Convention, 2006**

- The background to the MLC, 2006 and the maritime context.
- Articles of the MLC, 2006.
- Title 1 – Minimum requirements for seafarers to work on a ship.
- Title 2 – Conditions of employment.
- Title 3 – Accommodation, recreational facilities, food and catering.
- Title 4 – Health protection, medical care, welfare and social security protection.
- Flag State inspection and certification under Title 5.
- Complaints under Title 5.
- Port State Control under Title 5.
- Applicable national regulatory requirements for implementing the MLC, 2006.



- 
- The content of the procedures and work instructions of the Recognized Organization that govern the maritime labour inspection and certification process.

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# **Addendum Notice to PR 10B**

## **Procedure for the Selection, Training, Qualification and Authorisation of Maritime Labour Inspectors**

For the duration as shown in the validity section below, Paragraph 4, 6 & 9 in this document overrides that shown in BCS-PR 10B

### **4. Theoretical training**

4.3 A minimum of five days of theoretical training shall be provided. Where appropriate, some elements may be delivered by means such as distance learning and e-learning. One day of distance or e-learning is considered equivalent to one day of classroom training. However, at least three days shall be classroom-based in order to allow for discussion and debate and to allow candidates to benefit from the experience of the trainer.

In case of extraordinary circumstances beyond the control of BCS, "at least three days shall be classroom-based" may not be possible to carry out. Distance learning or e-learning based on modern network technique which has the function to allow discussion and debate between trainees and trainers, could be considered equivalent to the classroom-based training.

Records of the equivalence shall be maintained by BCS.

### **6. Practical training**

6.1 A person authorised to carry out maritime labour inspection must have completed under supervision and in accordance with the following criteria at least:

1. one inspection within the scope of maritime labour initial, intermediate or renewal inspection for a qualified marine management systems auditor; or
2. two inspections within the scope of maritime labour initial, intermediate or renewal inspection for a survey staff not qualified as a marine management systems auditor.

6.2 All training inspections stated in 6.1 above must be carried out under the supervision of qualified inspectors and inspections must be completed within twenty-four months of the end of the theoretical training.

...

### **9. Maintenance of authorisation**

9.1 A qualified inspector who has not performed at least one maritime labour inspection, addressing all aspects of the MLC, 2006 in any twenty-four-month period shall be required to undergo revalidation training of one maritime labour inspection under the supervision of a qualified inspector. ISM/ISPS audits can be substituted for the maintenance of this authorisation.

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In case of extraordinary circumstances beyond the control of BCS, an extension of three (3) months beyond due date, may be allowed for the following cases:

- where it is not possible to complete all training inspections stated in 6.1 of this PR above under the supervision of qualified inspectors within twenty-four months of the end of the theoretical training;
- where it is not possible for qualified inspector to perform at least one maritime labour inspection, addressing all aspects of the MLC, 2006 in any twenty-four-month period , as required by para.9.1 of this PR.

Record of any such extensions granted are to be maintained by

**BCS. Validity of Notice**

Enter into force date: 22 May 2020  
Valid until 31 December 2021

To be reviewed by BCS in the beginning of December 2021 to decide whether to further extend the validity or to revoke the notice.



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# BCS-PR 11 Procedure for Assigning Date of Build

The Class Certificate and the Society's Register of Ships shall indicate the **Date of Build** as defined below:

## **For New Construction**

The year, month and date at which the new construction survey process is completed shall be specified as the "**Date of Build**".

Where there is substantial delay between completion of construction survey process and the ship commencing active service, the date of commissioning may be also specified.

## **After Modifications**

After modifications are completed, the "**Date of Build**" shall remain assigned to the ship.

Where a complete replacement or addition of a major portion of the ship (see Footnote) is involved, the following shall apply:

- a. the "**Date of Build**" associated with each major portion of the ship shall be indicated where it has been agreed that the newer structure shall be on a different survey cycle;
- b. survey requirements shall be based on the "**Date of Build**" associated with each major portion of the ship;
- c. survey due dates may be aligned at the discretion of each Society.

## **Footnote:**

For example, a major portion of the ship may include a complete forward or after section, a complete main cargo section (which may include a complete hold / tank of a cargo ship), a complete block of deck structure of a passenger ship or a structural modification of a single hull to a double hull ship.

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## **Note:**

1. This Procedural Requirement is implemented from 1 January 2012.

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# BCS-PR 16 Procedure for providing lists of classed ships to Equasis

## 1 Definition

"EQUASIS" means the public-access information system on quality and safety-related information about the world's merchant fleet, [www.equasis.org](http://www.equasis.org)

"Technical Specifications" means the Technical Specifications for Data Exchange between members of the International Association of Classification Societies and Equasis, as may be revised from time to time.

## 2 Data supply to Equasis

BCS is to supply data files to Equasis listing ships in class and changes in class status. The data files and the frequency of sending them are to be in accordance with the Technical Specifications.

## 3 Data verification

Data verification is covered in the Technical Specifications.

Any errors in the data should be notified directly to BCS Head Office concerned.

Any questions or complaints on the data should be sent directly to Equasis MU, as relevant.

Attached:

Technical Specifications for Data Exchange between members of the International Association of Classification Societies and Equasis.

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Note:

1. This Procedural Requirement applies from 1 July 2020.
2. Acceptance of a classification society to be a data supplier using the attached Technical Specification remains the prerogative of the Equasis Editorial Board and Supervisory Committee.

# Data exchange between Members of the International Association of Classification Societies & Equasis

## Technical specifications

*tech\_IACS\_file\_format\_version\_1.12*  
*Version 1.12*  
*Nov 2020*





## Revisions

Version	Authors	Description	Date
0.0.1	Hervé GUICHARD	Initial document	10/07/2003
0.0.2	Hervé GUICHARD	Integration of the remarks made by E. BOULET	11/07/2003
0.0.3	Hervé GUICHARD	Modification of the procedures for management of inconsistencies	16/07/2003
0.0.4	Hervé GUICHARD	New rule for the "Date to be delivered" information. Inscription of the Reason Codes in the protocol and thus, suppression of the cross-reference panels. Addition of the reason in the error file. Reason Code only required for an insertion.	21/07/2003
0.0.5	Eric BOULET	Editorial modifications. Planning of supplies, Modelling, Handling of exceptions, Drafting of business rules. SMC & DoC management. Decoding tables management.	21/07/2003
0.0.6	Eric BOULET	Editorial proofreading	05/08/2003
0.1.0	George BARCLAY	Equasis approval	26/09/2003
0.1.1	G. BARCLAY & A. BERGONZO	Translation & modifications	19/11/2003
0.1.5	Hervé GUICHARD	Modification in accordance with the principle of separated supplies from the different IACS Members	19/03/2004
0.1.6	A. Bergonzo	Editorial proofreading and modifications	24/03/2004
0.1.7	A. Bergonzo	2nd set of modifications	20/04/2004
0.1.8	Hervé GUICHARD	Additional explanations	
0.2	A. Bergonzo	Changes and preamble addition	14/06/2004
0.3	Hervé GUICHARD	Modification in accordance with the meeting held with IACS Members (Feb 05)	18/02/2005
0.4	Hervé GUICHARD	Intégration of comments. Collect of information on SMC audits without issue. Correction of business rules for acknowledgments of DoC ship types.	21/03/2005
0.5	Hervé GUICHARD	Distinction between data sets Specifications for file sent to IACS	18/04/2005
0.6	Eric BOULET	Technical annex ch.4	08/05/2005
0.7	Equasis/DSI	Amendments 2.1.5 & ch.4	20/05/2005
1	Equasis/DSI	Amendments, version for validation	08/06/2005
1.1	Alistair Stubbs	Amendments for further clarification	21/11/2005
1.2	Eric BOULET	Update technical annex ch.4	28/11/2005
1.3		Comments from Tony Choplin (BV) – working document.	30/03/2007
1.4	Philippe DUCHESNE	Restructured document after meeting BV-Equasis 03/07/2007	10/07/2007

<b>Version</b>	<b>Authors</b>	<b>Description</b>	<b>Date</b>
1.5	Philippe DUCHESNE	Comments E. Boulet, D. Jones	23/08/2007
1.6	Philippe DUCHESNE	Comments Tony Choplin, Eric Boulet technical annex replaced by examples	17/10/2007
1.7	Tony CHOPLIN	Minor updates + XML sample in line with the samples of the spec.	15/11/2007
1.8	Tony Choplin	wording	4/1/2008
1.8a	Tony Choplin	Wording	6/2/2008
1.9	IACS	Description of IACS member details updated	May 2015
1.10	IACS	Description of IACS member details updated in relation to DNV GL	Feb 2016
1.11	IACS	To harmonize the terms of 'recommendation' and 'condition of class' with only the term 'condition of class' being retained.	May 2019
1.12	IACS	An IACS member requested to update its company name from "Korean Register of Shipping" to "Korean Register".	Nov 2020

**Approval**

<b>Approving Party</b>	<b>Reviewer</b>	<b>Version Approved</b>	<b>Signature</b>	<b>Date</b>
IACS				
Equasis Management Unit				
Equasis Technical Unit				

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Revisions

Approval

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# 1. Introduction

## 1.1 Recipients

This document is intended for the Equasis Management Unit, Equasis Technical Unit and members of the International Association of Classification Societies (IACS).

## 1.2 Objective

This document contains the specification and methodology for the data exchange between Equasis and each IACS member:

IACS member
American Bureau of Shipping
Bureau Veritas
China Classification Society
Croatian Register of Shipping
DNV GL
Indian Register of Shipping
Korean Register
Lloyd's Register
Nippon Kaiji Kyokai
Polish Register of Shipping
RINA Services
Russian Maritime Register of Shipping

The list of emails authorized to send the files has to be kept by Equasis and if an IACS member want to change the address that send the files it has to inform Equasis prior to change.

This document is to be formally approved by the IACS Secretariat, the Equasis Management Unit and Equasis Technical Unit.

## 1.3 Acronyms and abbreviations

<b>DoC</b>	:	Document of Compliance.
<b>ISM</b>	:	International Safety Management.
<b>IACS</b>	:	International Association of Classification Societies.
<b>LR-F</b>	:	Lloyd's Register-Fairplay.

**IMO** : International Maritime Organization.

**SMC** : Safety Management Certificate.

**SMS** : Safety Management System

**SOLAS** : Safety of Life at Sea.

#### **1.4 Layout of the document**

Chapter 2 defines the general specifications.

Chapter 3 defines the detailed specifications. It describes the format of the data files.

Chapter 4 contains examples.



## 2. General specification

### 2.1 Scope of supply from IACS Members to EQUASIS

The information provided by IACS members concerns:

- Classification,
- Safety Management Certificate (SMC), as required by the ISM Code,
- Document of Compliance (DOC).

#### **Frequency:**

Each IACS Member sends information at its convenience, but the file exchanges for each category of certificate have to occur at least monthly. A more frequent update schedule would be advantageous, weekly for example.

Equasis sends information to IACS weekly.

#### **.Information concerning the classification:**

Equasis requires classification information for sea-going<sup>1</sup> ships of 100GT and over, with IMO numbers<sup>2</sup>, except:

- vessels solely engaged in fishing,
- ships without mechanical means of propulsion,
- pleasure yachts,
- ships engaged on special service,
- hopper barges,
- floating docks and structures classified in a similar manner,
- ships of war and troop ships,
- wooden ships in general.

Ships are subject to "classification cycles" of duration of 5 years. Each classification is limited by renewal surveys.

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<sup>1</sup> Sea-going ships are understood to mean the ships engaged in international voyage or domestic voyage but not in inland waters.

<sup>2</sup> The scope of reporting is in line with IMO Res. A.600(15) "IMO ship identification number scheme", with the inclusion of hydrofoils and hovercraft.

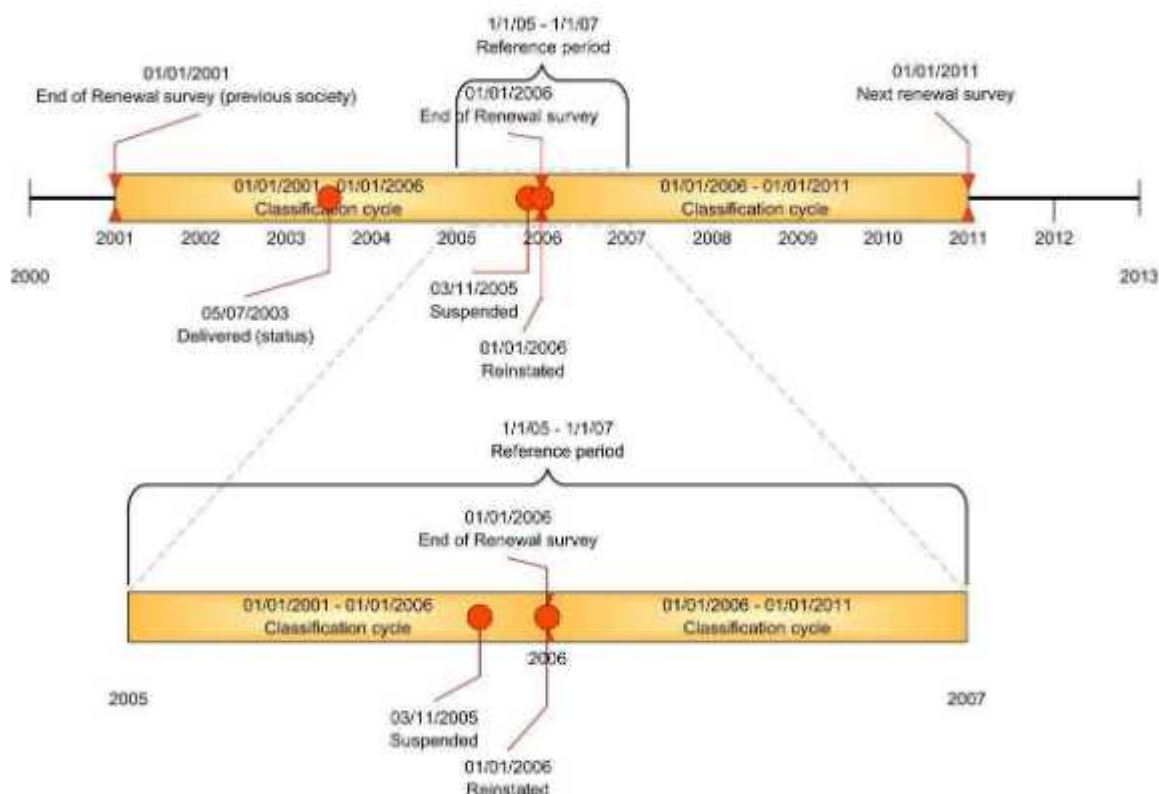
Equasis is to be provided with the following information:

- Dates of renewal surveys of classification cycles, which appear in the time frame of the last 730 days (2 years) or if the 2 year cycle is included between the 2 dates.

With the exception of classification cycles of ships which last status is "withdrawn", if this status is before the time frame (see example 3 below).

- Statuses which occurred in the last 730 days (2 years). For each status, the date is to be provided.

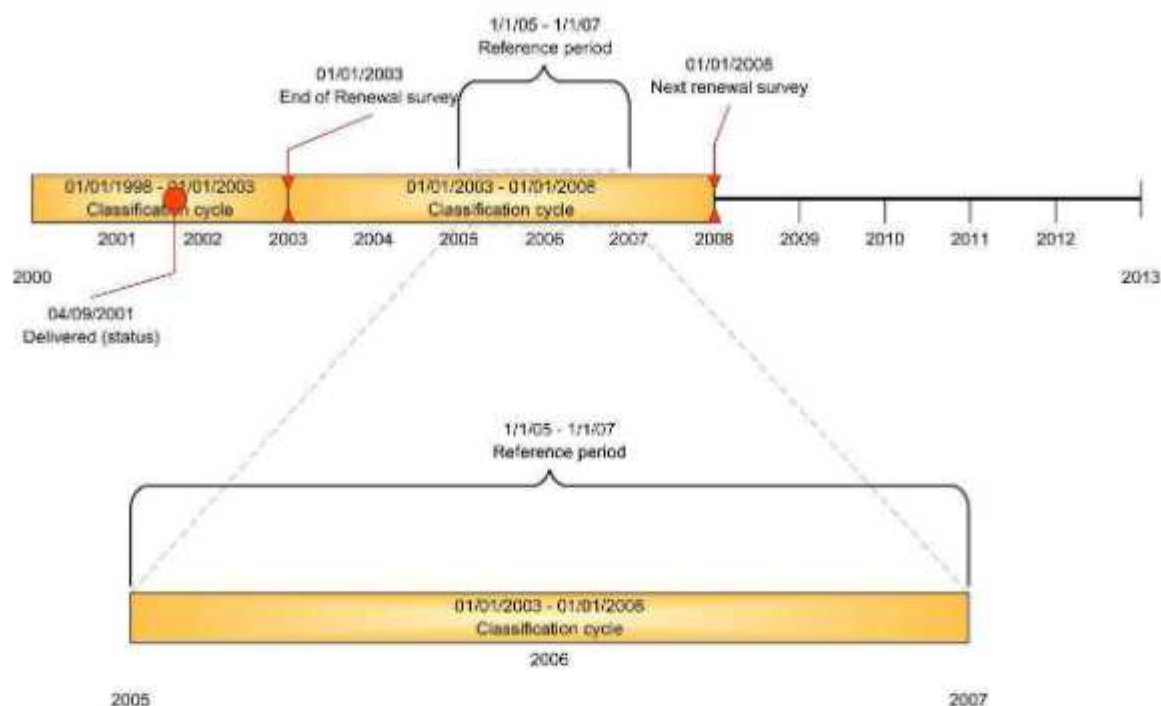
The following diagrams summarise the scope of information to be provided ("Reference date" is the date when data is extracted). The corresponding data to be sent for those examples are described at the end of this document.



## 1 Sample 1 : Ship imo no 1234561

The first sample is a ship with a renewal during the 2 years rolling period and some status also (suspension and reinstatement).

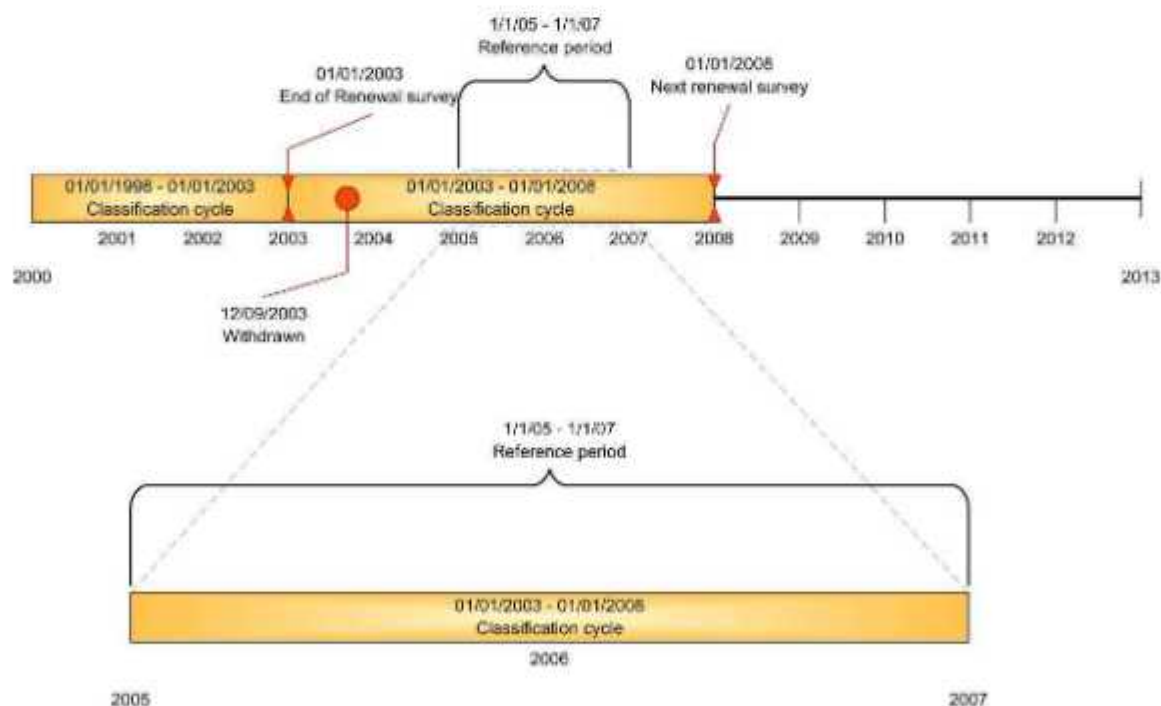
In this case, the latest cycle is reported and all status during the 2 years rolling period are reported.



## 2 Sample 2 : Ship imo no 1234562

The ship is classed during the period but no event during the 2 year rolling period (no renewal, no status).

In this case, the ship is reported with the previous and next renewal dates without any status.

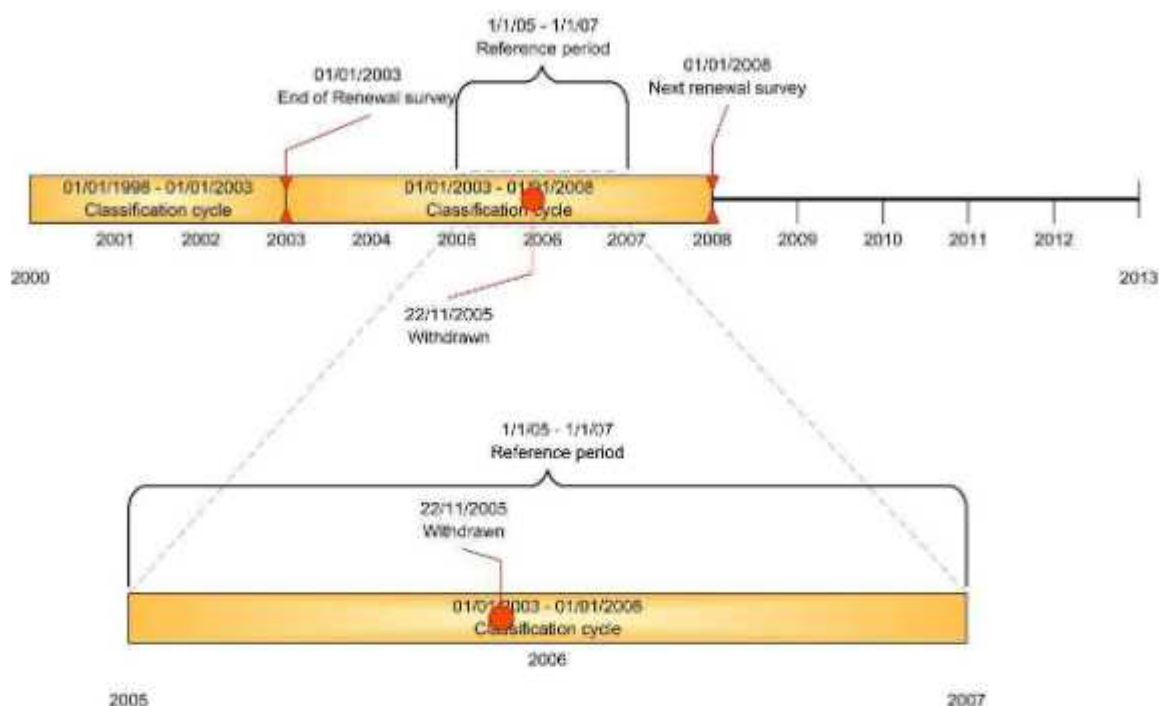


## 3 Sample 3 : ship imo no 1234563

The ship has been withdrawn before the 2 year rolling period but the renewal was scheduled after the 2 year period.



In this case, the ship is not sent since she is withdrawn for more than 2 year.



#### 4 Sample 4 : ship imo no 1234564

The ship has been withdrawn during the 2 year cycle.

In this case the previous and next renewal dates are reported with the status withdrawn.

Those sample are for the classification but the same principles can be applied to the SMC and DOC.

#### • Information concerning the SMC:

Equasis requires information on the SMC issued by IACS members, for ships of 500GT and over, with IMO numbers.

Equasis is to be provided with the following information:

- Date of the latest renewal audit and date of expiry of the certificate which appear in the time frame of the last 730 days (2 years) or if the 2 year cycle is included between the 2 dates,
- Statuses which occurred in the last 730 days (2 years). For each status, the date is to be provided.

#### • Information concerning the DoC:

Equasis requires information on the DoC issued by IACS members.

Equasis is to be provided with the following information:

- Dates of the latest renewal audit and date of expiry of the certificate which appear in the time frame of the last 730 days (2 years) or if the 2 year cycle is included between the 2 dates,
- Statuses which occurred in the last 730 days (2 years). For each status, the date is to be provided.

## **2.2 Scope of supply from EQUASIS to IACS Secretariat**

Equasis provides the IACS secretariat with a data file which contains an up to date report of all ships classed by their members.

### **Content:**

For all ships which are classed by an IACS classification society:

- IMO number,
- ship name (as recorded in the Equasis database and provided by LR-F)
- name of the existing class society,
- date of the last renewal survey,
- date of the next renewal survey,
- latest status,
- and the attached reason for the status.

### **Frequency:**

The file is sent on a weekly basis.

## **2.3 Responsibilities**

IACS Members are responsible for delivering data in conformity with this specification document.

Each IACS member registers a point of contact name and its e-mail address (see list in §1.2). Data files sent from unregistered e-mail addresses are rejected by Equasis.

Equasis is responsible for verification and conformity of the data to the specifications.

- If the data file provided by an IACS member is not of a compliant format and structure and codification (e.g. does not comply with the XML schema file, see §3.3), it is not loaded into Equasis.
- If more that 30% of the data does not comply with the business rules (see §3.3), the whole data file is rejected and no data is loaded into Equasis.

Equasis does not perform any consistency check in the data provided, and uploads the data supplied in the system without alteration.

The quality of the Equasis information system data relies upon the quality of the data transmitted by the IACS members and the quality of the service will be degraded by infrequent supply of data.

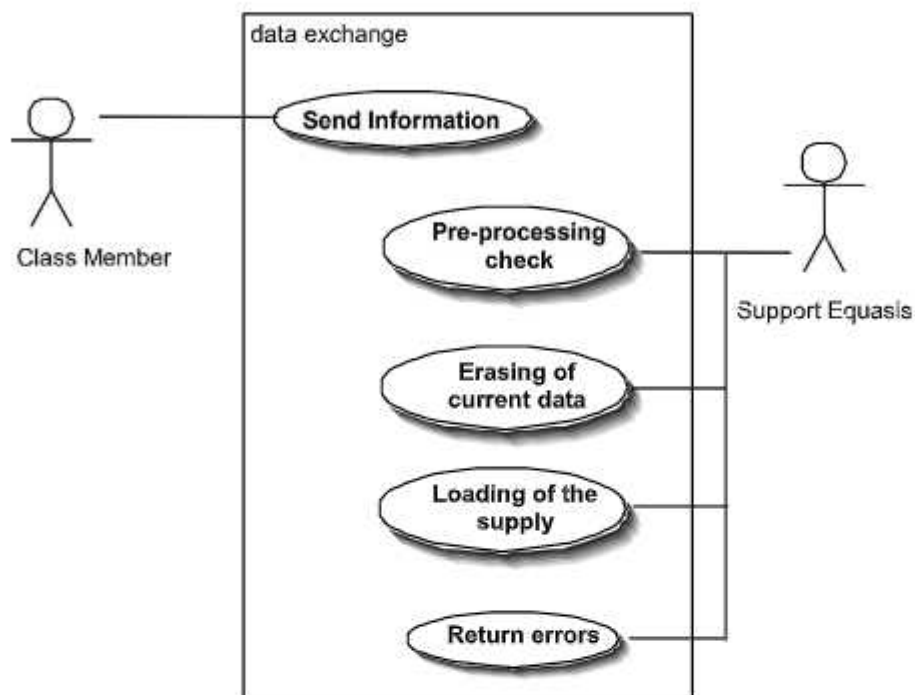


### 3. Detailed specifications

#### 3.1 Communication procedures

##### 3.1.1 Standard scenario

In normal situations, the following scenario applies:



1. The IACS member sends a data file to the Equasis Technical Unit.
2. The Equasis Technical Unit sends an acknowledgment of receipt by email.
3. The Equasis Technical Unit performs a pre-processing check of the following :
  - the electronic mail address of the provider (as listed in §1.2),
  - the file format (using the "XML schema" file, see §3.3)

If the result of this pre-processing check is not positive, the datafile is rejected (with the rules defined in 2.3).

4. The Equasis Technical Unit replaces the data from the database with the datafile.
5. The Equasis Technical Unit sends a report to the provider. This report contains a description of the errors found during the upload process.
6. It is then the responsibility of the data provider to correct the errors and re-send the amended file reloading.

### **3.1.2 Communication interfaces**

The format of the exchanged files is XML.

The files are exchanged through standard electronic mail (SMTP protocol).

### **3.1.3 Electronic mails format**

IACS member send their data file to the Equasis Technical Unit's e-mail address :

[equasis@equipement.gouv.fr](mailto:equasis@equipement.gouv.fr)

The object of the e-mail is "Equasis update from <name of class> <date>".

Where : <name of class> is the name of the IACS member ; <date> is the date "reference date". Format to be used is yyymmdd.

After having treated the data file, the Equasis Technical Unit sends an e-mail back to the IACS member.

In case of successful treatment, the object of the e-mail is "Equasis ACK for <name of class> <date>".

In case of unsuccessful treatment, the object of the e-mail is "Equasis report for <name of class> <date>". The e-mail contains an "error file" which lists the errors encountered during the treatment.

## **3.2 Data files**

### **3.2.1 Data file provided by IACS Members**

- The data files sent by IACS members to Equasis are named "Ccyymmdd.xml". Where yymmdd represents the date the file was extracted and CC is the IACS member code (see § 3.4.1).
- The data file is embedded in a compressed archive file which name is "Ccyymmdd.zip". The file format is ZIP.

### **3.2.2 Code file**

All the decoding tables used in the exchange are gathered in a unique code file. The code file name is "codeIACS.xml".

This file is not due in the periodical supply.

The decoding tables are initialised under the responsibility of IACS secretariat and according to the data format described below. All changes under the responsibility of IACS secretariat must be accompanied by advices to all parties and keep compatibility at least for a period of two rolling years.

### 3.2.3 Error file

The file which is sent back to the IACS member in case of errors is named : "OriginalFileName.bad.xml". Where OriginalFileName is the name of the data file sent to Equasis.

The error file is embedded in a compressed archive file which name is "OriginalFileName.bad.zip". The file format is ZIP.

### 3.2.4 Data file provided by Equasis

The data file sent by Equasis to the IACS secretariat is named "IACSyymmdd.xml". Where yymmdd is the date of data extraction.

## 3.3 Description of the datafile provided by IACS members

This chapter describes:

- the data to be include in the data file, and
- the business rules that the data have to comply to.

The Data file format is described in a "XML Schema" file (XSD file). This XSD file is used to control the data file format. It is provided as an annex to this document.

### 3.3.1 Common information

For all chapter 3.3:

- Item [**idIMO**] : A ship is identified by its unique "IMO" number (which is coded with 7 digits). This information is always mandatory. The checksum must be checked. The ship must be known in the Equasis database. Information about unknown ships from Equasis are reported as errors.
- Item [**provider**] : This item identifies the classification society. Each classification society is identified by its code (see § 3.4.1.). This information is always mandatory.
- Item [**idCompany**] : A company is identified by its unique "IMO" number (which is coded with 7 digits). The Company must be known in the Equasis database. This information is always mandatory.
- Item [**dReference**] : The date of the extraction of data (as indicated in the header of the file).



### 3.3.2 Root of the datafile

In each file provided by IACS Members, a root is expected to be filled in as follows:

Item	Occ.	Type	Length/ format	Description
release	1	Char	1-3	Release Number of the data protocol. The current number to be used for this present protocol is "1.8"
Provider	1	Char	2	Code (according to chapter 3.4.1) of the classification society provider of the file
dREFERENCE	1	Date	yyyymmdd	Date of Reference : the date at which the data was extracted.
classSupplied	1	Char	[Y] or [N]	Indicates if Yes or No the file includes information on Class certificates
smcSupplied	1	Char	[Y] or [N]	Indicates if Yes or No the file includes information on SMC certificates
docSuplied	1	Char	[Y] or [N]	Indicates if yes or No the file includes information on DoC

The same root is returned in the error file.

### 3.3.3 Information concerning the classification of ships

The information concerning the classification of a ship is divided into several fields which are defined as follows:

#### .Ship data description

Item	Occ.	Type	Length/ format	Description
idIMO	1	Int	7	IMO Number of the ship

#### .Certificate (Survey) Data description (certificate tag)

This survey information is linked to the ship element.

The survey information is inside the *certificate* tag with attribute *cTypeCertificate* equals to *CLASS*

These fields are provided for each classification cycle:

Item	Occ.	Type	Length/ format	Description
cTypeCertificate1Value:CLASS				
dSurvey	1	Date	yyyymmdd	Date of the previous renewal surveys (beginning of the classification cycle)
dNextSurvey	0-1	Date	yyyymmdd	Due of the next renewal survey (end of the classification cycle)

**Business rules:**

- The "dSurvey" date is always before or the same as the date of reference. This information is mandatory.
- The "dNextSurvey" date is always after the "dSurvey" date.

**.Status Data description**

This Status element is linked to the certificate element.

These fields are provided for each status description.

Item	Occ.	Type	Length/ format	Description
cStatus	1	Char	1 to 3	Code of the status given to the ship
dStatus	1	Date	yyyymmdd	Date of status delivery
cReason	0-1	Char	1 to 2	Code of the reason for the change of status

**Business rules:**

- The "cStatus" of a ship is supplied as a code according to chapter 3.4.3.
- The date "dStatus" is always before the date of reference.
- In the case where several cStatus are provided for with the same date the order of the line in the XML file will determine the order of the operation.  
But this should be very rare and avoided as much as possible
- The "cReason" is provided as a code according to chapter 3.4.4. This data is mandatory only when the "cStatus" field is equal to "suspended" or "withdrawn".
- Suspension that is less than 7 days shall not to be reported.
- Suspension of ship "other" (IACS type ZZ) shall not to be reported

**3.3.4 Information concerning Safety Management Certificates**

The information concerning a SMC is divided into several fields which are defined as follows.

**.Certificate Data description**

This Certificate element is linked to the ship element

These fields are provided for each certificate.

Item	Occ.	Type	Length/ format	Description
cFlag	1	Char	3	Code of the flag on whose behalf SMC is issued.
cConvOrVol	1	Char	[V] or [C]	This pointer shows in which framework the SMC certificate is delivered : voluntary (V) or statutory (C).
dSurvey	1	Date	yyyymmdd	Date of completion of the SMC previous renewal survey
dNextSurvey	0-1	Date	yyyymmdd	<b>Date of SMC expiry.</b>
idCompany	0-1	Int	7	IMO Company Number of the company indicated on the SMC

**Business rules:**

- A classification society may audit several companies and ships.
- The "cFlag" is issued by a code according to chapter 3.4.2.
- The "cConvOrVol" pointer indicates the framework in which the delivery of the SMC intervenes. This delivery may be the outcome of a voluntary action , in this case the pointer takes the "V" value. The delivery may be the outcome of a regulation obligation, in this case the pointer takes the "C" value.
- The "dSurvey" date is always before or the same as the date of reference.
- The "dNextSurvey" date is always after the "dSurvey" date.

**.Status Data description**

This Status element is linked to the certificate element.

These fields are provided for each status description.

Item	Occ.	Type	Length/ format	Description
cStatus	1	Char	1 to 3	Code of the SMC status given to the ship
dStatus	1	Date	yyyymmdd	Date of status delivery
cReason	0-1	Char	1 to 2	Code of the reason for the change of status

- The "cStatus" of a SMC is supplied as a code according to chapter 3.4.5.
- The date "dStatus" is always before the date of reference. The date is mandatory for each status.



- In the case where several cStatus are provided for with the same date the order of the line in the XML file will determine the order of the operation.  
But this should be very rare and avoided as much as possible
- The "cReason" is given as a code according to chapter 3.4.6. This information is optional.

### 3.3.5 Information concerning the Documents of Compliance

#### .Company description

Item	Occ.	Type	Length/ format	Description
ID_COMPANY	1	Int	7	IMO Company Number of the company indicated on the DoC

The information concerning a DoC is divided into several fields which are defined as follows.

#### .Certificate Data description

This certificate element is linked to the company element.

These fields are provided for each certificate.

Item	Occ.	Type	Length/ format	Description
cFlag	1	Char	3	Code of the flag on whose behalf the DoC was issued.
shipType	1-*	Char	2-4	Code(s) of the ship types for which the DoC is delivered to the Company.
dSurvey	1	Date	yyyymmdd	Date of completion of the survey
dNextSurvey	0-1	Date	yyyymmdd	Date of DoC expiry

#### Business rules:

- A DoC is issued to a given company for one or several ship type(s) and one flag.
- A classification society audits several companies and ships.
- The "cFlag" is issued by a code according to chapter 3.4.2.
- The "shipType" field is populated by a list of ship types for which the company is approved for that flag. The list of ships types is given on the DoC. Ship types are defined with a code according to chapter 3.4.7. This is always the complete list of approved ship types, regardless whether this is covered on a single DOC certificate or a combination of certificates, such as a full term and an interim.
- The "dSurvey" date is always before or the same as the date of reference.
- The "dNextSurvey" date is always after the "dSurvey" date.

Where a classification societies carries out an audit to add (or remove) a ship type from the DOC for a particular company and flag, this shall be recorded as a status change. In this

scenario it is assumed that the overall dates of the DOC renewal audit do not change in accordance with standard IACS procedure.

### **.Status Data description**

This Status element is linked to the company element.

These fields are provided for each status description.

Item	Occ.	Type	Length/ format	Description
cStatus	1	Char	1 to 3	Code of the DoC status given to the ship
dStatus	1	Date	yyyymmdd	Date the status was delivered
cReason	0-1	Char	1 to 2	Code of the reason for the change of status

- The "cStatus" of a DoC is supplied as a code according to chapter 3.4.5.
- The date "dStatus" is always before the date of reference. The date is mandatory for each status.
- In the case where several cStatus are provided for with the same date the order of the line in the XML file will determine the order of the operation.  
But this should be very rare and avoided as much as possible.
- The "cReason" for the change of the DoC status is given as a code according to chapter 3.4.6. This data is optional.

### 3.4 Description of the code file

In all the decoding tables, one label is associated with each code.

The decoding tables needed for the exchange are the following:

General	•IACS members •Flag
Classification	•Status •Reason for a change of status
SMC and DoC	•Status •Reason for a change of status
DoC only	•ShipType

#### 3.4.1 IACS Members Codification

Each classification society is described by a 2 letter code:

Code	IACS member
AB	American Bureau of Shipping
BV	Bureau Veritas
CC	China Classification Society
CR	Croatian Register of Shipping
VL	DNV GL
IR	Indian Register of Shipping
KR	Korean Register
LR	Lloyd's Register
NK	Nippon Kaiji Kyokai
PR	Polish Register of Shipping
RI	RINA Services
RS	Russian Maritime Register of Shipping



### 3.4.2 Flag codification

#### .Data description

The information is divided into several fields which are defined in the following table:

Item	Occ.	Type	Length/ format	Description
CODE_FLAG	1	Char	3	Code (unique identifier) used in the IACS information system
LABEL_FLAG	1	Char	1-256	String used to define the flag code

#### .Decoding values

As provided by IACS.

### 3.4.3 Classification status codification

#### .Data description

The information is divided into several fields which are defined in the following table:

Item	Occ.	Type	Length/ format	Description
CODE_CLASS_STATUS	1	Char	3	Code (unique identifier) used in the IACS information system
LABEL_CLASS_STATUS	1	Char	1-99	Term used to define the code of the status of the class certificate

#### .Decoding values

del	in class
sus	suspended
rei	reinstated
wit	withdrawn
rea	reassigned

### 3.4.4 Codification of reasons for a change of classification status

#### .Data description

The information is divided into several fields which are defined in the following table:

Item	Occ.	Type	Length/ format	Description
CODE_CLASS_REASON	1	Char	1-3	Code (unique identifier) used in the IACS information system
LABEL_CLASS_REASON	1	Char	1-256	String used to define the code for the reason of the change of status of the class certificate.

#### .Decoding values

- a Survey overdue
- b Non-compliance with conditions of class
- c Casualty
- d by society for other reasons
- 0 Transfer of class to another IACS member
- 1 Transfer of class to a non-IACS society
- 2 Sold for recycling (scrap)
- 3 Owner's request for other reasons

### 3.4.5 SMC and DoC status codification

#### .Data description

The information is divided into several fields which are defined in the following table:

Item	Occ.	Type	Length/ format	Description
CODE_SMCDOC_STATUS	1	Char	3	Code (unique identifier) used in the IACS information system
LABEL_SMCDOC_STATUS	1	Char	1-99	String used to define the code of the status of the SMC

#### .Decoding values

- del delivered
- wit withdrawn
- rea reassigned

*Note : value "sus", "rei", "ast", "rst" are not available (compared to previous versions of the document)*

### 3.4.6 Codification of reasons of change of SMC and DoC status

#### .Data description

The information is divided into several fields which are defined in the following table:

Item	Occ.	Type	Length/ format	Description
CODE_SMCDOC_REASON	1	Char	1-3	Code (unique identifier) used in the IACS information system
LABEL_SMCDOC_REASON	1	Char	1-256	Term used to define the code for the reason of the change of status.

#### .Decoding values

- a periodical verification audit not requested
- b corrective action not completed within agreed schedule
- c unresolved major non-conformity
- d amendments to the ISM code are not taken into account
- e by society for other reasons
- 0 transfer of certification of management systems to another IACS member
- 1 transfer of certification of management system to a non-IACS body
- 2 sold for recycling (scrap)
- 3 company's request for other reasons

### 3.4.7 Ship type Codification

#### .Data description

The information is divided into several fields which are defined in the following table:

Item	Occ.	Type	Length/ format	Description
CODE_SHIP	1	Char	2-4	Code (unique identifier) used in the IACS information system
LABEL_SHIP	1	Char	1-256	String used to define the Ship Type code

#### .Decoding values (as per defined in the ISM code)

- PS Passenger Ships
- PSHC Passenger HSC
- OT Oil Tankers
- CT Chemical Tankers
- GC Gas Carriers
- BC Bulk Carriers
- CHSC Cargo HSC
- OCS Other Cargo Ships
- MODU MODU's



**3.4.8 IACS ship types**

OT	Oil Tanker Flag
CT	Chemical Tanker
GT	Gas Tanker
LC	Other Bulk Liquid Carrier
BC	Bulk Carrier (all combinations OB, OBO, OO)
GC	General Cargo Vessel (including Ro-Ro Cargo, Container, Reefer, HSC Cargo)
PS	Passenger Vessel (including Passenger / General Cargo, Passenger / Ro-Ro, Passenger HSC)
ZZ	Other Vessel Type

### 3.5 Description of the code file error file

#### .Principle

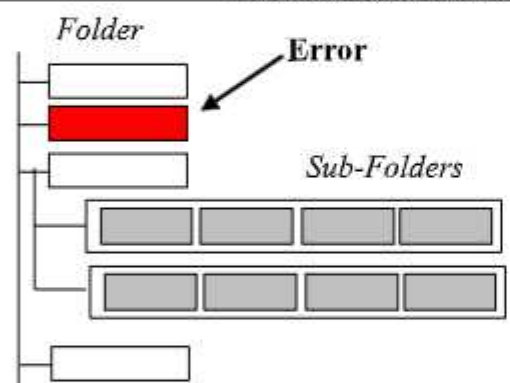
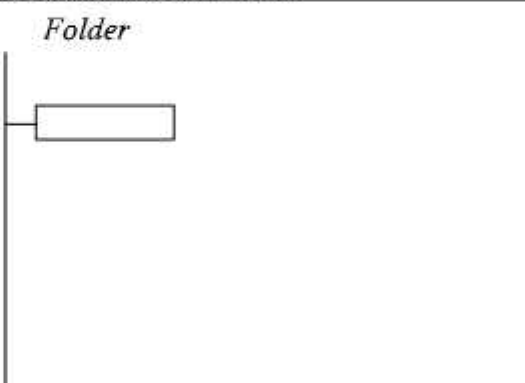
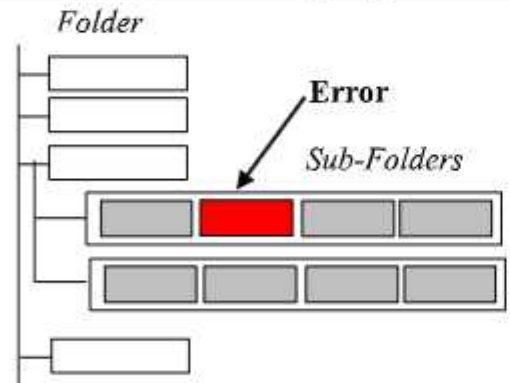
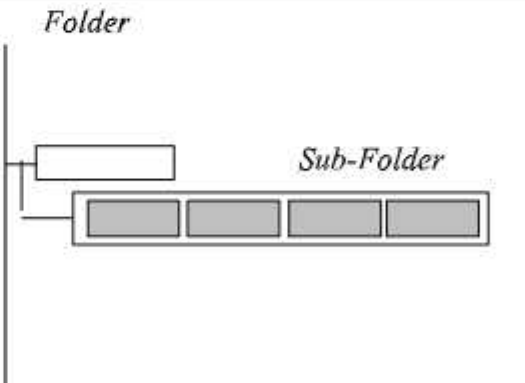
When there are errors in the original file, the Equasis Technical Unit sends an e-mail back with the erroneous data to the sender. This file contains the name of the original file with the extension ".bad.xml".

#### .Description of the error file

The file is in the standard XML format and data is shown in the same manner than in the original one. The root of this file is the same than the header of the original file.

The erroneous file is made with all the folders that the Equasis automated process cannot manage to integrate or to treat entirely. The rules used to check the data quality are the ones indicated in the business rules of the original data.

#### .Example

Original file	Content of the erroneous file returned
<i>Example of an erroneous data in a main Folder</i>	
	
<i>Example of an erroneous data in a Sub-Folder</i>	
	

## 4. Annex:examples

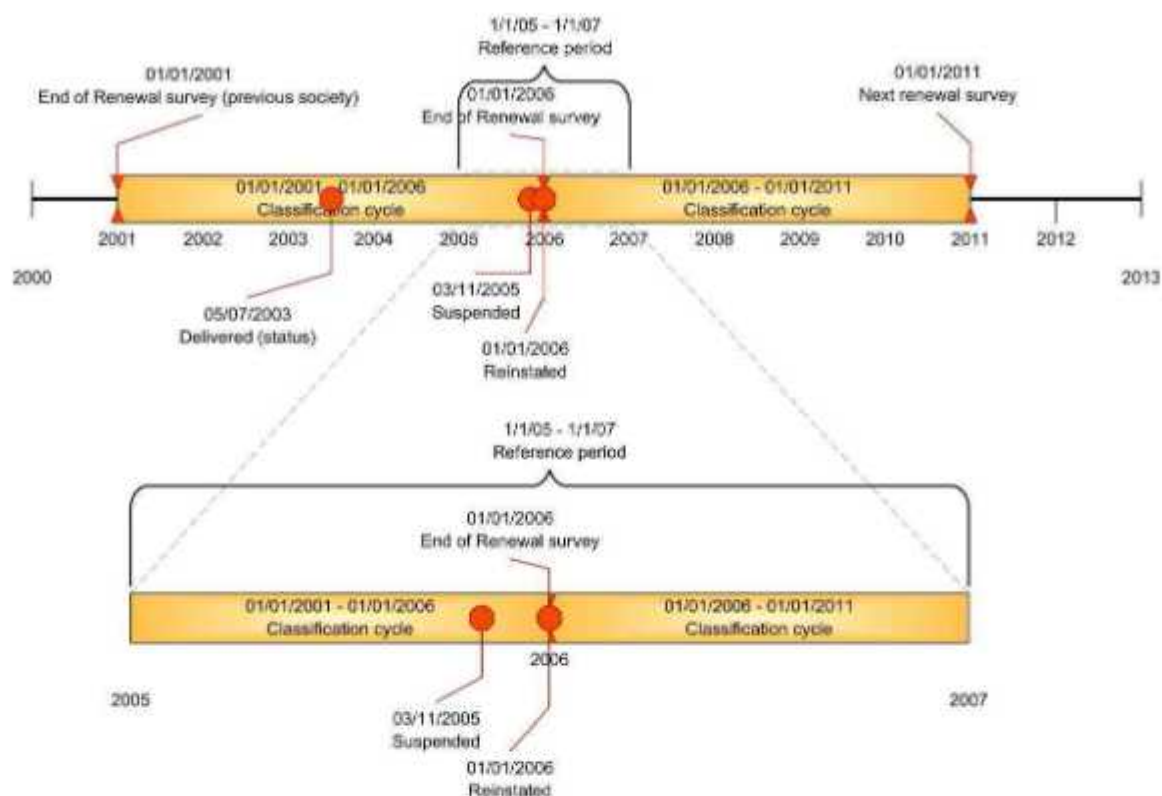
### 4.1 XML datafile examples

XML code of the examples from §2.1:

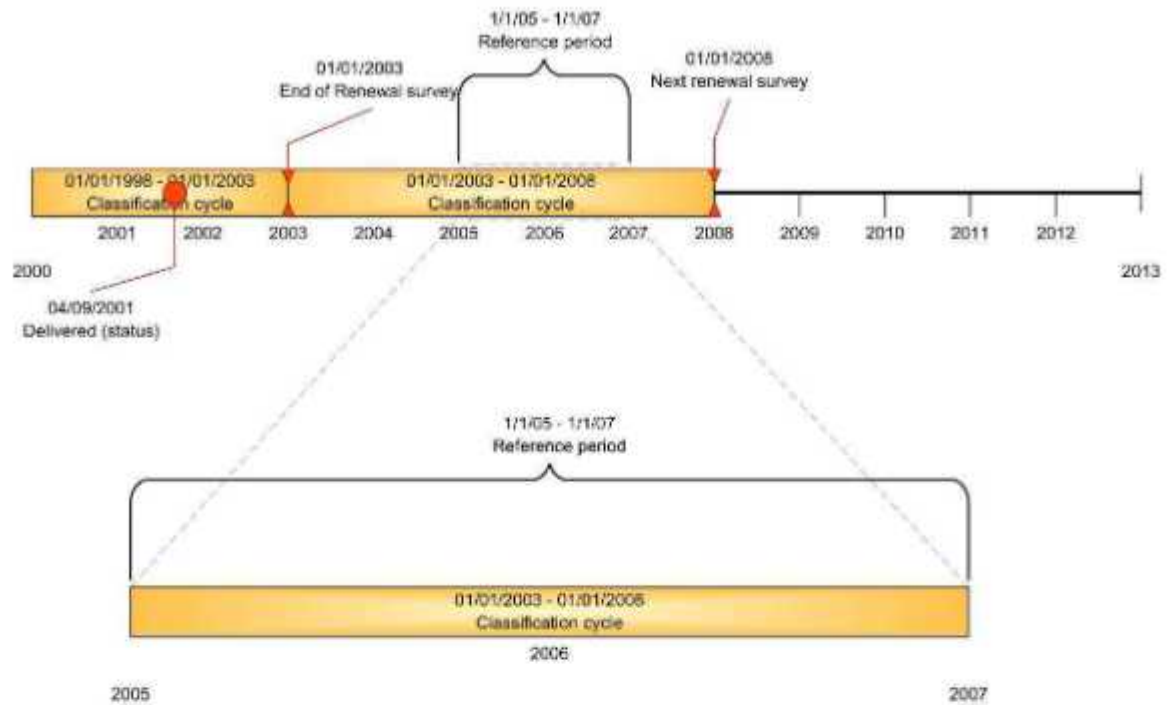
Date of reference : 1/1/2007

```
<classExport
  xmlns:xsi=http://www.w3.org/2001/XMLSchema-instance
  xsi:noNamespaceSchemaLocation="classImportv1.8.xsd"
  provider="BV"
  release="1.8"
  dReference="20070101"
  classSupplied="Y"
  smcSupplied="N"
  docSupplied="N">
```

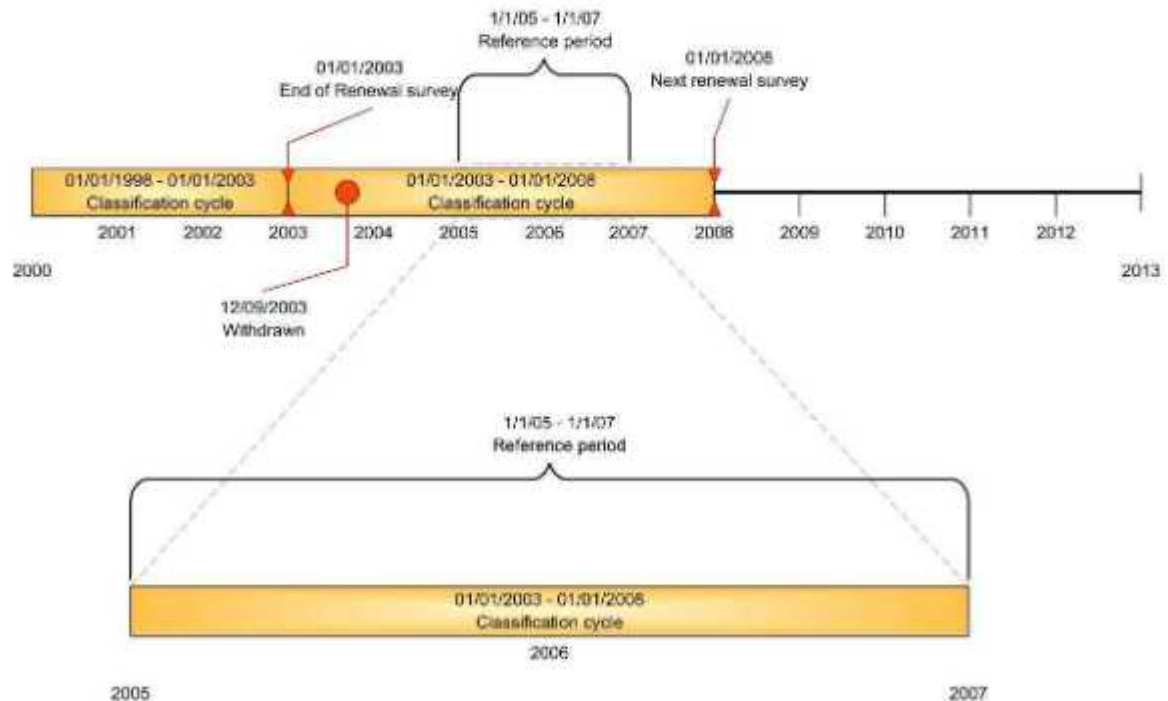




```
<ship idIMO="1234561">
  <certificate
    cTypeCertificate="CLASS"
    dSurvey="20060101"
    dNextSurvey="20110101">
    <status cStatus="sus" dStatus="20051103" cReason="d"/>
    <status cStatus="rei" dStatus="20060101"/>
  </certificate>
</ship>
```

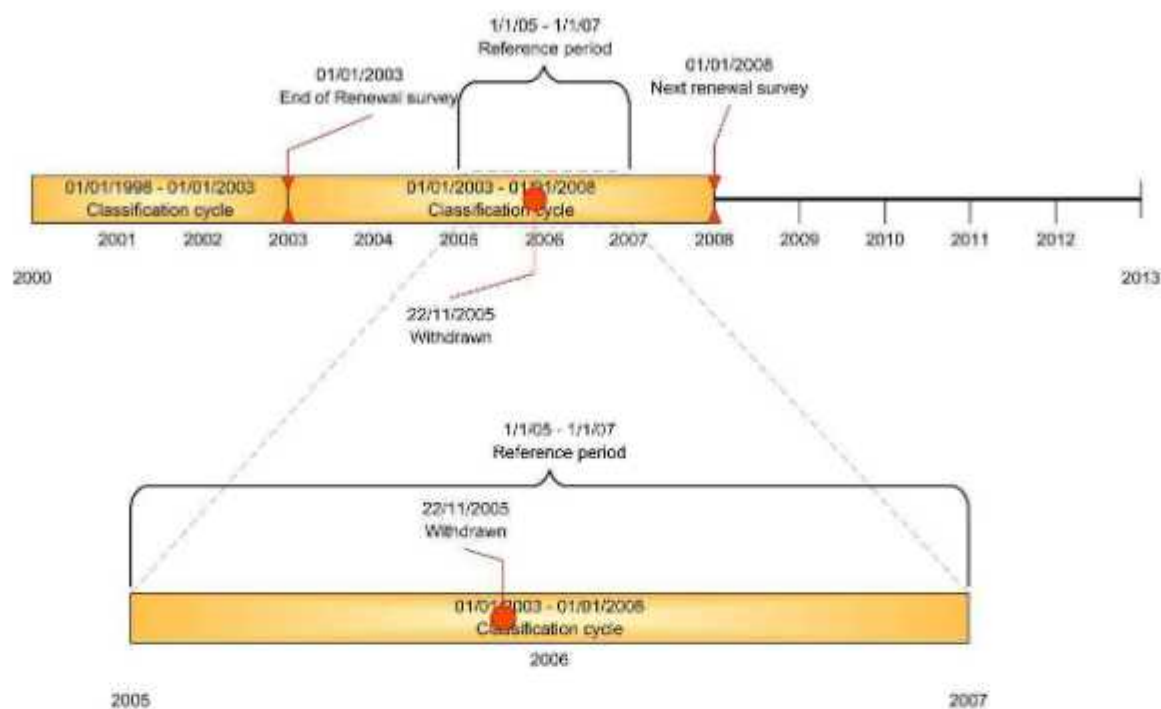


```
<ship idIMO="1234562">
  <certificate
    cTypeCertificate="CLASS"
    dSurvey="20030101"
    dNextSurvey="20080101"/>
</ship>
```



NOTHING: (including if the (next) renewal survey is under the 2 year rolling period).

=> if the ship is withdrawn for more that 2 years ; she is not sent.



```
<ship idIMO="1234564">
  <certificate
    cTypeCertificate="CLASS"
    dSurvey="20030101"
    dNextSurvey="20080101">
    <status cStatus="wit" dStatus="20051122" cReason="0"/>
  </certificate>
</ship>
```

```
</classExport>
```



## 4.2 XML schema example

```
<?xml version="1.0" encoding="UTF-8" ?>
- <codeIACS xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:noNamespaceSchemaLocation="P:\groupes\Applications\Equasis\2 spec
  fonction\IACS\1.fonctionnel\codeIACS.xsd" release="1.0">
- <table name="status">
  <code id="del" label="in class" />
  <code id="sus" label="suspended" />
  <code id="rei" label="reinstated" />
  <code id="wit" label="withdrawn" />
  <code id="rea" label="reassigned" />
</table>
- <table name="reason">
  <code id="a" label="survey overdue" />
  <code id="b" label="non compliance with recommendations and/or conditions of class" />
</table>
- <table name="shiptype">
  <code label="passenger ship" id="PS" />
  <code label="oil tanker" id="OT" />
</table>
- <table name="flag">
  <code label="France" id="FR" />
</table>
</codeIACS>
```

End of Document
--------------------

---

# BCS-PR 17 Reporting on deficiencies possibly affecting the implementation of the ISM Code on board

## INTRODUCTION

The purpose of this Procedural Requirement is to ensure that the Organisation responsible for the SMS audit of the ship and the flag Administration, as appropriate, are notified when deficiencies possibly affecting the implementation of the ISM Code on board are identified by a surveyor.

## 1. SCOPE AND APPLICATION

1.1 This document describes the procedure for reporting on deficiencies possibly affecting the implementation of the ISM Code on board during class and statutory visits and the subsequent action to be taken.

1.2 This procedure applies to all Classification Societies certified to QSCS.

## 2. DEFINITIONS

2.1 "International Safety Management (ISM) Code" means the International Management Code for the Safe Operation of Ships and for Pollution Prevention.

2.2 "Document of Compliance" (DOC) means a document issued to a Company that complies with the requirements of the ISM Code.

2.3 "Safety Management Certificate" (SMC) means a document issued to a ship which signifies that the company and its shipboard management operate in accordance with the approved safety management system.

2.4 "Safety Management System" (SMS) means a structured and documented system enabling Company personnel to implement effectively the company's safety and environmental protection policy.

2.5 "Deficiency" means a defect in, or a failure in the operation of the ship, a part of the ship's structure or its machinery, equipment, fittings, or a failure in the documentation.

2.6 "Report" means the documentation completed by the surveyor containing as a minimum the information shown in Annex 1. The report may be in any format decided by the Classification Society.

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Note:

1. This Procedural Requirement applies from 1 January 2021.

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2.7 "Leading indicator" means a measure preceding or indicating a future event used to drive and measure activities carried out to prevent and control injury, or damage to property or the environment.

2.8 "Surveyor" means, for the purpose of this PR, anybody attending on board for class or statutory purposes other than an ISM audit.

### **3. WHEN TO COMPLETE THE REPORT**

3.1 When deficiencies possibly affecting the implementation of the ISM Code on board are identified by the surveyor during a periodical (Annual/Intermediate/Special) Class Survey or occasional Class Survey, Statutory Surveys, additional surveys relevant to Port State Control, Flag State Inspections or any other occasion, a Report is to be completed by the surveyor.

3.2 The Classification Society shall internally document implementation of BCS-PR17, regardless if deficiencies have been found (for example "Deficiencies reported under BCS-PR 17: Yes/No").

### **4. WHAT TO REPORT**

4.1 The following shall be reported by the surveyor:

- i) deficiencies relating to technical conditions, combination of which indicate that the maintenance procedures specified in the SMS documentation may not be effectively implemented (Technical deficiencies);
- ii) deficiencies caused by deviation from operational requirements (Operational deficiencies);
- iii) deficiencies relating to deviation from requirements for documentation and reporting (Documentation deficiencies);
- iv) other deficiencies which may seriously affect the safety of ship, personnel or the environment (Other deficiencies).

See Annex 2 for examples.

4.2 The following shall not be reported by the surveyor:

- i) technical deficiencies, which are considered normal wear and tear for the ship type and age;
- ii) deficiencies which have already been identified by the Company or the crew, reported as appropriate, and are being dealt with adequately by the Company including the personnel working on board.

4.3 The report need not be issued when:

- i) at surveys/attendance resulting from Port State or Flag State detentions there is evidence available that the organisation responsible for the SMS audit of the ship has been notified and is also required to carry out an additional ISM audit;



- 
- ii) an auditor from the organisation, responsible for the SMS audit of the ship is present on board performing an audit and a surveyor has communicated the deficiencies directly to the auditor. This shall be documented.

## **5. REPORTING AND FOLLOW UP**

5.1 The surveyor shall make the report available to the master or Company representative and advise that it may be submitted to the organization responsible for the SMS audit of the ship as specified in the Continuous Synopsis Record

5.2 The report shall be submitted to the responsible department within the surveyor's Classification Society for review.

5.3 When the responsible department within the surveyor's Classification Society assesses that the reported deficiencies are not affecting the implementation of the ISM Code on board, the report is to be filed.

5.4 When the responsible department within the surveyor's Classification Society assesses that the reported deficiencies are possibly affecting the implementation of the ISM Code on board, the report shall be sent within 10 working days from the date when the report is received to either:

- a. the Classification Society that acts as the Recognised Organisation (hereinafter referred to as the Responsible Organisation) and to the flag Administration of the ship if specifically required and in accordance with the flag Administration requirements. The contact details of the Responsible Organisation can be found on the IACS website: [www.iacs.org.uk](http://www.iacs.org.uk), located under: BCS-PR17 and BCS-PR 18 Contact Details, or
- b. the flag Administration, if the SMS was audited by the flag Administration or an organisation other than a Classification Society acting as a Recognized Organisation in 5.4 a.

If for any reason the report is not sent within 10 working days of receipt, the Classification Society shall document reasons for the delay.

5.5 The Responsible Organisation shall review the report and finally judge whether the reported deficiencies are possibly affecting the implementation of the ISM Code on board. When it is adjudged that the reported deficiencies are possibly affecting the ISM implementation, decision on what action, if any, should be taken.

5.6 If deemed appropriate the report may be forwarded by the Responsible Organisation to the Recognized Organisation that has audited the Company for the issuance of DOC for their review and follow up.

5.7 The flag Administration shall be kept informed if specifically required and in accordance with flag Administration requirements.

5.8 Reports judged as possibly affecting the implementation of the ISM Code on board should be collected in a database which each Responsible Organisation should establish and maintain. The database may also include other data collected by the Responsible Organisation.

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5.9 Following Responsible Organisation's internal procedures, reports should be analysed with a view to derive leading indicators. The leading indicators identified by the Responsible Organisation may be used as target areas for audits.

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## **Annex 1- Minimum contents of the Report on deficiencies possibly affecting the implementation of the ISM Code on board**

The report shall have a title.

1. Identification of ship:
  - IMO number
  - Ship's name
  - Flag
2. Identification of Survey/Attendance
3. Identification of SMC and DOC issuer:
  - Organisation responsible for the SMS audit of the ship as specified in the Continuous Synopsis Record
  - Issuer of the DOC
4. Category of deficiency:
  - Technical
  - Operational
  - Documentation
  - Other
5. Details of deficiency



## Annex 2 - Guidance for what to report

Category of deficiency	Examples
<b>Technical deficiencies</b>	<ul style="list-style-type: none"> <li>• Poor condition of hull, main deck, closing appliances, railings, ladders.</li> <li>• Defective/missing fire fighting and life saving appliances, oil pollution prevention equipment.</li> <li>• Leaks and oil in E/R spaces, pump-rooms, etc.</li> <li>• Deficiencies relating to technical conditions which may lead to the limitation, suspension or withdrawal of a Class or Statutory Certificate.</li> </ul>
<b>Operational deficiencies</b>	<ul style="list-style-type: none"> <li>• Accidents and hazardous occurrences not reported to the Company.</li> <li>• Crew not able to satisfactorily conduct practical demonstrations of shipboard operations, such as starting the fire pump, emergency generator, lifeboat engine, etc.</li> <li>• Crew not able to communicate effectively in the execution of their duties.</li> <li>• Inability of crew to perform satisfactorily mandatory drills such as fire drills, LSA drills, pollution prevention drills, etc.</li> </ul>
<b>Documentation deficiencies</b>	<ul style="list-style-type: none"> <li>• Expired classification or statutory certificates or certificates not endorsed as required.</li> <li>• Overdue surveys, overdue audits or overdue conditions of class.</li> <li>• Ship's copy of Document of Compliance (DOC) not valid or not relevant to ship type.</li> <li>• Original Safety Management Certificate (SMC) has incorrect data or endorsements missing.</li> <li>• Emergency response plans and relevant SOPEP manual not available (contact points ashore should be current and corresponding with Company name/address on DOC and SMC).</li> <li>• Entries for relevant drills etc. in Log Book not completed in accordance with mandatory requirements.</li> <li>• Incorrect or missing entries in the Oil Record Book.</li> <li>• Fire Plan not up to date</li> </ul>
<b>Other deficiencies</b>	<ul style="list-style-type: none"> <li>• Ship's complement not complying with the Minimum Safe Manning Certificate.</li> <li>• Master, officers and ratings not certified as required by the STCW Convention.</li> <li>• Serious deficiencies in respect to housekeeping and maintenance of galley, crew accommodation and provisions stores.</li> <li>• Port State or Flag State detentions: if no evidence available, that the organisation responsible for the SMS audit of the ship as specified in the Continuous Synopsis Record has been notified.</li> </ul>

---

# BCS-PR 18 Transfer of Safety and Security Management Systems Certification

## Introduction

This Procedural Requirement governs the transfer of ISM and ISPS Code certification from one Society (the losing Society) to another Society (the gaining Society), and is applicable irrespective whether the Certification is mandatory or voluntary.

## Application

This PR shall apply to all cases of transfer of ISM and ISPS Code certification between Classification Societies who implement BCS-PR 9/BCS-PR 24, except as noted in section 2.0 below.

Societies shall follow this Procedural Requirement when a request from a Company is received for the transfer of ISM and / or ISPS Code Certification from one Society to another Society.

Annex 1      Process Flow Chart for transfer of certification

Annex 2      Link to Contact Points

Annex 3      Transfer of Certification (Form TC)

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## Notes:

1. This Procedural Requirement applies from 1 February 2013.

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## **1.0 Definitions**

- 1.1 "Gaining Society (GS)" means a Society that receives a request for a transfer of ISM Code certification for a Company or ship; or, the transfer of ISPS Code certification for a ship from another Society.
- 1.2 "Losing Society (LS)" means a Society from which ISM Code certification or ISPS Code certification is being transferred.

## **2.0 General**

- 2.1 This procedure shall not apply in cases involving a change of management company.

## **3.0 Gaining Society's Obligations and Reporting**

- 3.1 On receiving a request from a Company to take over its ISM and / or ISPS Code certification from another Society, the GS must inform the Company, in writing, that an application for such certification can only be accepted by the GS after it has received confirmation (with supporting documentation) that:
- (i) The existing certificate has not been withdrawn or otherwise invalidated by the LS or the Flag;
  - (ii) All verifications initiated by the LS have been satisfactorily completed by the LS, unless otherwise agreed between the gaining and losing Societies; and
  - (iii) Any major non-conformities have been closed out or down-graded by the LS.
- 3.2 Where a written request for transfer of certification has been received from the Company, the GS shall notify the LS of the Company's request by using Step 1 of Form TC.
- 3.3 If evidence of the certification status listed in Step 2 of Form TC is not received from the LS within three (3) working days from notification, the GS may utilize the evidence and certification information provided by the Company. In such cases, a statement reminding the Company that the conditions of 3.1 are still applicable shall be given when the GS requests this information from the Company.
- 3.4 An audit is required for the issue of a new certificate. If the certificate has been issued by the flag, the auditor may endorse the certificate on behalf of the administration if authorised to do so.
- 3.5 The audit by the GS shall address all elements of the ISM (ISPS) Code, to the extent that the RO (RSO) is so authorized by the Administration, any flag Administration requirements and any matters arising out of the last audit carried out by the LS. Where the transfer of certification occurs within the annual, intermediate or renewal due date window, the corresponding audit may serve as the audit required in 3.4.
- 3.6 If the audit is successful and a new certificate is issued by the GS, the GS must inform the LS, within one (1) month of the date of issue, by completing Step 3 of Form TC.
- 3.7 When the audit is not successful and, as a result, the transfer of certification is not accepted, the GS shall inform the LS, within two (2) working days of the date of the



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audit, by completing Step 3 of Form TC and attaching the audit report in which the reason for the rejection should be fully explained.

#### **4.0 Losing Society's Obligations and Reporting**

4.1 The LS shall co-operate by providing the information specified in Step 2 of Form TC within three (3) working days of the receipt of the completed Step 1. The documentation to be attached to the form by the LS includes:

- (i) The last external audit report, including any non-conformities and failures identified;
- (ii) In the case of ISM non-conformities this should include the corrective action plan and the time period(s) proposed for implementation;
- (iii) In the case of ISPS failures, evidence that corrective action has been proposed and the failure has been properly addressed; and
- (iv) Any other information that may be relevant to the decision to accept or reject the transfer of certification.

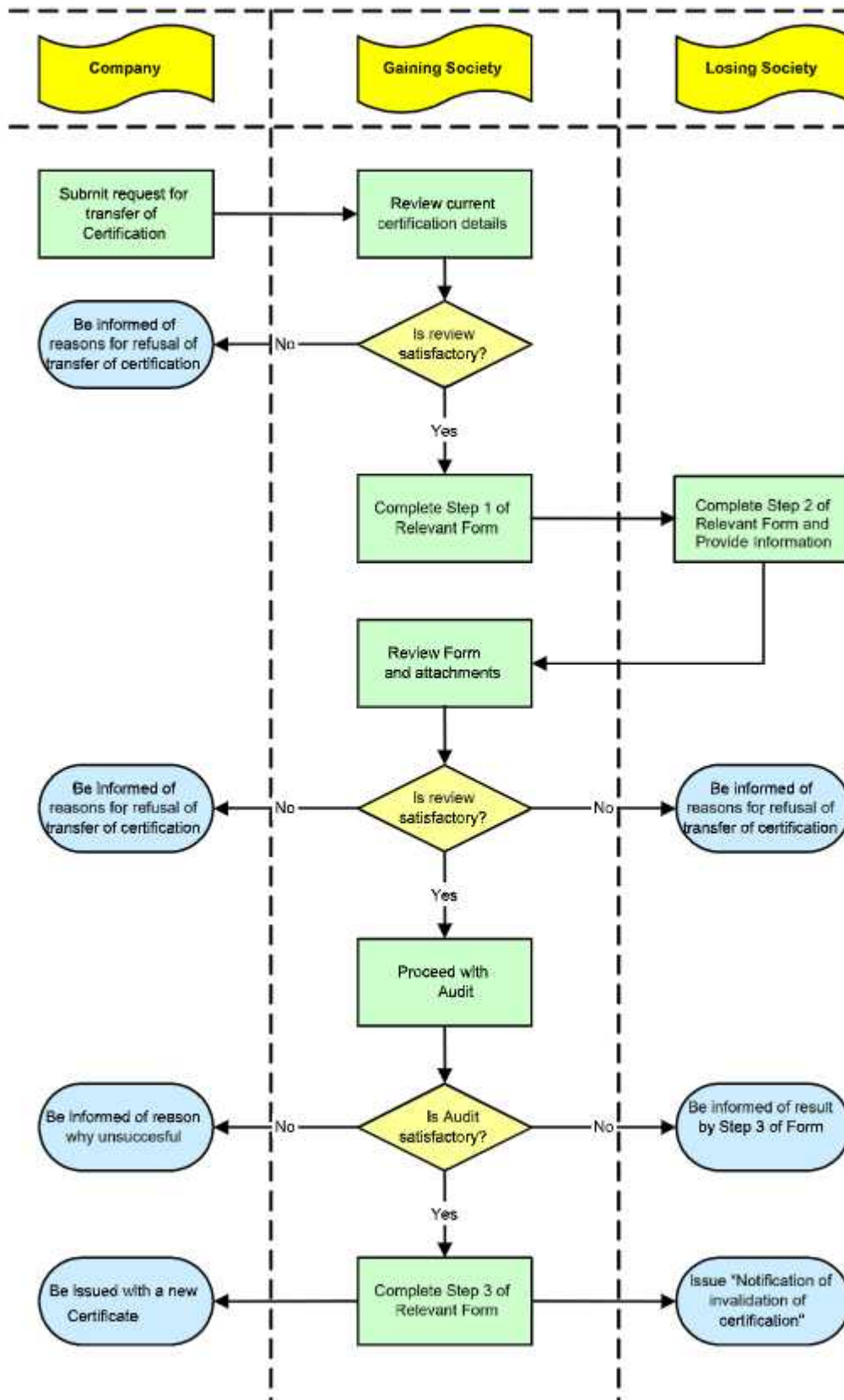
4.2 Upon receipt of information that a new certificate has been issued by the GS, the LS shall issue a "Notification of Invalidation of Certification" in accordance with BCS-PR 9 or BCS-PR 24 as applicable, ensuring that the GS is included in its circulation.

4.3 Upon receipt of information that the audit is not successful because of an unresolved major non-conformity and / or failure raised by the GS, the LS shall review the findings and take action as appropriate.

#### **5.0 Other Requirements**

Any administrative differences arising in relation to the implementation of this PR that cannot be settled privately between the gaining and losing Societies are to be solved under the IACS Procedures, Volume 3, Annex 4 "IACS Procedure for handling a complaint" "Complaints against QSCS Certificate Holders".

## Annex 1: Process Flow Chart for transfer of certification



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## **Annex 2: Link to Contact Points**

The contact details can now be found on BCS-PR 18 Contact Details (for ISM & ISPS matters)



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**Annex 3: Transfer of Certification (Form TC)****SPECIFY TRANSFER OF CERTIFICATION:**DOC ☐SMC ☐ISSC ☐**COMMON PARTICULARS:**

Losing Society / Fax / e-mail \_\_\_\_\_

Gaining Society / Fax / e-mail \_\_\_\_\_

Company Name: \_\_\_\_\_ Name of Ship: \_\_\_\_\_

Company Address: \_\_\_\_\_ IMO Number: \_\_\_\_\_

Company No: \_\_\_\_\_

**PROCEDURE:**

STEP 1	to be completed by the GAINING SOCIETY and sent to LOSING SOCIETY							
Relevant Information	DOC						SMC	ISSC
	1	2	3	4	5	6		
Flag								
Ship Type(s) (PS, PHS, CHC, BC, OT, CT, GC, MODU, OCS)								
Responsible Person								
Position								
Date completed and sent								

STEP 2	to be completed by the LOSING SOCIETY and sent to GAINING SOCIETY	
Attached documentation:		
Audit report	<input type="checkbox"/>	
Copy of certificate	<input type="checkbox"/>	
Details of agreed corrective action plan and time frame	<input type="checkbox"/>	
Any other attachment, including outstanding verification to be completed by losing society (specify)	<input type="checkbox"/>	
Responsible Person		
Position		
Date completed and sent		

STEP 3	to be completed by the GAINING SOCIETY and sent to LOSING SOCIETY	
Verification successful?	<input type="checkbox"/> Yes <input type="checkbox"/> No (attach audit report)	
Responsible Person		
Position		
Date completed and sent		

---

# BCS-PR19 Procedural Requirement for Thickness Measurements

1. Thickness Measurements required in the context of hull structural classification surveys , if not carried out by BCS itself shall be witnessed by a surveyor. The attendance of the surveyor shall be recorded.
2. This requires the surveyor to be on board, while the gaugings are taken, to the extent necessary to control the process (see Footnote).

## 2.1 Survey meeting

Prior to commencement of the Intermediate or Special survey, as required by BCS- R Z7, R Z7.1, R Z7.2, R Z10s or R Z15, a meeting is to be held between the attending surveyor(s), the master of the ship or mobile offshore unit or an appropriately qualified representative appointed by the master or Company, the owner's representative(s) in attendance and the thickness measurement firm's representative(s) so as to ensure the safe and efficient execution of the surveys and thickness measurements to be carried out onboard.

Communication with the thickness measurement operator(s) and owner's representative(s) is to be agreed during the meeting, with respect to the following:

- reporting of thickness measurements on regular basis to the attending

surveyor - prompt notification to the surveyor in case of following findings:

- excessive and/or extensive corrosion or pitting/grooving of any significance - structural defects like buckling, fractures and deformed structures
- detached and/or holed structure - corrosion of welds.

When thickness measurements are taken in association with Intermediate or Special Survey , a documented record indicating where and when the meeting took place and who attended (the name of the surveyor(s), the master of the ship or mobile offshore unit or an appropriately qualified representative appointed by the master or Company, the owner's representative(s) and the representative(s) of the thickness measurement firm(s)) is to be maintained.

Footnote:

It is confirmed that this also applies to thickness measurements taken during voyages.

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Notes:

1. This Procedural Requirement applies from 1 January 2018.

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## **2.2 Monitoring of the thickness measurement process onboard**

The surveyor is to decide final extent and location of thickness measurements after overall survey of representative spaces onboard.

In case the owner prefers to commence the thickness measurements prior to the overall survey then the surveyor is to advise that the planned extent and locations of thickness measurements are subject to confirmation during the overall survey. Based on findings, the surveyor may require that additional thickness measurements have to be taken.

The surveyor is to direct the gauging operation by selecting locations such that readings taken represent, on average, the condition of the structure for that area.

Thickness measurements taken mainly to evaluate the extent of corrosion, which may affect the hull girder strength, are to be carried out in a systematic manner of all longitudinal structural members that are required to be gauged by the relevant BCS- R(s).

Where thickness measurements indicate substantial corrosion or wastage in excess of allowable diminution, the surveyor is to direct locations for additional thickness measurements in order to delineate areas of substantial corrosion and to identify structural members for repairs/renewals.

Thickness measurements of structures in areas where close-up surveys are required shall be carried out simultaneously with close-up surveys.

## **2.3 Review and verification**

Upon completion of the thickness measurements, the surveyor is to confirm that no further gaugings are needed, or specify additional gaugings.

If, where special consideration is allowed by BCS- R(s), the extent of thickness measurements is reduced, the surveyor's special consideration is to be reported.

In case thickness measurements are partly carried out, the extent of remaining thickness measurements is to be reported for the use of the next surveyor.



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# BCS-PR 20 Procedural Requirement for certain ESP Surveys

The objective of this PR is to improve the quality of surveys. This PR applies to surveys of hull structures and piping systems in way of cargo holds and/or cargo tanks, cofferdams, cargo pump rooms, pipe tunnels, void spaces, within the cargo length area and all ballast tanks. In the case of Bulk Carriers, selected fuel oil tanks within the cargo length area might be part of the areas to be surveyed according to the applicable provisions of the BCS-R Z 10.2 or BCS-R Z10.5.

Taking into consideration, the size of vessels and scope of surveys for vessels noted below, it is more effective to have more than one surveyor examine the required spaces, holds or tanks and to provide mutual support and consultation during the surveys in recommending repairs and actions required for conditions of Class.

1. On ships 20,000 tonnes DWT and above, subject to ESP, starting with special survey No.3, at special and intermediate hull classification surveys, the survey of hull structure and piping systems to which this PR applies is to be carried out by at least two exclusive surveyors. On bulk carriers 100,000 dwt and above of single side skin construction at the intermediate hull classification survey between 10 and 15 years of age, the survey of hull structure and piping systems to which this PR applies is to be performed by at least two exclusive surveyors.
2. This requires that at least two exclusive surveyors attend on board at the same time to perform the required survey<sup>1)</sup>. Where compatible with relevant laws and regulations, on dual class vessels, the requirement for two surveyors may be fulfilled by having one surveyor attend from each Society.

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## Notes:

1. It is confirmed that this also applies to voyage surveys.
2. For definition of exclusive surveyors, refer to BCS-PR 5.
3. This Procedural Requirement applies from 1 July 2020.

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3. Though each attending surveyor is not required to perform all aspects of the required survey, they are required to consult with each other and to do joint overall and close- up surveys to the extent necessary to determine the condition of the vessel areas to which this PR applies. The extent of these surveys should be sufficient for the surveyors to agree on actions required to complete the survey with respect to renewals, repairs, and other conditions of class. Each surveyor is required to co-sign the survey report or indicate their concurrence in an equivalent manner.
  4. The following surveys may be witnessed by a single Surveyor:
    - Thickness measurements in accordance with Procedural Requirement 19;
    - Tank testing in accordance with the applicable BCS-R Z10;
    - Repairs carried out in association with Intermediate and Special Hull Classification Survey, the extent of which have been agreed upon by the required two surveyors during the course of the surveys.

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# BCS- PR 23 Procedure for Reporting Cancellation of Approval of a Thickness Measurement Firm

## 1. Introduction

1.1 Firms engaged in thickness measurements on ships are subject to approval by BCS in accordance with BCS- R Z17.

## 2. Notification of cancellation of approval for cause

2.1 When the approval of a TM Firm has been cancelled by BCS for any of the following reasons:

- a) service improperly carried out or the results improperly reported;
- b) appropriate corrective action not taken for deficiencies found in the service operation system within the time agreed by BCS;
- c) the Society not being informed of alterations to the service operation system related to compliance with requirements for approval;
- d) wilful acts or omissions by the TM Firm related to compliance with requirements for maintaining approval.

BCS is to send an email to the other participating Societies within 5 working days of such cancellation.

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### Notes:

- 1. This Procedural Requirement applies from 1 November 2013.



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2.2 The e-mail is to be in the form set out below.

Notice of Cancellation of Thickness Measurement (TM) Firm Approval

Dear Madam/Sir,

This is to inform you that the approval of the following TM Firm has been cancelled on the date shown below:

**[TM Firm complete name as shown on Society's public website]**

**[TM Firm complete address: Street Address or Post Office Box; City, Province or State (where applicable), Country, Postal Code (if available)]**

due to **[insert text of reason from 2.1, above]**.

Approval cancelled by **[Society]** on **[DD/MM/YYYY]**.

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# BCS-PR 24 Procedural Requirements for ISPS Code Certification

## Introduction

This document provides the Classification Societies with the methods and criteria for carrying out Ship Security Plan (SSP) approvals and for issuing International Ship Security Certificates (ISSCs) to ships following verification by audit that their security systems and any associated security equipment comply with the requirements of the ISPS Code and the provisions of the corresponding approved SSPs.

The Classification Societies may conduct approvals of SSPs or amendments thereto and verification of SSPs necessary for issuing an ISSC on behalf of Administrations. Certificates will comply with the format required by the Administrations.

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### Note:

1. This Procedural Requirement applies from 1 July 2019.

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## **1. Scope and Application**

1.1 This document establishes the procedures for:

- (i) review and approval of SSPs;
- (ii) verification of compliance with the requirements of the ISPS Code;
- (iii) issue of Interim, Initial, and Renewal ISSCs;
- (iv) intermediate verification;
- (v) additional verification;
- (vi) withdrawal of certification.

1.2 This Procedural Requirement (PR) is to be applied by Classification Societies when acting as RSOs on behalf of Administrations in the conduct of SSP approvals, audits and the issuance of certificates in accordance with the ISPS Code.

1.3 The scopes of the verifications carried out in accordance with this PR shall be restricted to the Requirements of SOLAS Chapter XI-2 and the ISPS Code Part A taking into account ISPS Code B/8.1 to B/13.8.

1.4 For minimum requirements relating to non-routine ISPS Code certification scenarios, please refer to Annex 1.



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## **2. Definitions**

2.1 "Auditor" means a person trained, qualified and authorized in accordance with BCS Procedural Requirement 10 (BCS-PR 10) to carry out SSP approval and audits.

2.2 "Convention" means the International Convention for the Safety of Life at Sea (SOLAS), 1974 as amended.

2.3 "ISPS Code" means the International Ship and Port Facility Security Code, (consisting of Part A and Part B), as adopted by the IMO.

2.4 "Ship Security Assessment" (SSA) is an activity carried out to identify possible threats to key shipboard operations and the likelihood of their occurrence and an evaluation of existing security measures and weaknesses in the infrastructure, policies and procedures.

2.5 "Ship Security Plan" (SSP) means a plan developed to ensure the application of measures on board the ship designed to protect persons on board, the cargo, cargo transport units, ship's stores or the ship from the risks of a security incident.

2.6 "Security System" is the system in place on board the ship which implements the procedures, documentation and required records which are examined to verify compliance with the requirements of the ISPS Code.

2.7 "Security Equipment" is equipment used in the implementation of the security measures specified in the SSP.

2.8 "Company Security Officer" (CSO) means the person designated by the company for ensuring that a ship security assessment is carried out; that a ship security plan is developed, submitted for approval and thereafter implemented and maintained, and for liaison with the Port Facility Security Officer (PFSO) and the Ship Security Officer (SSO).

2.9 "Ship Security Officer" (SSO) means the person on board the ship, accountable to the master, designated by the Company as responsible for the security of the ship, including implementation and maintenance of the ship security plan and for the liaison with the CSO and the Port Facility Security Officer (PFSO).

2.10 "Security Incident" means any act or circumstance that threatens the security of a ship, a mobile offshore drilling unit, a high speed craft, a port facility, a ship/port interface or any ship to ship activity.

2.11 "Security Level" means the qualification of the degree of risk that a security incident will be attempted or will occur.

2.12 "Security Level 1" means the level for which minimum appropriate protective security measures shall be maintained at all times.

2.13 "Security Level 2" means the level for which appropriate additional protective security measures shall be maintained for a period of time as a result of heightened risk of a security incident.

2.14 "Security Level 3" means the level for which further specific protective security measures shall be maintained for a period of time when a security incident is probable or imminent, (although it may not be possible to identify the specific target).

2.15 "Regulation" means a regulation of the Convention.

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2.16 "Ship" when used in this Code, includes self propelled mobile offshore drilling units and high speed craft as defined in SOLAS Chapter XI-2/1.

2.17 "Failure" means the non-fulfilment of a specified requirement that does not compromise the ship's ability to operate at security levels 1, 2 and 3. It may also be referred to as a Non-conformity.

2.18 "Major Failure" means the non-fulfilment of a specified requirement that compromises the ship's ability to operate at security levels 1, 2 or 3. It may also be referred to as a Major Non-conformity.

2.19 "Observation" means a statement of fact made during an audit and substantiated by objective evidence. It may also be a statement made by the auditor referring to the SSP which, if not corrected, may lead to a Failure in the future.

2.20 "Verification" is confirmation through the evaluation of objective evidence that specified requirements have been fulfilled. (See also 2.23)

2.21 "Recognised Security Organisation" (RSO) means an organisation authorised by a Contracting Government in accordance with SOLAS Chapter XI-2/1.16. When "Classification Society" is used in this PR, it is always intended as "Classification Society acting as RSO".

2.22 "Ship Security Alert System" (SSAS) means a system installed on board, either interfaced with another radio installation or self-contained (abbreviated to SSAS-SC in this PR), that complies with the functional requirements of SOLAS Chapter XI-2/6.2 to 6.4 and the performance criterion of IMO MSC.147(77).

2.23 "Audit" means a process of systematic and independent verification by obtaining objective evidence to determine whether the ship security related activities comply with the ISPS Code and the planned arrangements of the SSP and whether these arrangements are implemented effectively to achieve the objectives of the ISPS Code.

2.24 Any capitalized terms used in this PR which are not defined above have the meanings given them in the Convention.



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### **3. Criteria for Verification**

3.1 Criteria for verification of compliance with the requirements of the ISPS Code shall be in accordance with the applicable sections of the SOLAS Chapter XI-2 and the ISPS Code Part A.

3.2 A Classification Society performing verification of compliance with the requirements of the ISPS Code shall meet the requirements of MSC/Circ. 1074 Appendix 1, paragraphs 3 to 5.

3.3 If a Classification Society has been involved in either the conduct of the SSA or the development of the SSP or any amendments for a specific ship, that Classification Society shall not, due to potential conflict of interest, approve the SSP or conduct verifications for the certification of the ship.

3.4 A Classification Society that approves a SSP or issues an ISSC shall have implemented a documented system for the:

- a) qualification and continuous updating of the knowledge and competence of auditors who perform such approvals or verifications in compliance with BCS-PR 10, and
- b) performance of the processes involved in accordance with this PR. This system shall , inter alia, include procedures and instructions for the following:
  - (i) the establishment of contract agreements with Companies in respect of their ships;
  - (ii) the scheduling and performance of SSP approvals and verifications;
  - (iii) the reporting of the results of SSP approvals and verifications;
  - (iv) the issue of interim and full term ISSC certificates.

3.5 Only auditors who are qualified as required by BCS-PR 10 shall carry out approvals and verifications.

3.6 The entire SSP approval and implementation audit process shall verify:

- (i) that the SSP and any amendments are appropriate to the three security levels defined by the ISPS Code;
- (ii) that the SSP is compliant with the ISPS Code;
- (iii) that the SSP is being effectively implemented on board.



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#### **4. Obligations of the Company**

- 4.1 Where the verification of an SSP is to be carried out by a Classification Society that did not carry out the SSP approval, the Company shall provide, if requested by the Classification Society, a copy of the SSA report and the SSP prior to the audit on board.
- 4.2 The Company shall carry out internal audits and reviews of security activities at least once every twelve (12) months on board each ship.
- 4.3 The Company and the ship are to maintain records of external security verifications for a minimum period of five (5) years.
- 4.4 Any amendments made to the security system, the security equipment or the SSP and that are related to the requirements of ISPS Code A/9.4.1 to A/9.4.18, must be submitted to the Classification Society for review and approval.
- 4.5 At the initial installation of the SSAS, the Company shall arrange for an approved Radio Technician to test and issue a report on the equipment's compliance with the requirements of SOLAS Chapter XI-2/6.2 to 6.4. A SSAS-SC may be tested and reported on by the SSO.
- 4.6 Following the initial installation of the SSAS, the Company is responsible for:
- (i) testing and maintaining the SSAS to satisfy operational requirements according to the approved SSP; and
  - (ii) maintaining on board the SSAS records specified in ISPS Code A/10.1.10.

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## **5. Ship Security Plan Approval**

5.1 The Company is to prepare and submit to the Classification Society a SSP for each ship. This SSP is to be reviewed and approved on behalf of the Administration.

5.2 Unless otherwise specified by the Administration, all changes to an approved SSP related to the requirements of ISPS Code A/9.4.1 to A/9.4.18 shall be reviewed and approved before implementation by the Classification Society that approved the SSP. The SSP and the amendments are to be accompanied by the SSA from which they were developed.

5.3 The SSP shall be developed in accordance with the requirements of ISPS Code Part A taking into account ISPS Code B/8.1 to B/13.8, and shall be written in the working language, or working languages, of the ship. If the language, or languages, used is not English, French or Spanish, a translation into one of these languages shall be included. The Classification Society undertaking the approval shall consider at least the version of the SSP written in English, French or Spanish.

5.4 When reviewing and approving a SSP, the auditor shall verify that the Company has taken into account relevant security-related guidance and best management practices, including the latest IMO Circulars concerning piracy, hijacking and armed robbery.

5.5 When the Classification Society approves the SSP and any amendments it should retain, as a minimum, a copy of the letter of approval. The evidence of this approval shall be kept on board. Marking of SSPs, following first approval and approval of amendments, shall be handled in accordance with the Classification Societies internal procedures.

5.6 The Classification Society that approves an amendment to an SSP shall determine whether any additional verification is required relating to its implementation.

5.7 During the certification period, no Classification Society shall approve amendments to a SSP approved by another Classification Society or an Administration.

5.7bis If the ISPS certification is transferred in accordance with BCS-PR 18 and if the gaining Society is requested to approve any amendments to the SSP by the management company, the gaining Society shall re-approve the entire SSP.

5.8 Evidence should be sought that the Company Security Officer (CSO) has received training in accordance with ISPS Code A/13.1. If evidence is not provided by the Company or if there is objective evidence that the CSO has not received such training, the auditor should inform the Company so that corrective actions can be taken.

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## **6. Audit of Ships**

6.1 Audits for the issue or renewal of ISSCs shall consist of the following steps:

- (i) verification that an approved SSP is on board;
- (ii) verification through a representative sample that the security system is being implemented effectively;
- (iii) verification that all security equipment specified in the SSP complies with applicable requirements;
- (iv) verification that all security equipment specified in the SSP, including the ship security alert system (SSAS), is operational.

6.2 Initial, Intermediate and Renewal audits shall be performed only under normal operating conditions and when the ship is fully manned in accordance with the Safe Manning Certificate.

6.3 The auditor shall verify the effective implementation of the approved SSP and its documented procedures based on objective evidence obtained by interviews, inspections, review of documents and examination of records.

6.4 Following the initial installation of the SSAS, the Classification Society may approve the related provisions in the SSP and verify, by audit and the witnessing of a complete security alert test, the effective implementation of those provisions. Confirmation that the SSAS complies with the requirements of paragraphs 2 to 4 of SOLAS Chapter XI-2 will be found in the Radio Technician's report (or the SSO's report, in the case of a SSAS-SC).

6.5 At each subsequent scheduled audit the auditor shall examine the records of the testing of the SSAS, identify the SSAS activation points and verify the effective implementation of the procedures, instructions and guidance relating to the SSAS as specified in ISPS Code A/9.4.18.

6.6 Intermediate and renewal audits shall include a review of Failures reported following previous audits. The auditor shall select a sample of the reported Failures and verify that the company is investigating, analyzing and resolving them effectively and in a timely manner.

6.7 The auditor has the authority to ask for information from any other Classification Society or, if relevant the Administration, in order to check the accuracy of the information provided by the Company.

6.8 Where the audit of a ship is to be carried out by a Classification Society that did not carry out the SSP approval, the Classification Society may review the SSP either at, or prior to, the audit on board.



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## **7. Failures and Corrective Action Follow-up**

7.1 Audit findings shall be reviewed by the auditor(s) in order to determine whether they should be reported as Major Failures, Failures or Observations.

7.2 At the end of the Audit, the auditor(s) shall hold a meeting with the senior management of the ship and those responsible for the functions concerned. The purpose is to present Major Failures, Failures and Observations to the ship's management in such a manner that they are clearly understood.

7.3 Failures shall be raised against the corresponding requirement of the ISPS Code, the relevant sections or paragraphs of the SSP and any specific flag State requirements.

7.4 An ISSC is not to be issued or renewed if a Major Failure exists. Immediate action is required to restore compliance. The auditor shall verify the implementation of these measures before the ship sails and a schedule for the implementation of actions to prevent recurrence shall be agreed between the Company and the auditor. At least one additional audit shall be carried out within the period agreed for the verification of implementation of the actions to prevent recurrence.

7.5 An ISSC shall not be issued or renewed until compliance has been restored for all identified Failures. In addition a schedule for the implementation of action to prevent recurrence may be agreed between the Company and the auditor. Additional audits may be carried out as necessary.

7.6 An ISSC shall not to be endorsed if a Major Failure exists. Immediate action is required to restore compliance, thereby permitting the Major Failure to be down-graded. The auditor shall verify the implementation of these measures before the ship sails and a schedule for the implementation of actions to prevent recurrence shall be agreed between the Company and the auditor. At least one additional audit shall be carried out within the period agreed for the verification of implementation of the actions to prevent recurrence.

7.7 An ISSC may be endorsed following identification of a Failure, provided that compliance has been restored, or a schedule has been agreed between the Company and the auditor for the completion of corrective action to restore compliance and to prevent recurrence. Additional audits may be carried out as necessary.

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## **8. Issuance and Endorsement of the International Ship Security Certificate (ISSC)**

8.1 The ISSC shall be issued after an Initial or Renewal audit in accordance with 6.1.

8.2 The "type of ship" to be entered on the ISSC shall be selected from those defined in SOLAS Chapter XI-2/1.

8.3 The ISSC shall be endorsed at the Intermediate audit and at any additional audit required by the Administration.

8.4 On completion of the audit, an ISSC with validity not exceeding five (5) years may be issued by the auditor. A certificate of shorter validity may be issued in accordance with Classification Society procedures and flag State requirements. When the renewal audit is completed within three months before the expiry of the existing certificate, the new certificate shall be valid until a date not exceeding five years of the expiry date of the existing certificate.

8.5 If validity of the ISSC is extended in accordance with ISPS Code A/19.3.5, documentary evidence of Administration approval must be sighted by the Classification Society.

8.6 At the request of the Company, the expiry date of ISSC may be aligned with the expiry date on the Safety Management Certificate (SMC) provided that this does not exceed the five (5) year period specified in ISPS Code A/19.3.

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## **9. Opening and Closing Meetings**

9.1 Shipboard verification audits shall start with an opening meeting, the purpose of which is to:

- (i) introduce the auditor to the ships management;
- (ii) explain the scope and purpose of the audit;
- (iii) provide a short summary of the methods and procedures to be used;
- (iv) establish the official communication line between the auditor and the shipboard management;
- (v) confirm that the necessary resources, documentation and facilities are available;
- (vi) confirm the time and date of the closing meeting and any interim meetings.

9.2 On completion of each audit, the auditor shall hold a closing meeting with the shipboard management, as appropriate, to present the findings so that they are fully understood.



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## **10. Reporting Plan Approvals and Shipboard Audits**

10.1 A report is to be produced after every SSP approval and audit.

10.2 In the case of a SSP approval, the Letter of Approval shall include the following wording: "In the development of the Ship Security Plan, in accordance with ISPS Code A/9.4, the provisions of ISPS Code B/8.1 to B/13.8 have been duly taken into account and applied as appropriate for the ship".

10.3 The Letter of Approval shall be given to the company and retained on board the ship, together with a copy of the audit report.

10.4 In the case of an audit, the report must include the following:

- (i) the date and time of completion of the audit;
- (ii) the status of the implementation of the SSP;
- (iii) confirmation of the operational status of all security equipment and systems on board;
- (iv) reports of any Failures found during the audit.

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## **11. Responsibilities Pertaining to Audits**

### **11.1 Responsibilities of the Classification Society.**

11.1.1 The Classification Society is responsible for performing the audit and certification process in accordance with this PR and relevant flag State requirements.

### **11.2 Responsibilities of the Auditor.**

11.2.1 The auditor is responsible for:

- (i) carrying out the audit effectively and efficiently;
- (ii) complying with the applicable procedural and regulatory requirements;
- (iii) noting in the report any obstacles to the effective conduct of the audit;
- (iv) organizing any special technical assistance required to verify compliance;
- (v) reporting the audit results clearly, concisely and without undue delay.

11.2.2 Auditors shall treat all the information to which they have access during the course of SSP approvals and shipboard verification audits in the strictest confidence.

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## **12. Withdrawal of Certification**

12.1 An interim ISSC shall not be issued to a ship from which a full-term ISSC has been withdrawn.

12.2 When an ISSC has been withdrawn, a new certificate may be issued only after the successful completion of an audit of scope equivalent to an initial audit.

12.3 The new certificate shall have the same expiry date as the certificate that was withdrawn.



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### **13. Actions Following Port State Control Detentions**

13.1 When a ship is detained and deficiencies relating to the ISPS Code are given as reasons for the detention, the Classification Society that issued the ISSC shall carry out an additional audit.

13.2 Any Failures shall be dealt with in accordance with the relevant requirements of paragraph 7 above.

13.3 If the auditor disagrees with the conclusions of the Duly Authorised Officer, the reasons for the disagreement shall be documented in the audit report. The Duly Authorised Officer, the Company and the Administration must be made aware of the auditor's comments in this respect.

## Annex 1

### ISPS CODE CERTIFICATION SCENARIOS – MINIMUM REQUIREMENTS

	Scenario	Condition	Action required	Ship Security Plan	Scope of Audit and Certification
1	Change of ship's name	Conducted by a surveyor or an auditor	Verification on board	1. Verify correct ship's name on the title page, index page and revision page of SSP. 2. Amend SSP Approval Letter with the ship's new name.	1. Verify correct ship's name on all Certificates and Documents. 2. Verify that SSAS has been reprogrammed with the ship's new name. 3. Amend/reissue ISSC with the ship's new name. <i>Note: ISSC must be amended by issuing organization or by special arrangement<sup>1</sup>. Replacement ISSC shall have the same expiry date as the current ISSC.</i>
2	Change of flag	Conducted by an auditor	Interim audit on board	1. Check that the SSP is on board. 2. Check that SSP addresses ISPS Code A/9.4.1 to A/9.4.18. 3. Check that a copy of the SSP has been submitted to the Administration or its organization for approval.	1. Interim verification as required by ISPS Code A/19.4.2. 2. Issue Interim ISSC.
		1. SSP has already been approved for the new flag 2. Conducted by an auditor	Additional audit on board		1. Verify compliance with the requirements of the SSP and reprogramming of SSAS. 2. Issue a replacement ISSC with same expiry date as the current ISSC.
3	Change in IMO ship type	Conducted by an auditor	Interim audit on board	Verify amendments to SSP, if any, have been submitted for approval	1. Interim verification as required by ISPS Code A/19.4.2. 2. Issue Interim ISSC with new ship type.
4	Takeover of certification from an organization not holding a QSCS certificate	Conducted by an auditor	Initial audit on board		1. Audit to address all elements of ISPS Code. 2. Issue ISSC.
5	Ship out of service between 3 and 6 months <sup>2</sup>	Conducted by an auditor	Additional audit if required by the Administration		Endorse ISSC as appropriate.
6	Ship out of service more than 6 months <sup>2</sup>	Conducted by an auditor	Interim audit on board		1. Interim verification as required by ISPS Code A/19.4.2. 2. Issue Interim ISSC.
7	Intermediate audits requested after the end of the audit time window	Conducted by an auditor	Intermediate audit on board		1. If reinstated, ISSC to be endorsed with a statement (e.g. Validity reinstated with scope as initial). If re-issued, ISSC to have same expiry date as previous certificate. 2. Issue BCS-PR 17 report if ISM audit is not held at the same time

	Scenario	Condition	Action required	Ship Security Plan	Scope of Audit and Certification
8	Change of Company name and/or address		Attendance on board not required	1. Approve SSP amendments to reflect new Company name and address. 2. Reissue approval letter.	1. Verify DOC has been reissued with new Company name and address. 2. Issue replacement ISSC with same expiry date as previous ISSC.

Note: Above scenarios may be subject to flag State requirements and should only be applied in the absence of any instructions from the Administration.

<sup>1</sup> The organization may with permission from the Administration authorize a surveyor from the vessel's Classification Society, if other than the ISPS organization, to amend the documentation.

<sup>2</sup> These instructions do not apply to ships for which seasonal lay-ups are a normal part of their operational routine – refer to MSC-MEPC./7 Circ.9.



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## **Annex 2**

### **APPLICATION OF THE ISPS CODE TO FPSOs AND FSUs**

See MSC-MEPC.2/Circ.9 of 25 May 2010 "Guidance for the application of safety, security and environmental protection provisions to FPSOs and FSUs".

## NOTIFICATION OF INVALIDATION OF ISPS CERTIFICATION (ISSC)

Ship's Name:		IMO No.	
Company Name and Address:		Certificate No.	
		Issued by:	
The audit was conducted on behalf of the government of:			
Type of audit:	Intermediate <input type="checkbox"/>	Additional <input type="checkbox"/>	Renewal <input type="checkbox"/>
(Tick as appropriate)			
REASON FOR INVALIDATION OF CERTIFICATION (specify):			
Name:	Position:	Society:	Date:

**Distribution:**

- Copy to Company
- Copy to Administration
- Copy to Port State Authority (if appropriate)
- Copy to Classification Society

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## **BCS- PR 29      Definition of date of “contract for construction”**

1.     The date of “contract for construction” of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to BCS by the party applying for the assignment of class to a newbuilding.
2.     The date of “contract for construction” of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.

For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a “series of vessels” if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:

- (1)    such alterations do not affect matters related to classification, or
- (2)    If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to BCS for approval.

The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3.     If a contract for construction is later amended to include additional vessels or additional options, the date of “contract for construction” for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a “new contract” to which 1 and 2 above apply.
4.     If a contract for construction is amended to change the ship type, the date of “contract for construction” of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

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Note:

This Procedural Requirement applies from 1 July 2009.



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# BCS-PR 35 Procedure for Imposing and Clearing Conditions of Class

## 1. Purpose

The purpose of this Procedural Requirement is to set unified procedures for imposing, clearing and controlling Conditions of Class which Classification Societies are to follow.

## 2. Definition

'Conditions of Class' mean requirements to the effect that specific measures, repairs, surveys etc. are to be carried out within a specific time limit in order to retain Classification.

## 3. Procedures for Members to follow for imposing, clearing and controlling Conditions of Class

3.1 Conditions of Class shall be imposed for the following:

- a. Repairs and/or renewals related to damages that affect Classification (e.g. grounding, structural damages, machinery damages, wastage over the allowable limits, etc.)
- b. Supplementary survey requirements
- c. Temporary repairs

3.2 For repairs not completed at the time of survey, a Condition of Class is to be imposed. In order to provide adequate information to the surveyor attending for survey of the repairs, the Condition of Class is to be sufficiently detailed with identification of items to be repaired. For identification of extensive repairs, reference may be given to the survey report.

3.3 Conditions of Class may require imposing limitations related to navigation and operation that are deemed necessary for continued operation under Classification (e.g. loss of anchor and/or chain, etc).

3.4 Conditions of Class shall be given in writing with a time limit for completion to the owner's representatives/Ship's Master, and are to be clearly stated on the Certificate of Class or an attachment to the Certificate of Class and/or class survey status or report.

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Note:

1. This Procedural Requirement applies from 1 July 2020.

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3.5 Owners will be notified of these dates and that the vessel's class will be subject to a suspension procedure if the item is not dealt with, or postponed, by the due date. (Ref. PR1C, A2)

3.6 Clearance of Conditions of Class shall be supported by a survey report giving details of all associated repairs and/or renewals, or of the supplemental surveys carried out. Repairs carried out shall be reported with identification of:

- Compartment and location
- Structural member
- Repair method
- Repair extent
- NDT/Tests

3.7 Partially dealt with Conditions of Class shall be supported by a survey report giving details of repairs and/or renewals, or of that part of the supplemental surveys carried out and those parts remaining outstanding.

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# BCS-PR 36 Transfer of Maritime Labour Convention, 2006 Certification

## Application

This Procedural Requirement contains procedures and requirements pertaining to the transfer of Maritime Labour Convention, 2006 (MLC) certification when a request is received from a shipowner for such transfer from one Classification Society (the losing Society) to another Classification Society (the gaining Society), and is applicable irrespective whether the certification is mandatory or voluntary.

The obligations of this Procedural Requirement apply to Classification Societies which are subject to verification of compliance with QSCS.

This PR is applicable to all cases of transfer of MLC certification between Classification Societies, except as noted in section 2.0 below.

Annex 1	Process Flow Chart for transfer of certification
Annex 2	Link to Contact Points
Annex 3	Transfer of Certification (Form TC MLC)
Annex 4	Notification of Invalidation of Maritime Labour Certificate

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## Note:

1. This Procedural Requirement applies to requests for transfers of MLC certification received from 20 August 2013.



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## **1.0 Definitions**

1.1 "Gaining Society (GS)" means a Society that receives a request for a transfer of MLC certification for a ship.

1.2 "Losing Society (LS)" means a Society from which MLC certification is being transferred.

## **2.0 General**

2.1 This procedure shall not apply in the following cases:

2.1.1 Where there is a change of shipowner.

2.1.2 Where the certificate that is to be the subject of the transfer is an Interim certificate.

## **3.0 Gaining Society's Obligations and Reporting**

3.1 On receiving a request from a shipowner to take over its MLC certification from another Society, the GS must inform the shipowner, in writing, that an application for such certification can only be accepted by the GS after it has received confirmation (with supporting documentation) that:

- (i) The existing certificate has not been withdrawn or otherwise invalidated by the LS or the Flag;
- (ii) All inspections initiated by the LS have been satisfactorily completed by the LS, unless otherwise agreed between the gaining and losing Societies; and
- (iii) Any serious deficiencies have been closed out or downgraded by the LS.

3.2 Where a written request for transfer of certification has been received from the shipowner, the GS shall notify the LS of the shipowner's request by using Step 1 of Form TC MLC.

3.3 If evidence of the certification status listed in Step 2 of Form TC MLC is not received from the LS within three (3) working days from notification, the GS may utilize the evidence and certification information provided by the shipowner. In such cases, the shipowner shall be reminded that the conditions of 3.1 are still applicable when the GS requests this information from the shipowner.

3.4 If the DMLC Part II was reviewed and certified previously by the LS, the GS shall re-review the DMLC Part II before the onboard inspection, mentioned in item 3.5 below. If the DMLC Part II was reviewed by the flag Administration, the GS will act in accordance with flag Administration's instructions relative to approval of the DMLC Part II.

3.5 An inspection is required for the issue of a new certificate.

3.6 The inspection by the GS shall address all required elements of the MLC, to the extent that the Society is authorized by the Administration, any flag Administration requirements and any matters arising out of the last inspection carried out by the LS. Where the transfer of

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certification occurs within the intermediate or renewal due date window, the corresponding inspection may serve as the inspection required in 3.5.

3.7 If the inspection is successful and a new certificate is issued by the GS, the GS must inform the LS, within one (1) month of the date of issue, by completing Step 3 of the Form TC MLC.

3.8 When the inspection is not successful and, as a result, the transfer of certification is not accepted, the GS shall inform the LS, within two (2) working days of the date of the inspection, by completing Step 3 of the Form TC MLC and attaching the inspection report in which the reason for the rejection should be fully explained.

#### **4.0 Losing Society's Obligations and Reporting**

4.1 The LS shall co-operate by providing the information specified in Step 2 of the Form TC MLC within three (3) working days of the receipt of the completed Step 1. The documentation to be attached to the form by the LS includes:

- (i) The last Maritime Labour Certificate Issued;
- (ii) The last inspection report, including any deficiencies identified, the corrective action plan and the time period(s) proposed for implementation;
- (iii) Any other information that may be relevant to the decision to accept or reject the transfer of certification.

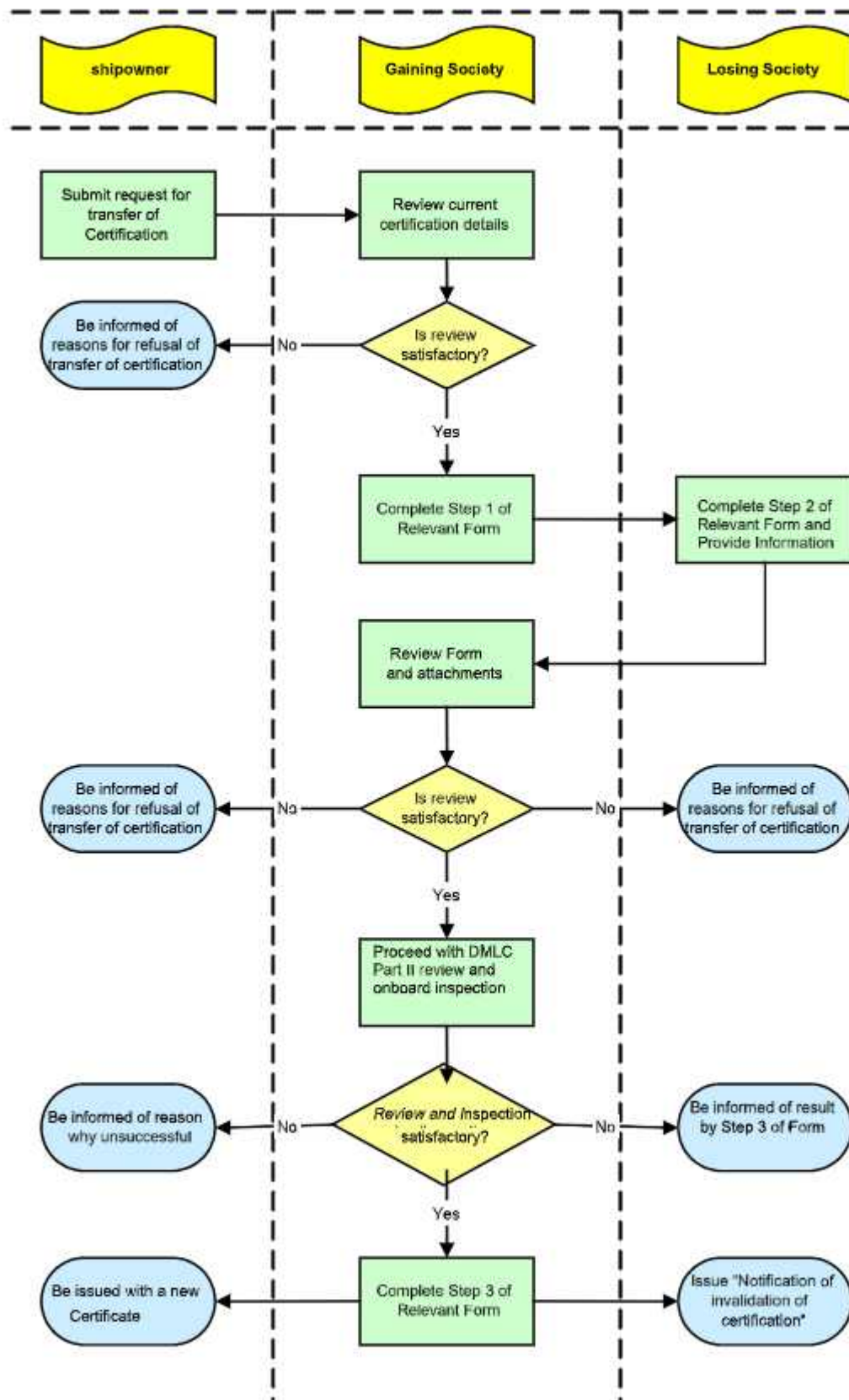
4.2 Upon receipt of information that a new certificate has been issued by the GS, the LS shall issue a "Notification of Invalidation of Certification" in accordance with the Annex 4, as applicable, ensuring that the GS is notified.

4.3 Upon receipt of information that the inspection is not successful because of an unresolved serious deficiency raised by the GS, the LS shall review the deficiency and take action as appropriate.

#### **5.0 Other Requirements**

Any administrative differences arising in relation to the implementation of this PR that cannot be settled bilaterally between the gaining and losing Societies are to be brought to the attention of the Permanent Secretariat for final resolution under the IACS Procedures Volume 3 Annex 4 "IACS Procedure for handling a complaint".

## Annex 1: Process Flow Chart for transfer of certification





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## **Annex 2: Link to Contact Points**

The contact details can be found on BCS-PR 36 Contact Details (for MLC matters).

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**Annex 3: Transfer of MLC Certification (Form TC MLC)**

**COMMON PARTICULARS:**

Losing Society e-mail \_\_\_\_\_

Gaining Society e-mail \_\_\_\_\_

Shipowner Name: \_\_\_\_\_ Name of Ship: \_\_\_\_\_

Shipowner Address: \_\_\_\_\_ Ship IMO Number: \_\_\_\_\_

**PROCEDURE:**

Step 1	To be completed by the GAINING SOCIETY and sent to the LOSING SOCIETY
Flag	
Ship type	
(PS, PHS, CHC, BC, OT, CT, GC, MODU, OCS)	
Responsible Person	
Position	
Date completed and sent	

Step 2	To be completed by the LOSING SOCIETY and sent to the GAINING SOCIETY
Attached documentation	
Last inspection report	<input type="checkbox"/>
Copy of Maritime Labour Certificate	<input type="checkbox"/>
Details of agreed corrective action plan and time frame	<input type="checkbox"/>
Any other information including any outstanding inspection to be completed by losing society (specify)	<input type="checkbox"/>
Responsible Person	
Position	
Date completed and sent	

Step 3	To be completed by the GAINING SOCIETY and sent to the LOSING SOCIETY
Inspection successful?	<input type="checkbox"/> Yes <input type="checkbox"/> No (attach inspection report)
Responsible Person	
Position	
Date completed and sent	

## Annex 4: Notification of Invalidation of Maritime Labour Certificate

Ship's Name:	IMO No.	
Shipowner's Name and Address:	Certificate No.  Issued on behalf of:	
REASON FOR INVALIDATION OF CERTIFICATE (specify):		
Name:	Position:	Society:
Date:	Signature:	

**Distribution:**

- Copy to Shipowner  
Copy to Administration  
Copy to Port State Authority (if appropriate)  
Copy to Gaining society (in the case of a transfer of certification)



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# **BCS- PR 37      Procedural Requirement for Confined Space Safe Entry**

## **Contents**

- 1      Objective**
- 2      Definitions**
  - 2.1      Confined Space
  - 2.2      Confined Space Entry (CSE)
  - 2.3      Competent Person
  - 2.4      Responsible Person
  - 2.5      Attendant
  - 2.6      Marine Chemist
  - 2.7      Adjacent Space
  - 2.8      Toxic Product
  - 2.9      Surveyor
  - 2.10      Permit to Enter/Permit to Work
- 3      Requirements**
  - 3.1      Training
  - 3.2      Confined Space Entry Procedures
  - 3.3      Equipment for Surveyors Entering a Confined Space

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## **Note:**

- 1.      This Procedural Requirement applies from 1 July 2019

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## **1 Objective**

This procedural requirement contains the minimum requirements that BCS shall prescribe to help keep surveyors safe when conducting confined space entry.

BCS is free to take measures beyond those required in this document, but shall as a minimum prescribe the requirements contained in this document and that they meet any relevant occupational safety and health legislative requirements in place at locations where work is conducted.

BCS- G 72 can be referred to for further guidance on confined space safe entry practice.

## **2 Definitions**

### **2.1 Confined Space**

Confined Space means a space that has any of the following characteristics:

- Limited openings for entry and exit
- Unfavourable natural ventilation
- Not intended for continuous worker occupancy

It may include, but is not limited to: boilers, pressure vessels, cargo spaces (cargo holds, or cargo tanks), cargo space stairways, ballast tanks, double bottoms, double hull spaces, fuel oil tanks, lube oil tanks, sewage-tanks, pump-rooms, compressor rooms, cofferdams, void spaces, duct keels, inter-barrier spaces, engine crankcases, excavations and pits.

### **2.2 Confined Space Entry (CSE)**

Confined Space Entry is the process of entering, working in and exiting a confined space.

### **2.3 Competent Person**

Competent person means a person with sufficient theoretical knowledge and practical experience to make an informed assessment of the likelihood of oxygen deficient/enriched or a dangerous atmosphere being present or subsequently arising in the space. Competent person must be trained and qualified in the hazards of Confined Spaces and in use of atmospheric monitoring devices. The Competent Person role may be performed by a Marine Chemist.

### **2.4 Responsible Person**

Responsible Person means a person authorised to permit entry to a confined space and having sufficient knowledge of the procedure to be followed and other activities that are being undertaken that could impact on the safety of those in a confined space.

### **2.5 Attendant**

Attendant is a person who is suitably trained and responsible for maintaining a watch over those entering the confined space, for maintaining communications with those inside the space and for initiating the emergency procedures in the event of an incident occurring.

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## **2.6 Marine Chemist**

A Marine Chemist is a person holding a valid and suitably recognised qualification as a marine chemist or equivalent.

## **2.7 Adjacent Space**

An adjacent space is any space bordering the confined space in any directions, including all points of contact, corners, diagonals, decks, tank tops and bulkheads.

## **2.8 Toxic Product**

A Toxic Product means any chemical liquid, gas or solid material, which can give toxic vapour and which is assigned with suffix "T" in column "k" of table given in Chapter 17 of IBC Code, or assigned with suffix "T" or "F+T" in column "f" of table given in Chapter 19 of IGC Code, or classified as a Toxic Substance (Class/Division 6.1) within the part 2 of IMDG Code, or any other product which has a toxic symbol in the data sheet or is hazard classified as a toxic.

## **2.9 Surveyor**

For the purpose of this Procedural Requirement a Surveyor is any person employed by BCS conducting activities within a confined space on behalf of BCS.

## **2.10 Permit to Enter/Permit to Work**

A Permit to Enter or Permit to Work is a documented authorisation that has been signed and dated, including time of issue by the Responsible Person, which states that the space has been tested by a Competent Person and that the space is safe for entry; what precautions, equipment etc. are required and what works is to be done.

# **3 Requirements**

The requirements are categorised in three groups.

## **3.1 Training**

3.1.1 All surveyors who are expected to enter and work in confined spaces shall be trained in Occupational Safety and Health requirements for such activities. This training shall include:

3.1.1.1 Recognising a confined space

3.1.1.2 Role of the Competent Person, Responsible Person, Attendant and Marine Chemist

3.1.1.3 How to recognise the hazards and manage the risks associated with Confined Space Entries

3.1.1.4 Permit to Work (PTW) systems/control procedures at the workplace

3.1.1.5 Requirements for atmosphere testing and the interpretation of their results

3.1.1.6 Use of personal multi gas meters

3.1.1.7 Access, exit and safe working requirements



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#### 3.1.1.8 Emergency arrangements

3.1.2 Competency in the areas covered by the training identified in 3.1.1 shall be periodically assessed, either as part of activity monitoring or some other suitable means. The maximum period between these assessments of competency is 3 years. Appropriate refresher training shall be provided as determined necessary from the competency assessment. The delivery mechanism for this refresher training is for the individual societies to determine.

### 3.2 Confined Space Entry Procedures

Societies shall have documented procedures that cover the following points:

3.2.1 Include in their procedures the minimum requirements for Surveyors entry into a confined space, as follows:

3.2.1.1 Safe entry procedures (such as entry permit, "safe for workers" certificate, "safe for hot work" certificate, etc.) are in place, current and are being followed

3.2.1.2 The Responsible and Competent Persons are identified

3.2.1.3 The access and exit arrangements to and within the confined space are considered safe. Where available, multiple entry and exit ways shall be opened

3.2.1.4 Communications arrangements are adequate

3.2.1.5 The confined space is adequately clean to allow safe working

3.2.1.6 The confined space lighting is adequate for entry/exit and to allow safe working in a confined space

3.2.1.7 The atmosphere has been demonstrated as being safe (safe limits are: atmospheric oxygen the range of 20.6% to 22% by volume, combustible gases less than 5% of lower explosive limit, toxics within acceptable limits)

3.2.1.8 Adequate ventilation arrangements are in place and functioning

3.2.1.9 Isolation of the confined space, as applicable, from other tanks, cargo spaces, pipes, etc. and of machinery in the space, is confirmed

3.2.1.10 Extreme temperature effects are adequately considered

3.2.1.11 Electrical equipment in the confined space is suitable and in acceptable condition

3.2.1.12 A dedicated Attendant is provided by the vessel's management or the management of the facility where the surveyor's activities are carried out for the complete duration of the time spent working in the confined space and the Attendant has suitable means of initiating emergency response

3.2.1.13 Adequate emergency response arrangements are in place

3.2.2 No surveyor shall be the first to enter a confined space, and they shall be accompanied at all times where the size of the space permits.

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3.2.3 Surveyors shall not enter the confined space if they are required to wear breathing apparatus.

3.2.4 Surveyor shall not enter the confined space if the surrounding noise can adversely impact effective communication.

3.2.5 Surveyor shall not enter the confined space if a toxic product is contained in an adjacent space, until the following is carried out:

3.2.5.1 A risk assessment is completed by the vessel's Management Company and the risk is mitigated.

3.2.5.2 All identified controls are confirmed in place prior to tank entry.

3.2.6 No surveyor shall be part of a rescue team.

3.2.7 Surveyors shall immediately leave a confined space, by the nearest safe exit, if any alarms sound, or any physical impairment or distress is experienced by the surveyor.

3.2.8 If any of minimum requirements addressed in 3.2.1 through 3.2.7 are not complied with or in any other situation where the surveyor has a valid concern over the safety of the confined space, he/she shall refuse to enter the confined space.

3.2.9 The points addressed in 3.2.1 through 3.2.8 above shall be considered as part of survey planning and reviewed as changes occur during any Confined Space Entry.

### **3.3 Equipment for Surveyors Entering a Confined Space**

3.3.1 The following minimum set of Personal Protective Equipment shall be made available by the society to surveyors for conducting a Confined Space Entry:

3.3.1.1 Protective clothing

3.3.1.2 Safety shoes/boots

3.3.1.3 Hard hat

3.3.1.4 Work gloves

3.3.1.5 Protective glasses and/or goggles

3.3.1.6 Ear defenders and/or ear plugs

3.3.1.7 An individual multi gas meter, in good working order, serviced and calibrated as per the manufacturer's instructions

3.3.1.8 A flashlight, appropriate to the nature of the confined space to be entered, and in good working order

3.3.2 The surveyor must always use the necessary personal protective equipment according to the specific conditions and the survey being carried out.

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# BCS-PR 38 Procedure for calculation and verification of the Energy Efficiency Design Index (EEDI)

## Introduction

This procedure applies to all cases of Class Societies' involvement in conducting the survey and certification of EEDI in accordance with regulations 5, 6, 7, 8 and 9 of MARPOL Annex VI.

## 1 Definitions

"Industry Guidelines" means the *"2020 Industry Guidelines for calculation and verification of the Energy Efficiency Design Index (EEDI)"* as submitted to MEPC 76 that may be revised in order to remain in line with the relevant IMO Guidelines.

"Verifying Society" is a Society which conducts the survey and verification of EEDI of a ship.

"Witnessing Society" is a Society which has witnessed the towing tank test of a ship of the same type as the ship whose EEDI is verified by the Verifying Society. "Ship of the same type" is defined in IMO *"2014 Guidelines on Survey and Certification of the Energy Efficiency Design Index (EEDI)" as amended*.

"Witnessing protocol" is a document showing evidence of the witnessing and acceptance of the towing tank test by the Witnessing Society, with indication such as date, signature and possible remarks of the attending surveyor.

## 2 Scope of the Procedure

The scope of this procedure is defined in Part I of the Industry Guidelines.

## 3 Calculation of EEDI

The procedure to compute the EEDI is documented in Part II of the Industry Guidelines. For the purpose of this Procedural Requirement, calculation of the EEDI is to be performed in accordance with IMO *"2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships, as amended"* and Part II of the Industry Guidelines, as amended.

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Note:

1. This Procedural Requirement applies from 1 April 2021.



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#### **4 Verification of EEDI**

The procedure to verify the EEDI is documented in Part III of the Industry Guidelines, together with Appendixes 1, 3, 4 and 5. For the purpose of this Procedural Requirement, verification of the EEDI is to be performed in accordance with IMO *"2014 Guidelines on Survey and Certification of the Energy Efficiency Design Index (EEDI)"* as amended and Part III of the Industry Guidelines, as amended.

A sample of document to be submitted to the Verifier including additional information for verification is provided in Appendix 2 of the Industry Guidelines.

#### **5 Acceptance of towing tank tests witnessed by another Society**

Further to the agreement of the submitter of the EEDI Technical File and the Shipowner, a Verifying Society may accept towing tank tests reports witnessed by another Society if the towing tank tested ship is of the same type as the ship of which the EEDI is verified.

Copies of the following documents are to be provided to the Verifying Society, with due consideration given to the protection of the Intellectual Property Rights (IPR) as indicated under paragraph 14 of the Industry Guidelines:

- Calculation of the reference speed of the verified ship explicitly making reference to the speed power curves of the tank tested ship model
- Witnessing protocol of the tank tested ship endorsed by the surveyor of the Witnessing Society
- Towing tank test report of the tank tested ship

On specific request of the Verifying Society, the following additional information is to be submitted:

- Ship lines and model particulars, loading and operating conditions of the tank tested ship as described in 4.2.7.2 of IMO *"2014 Guidelines on Survey and Certification of the Energy Efficiency Design Index (EEDI)"* as amended, showing that the verified ship and the tank tested ship are of the same type

If some of the relevant information is held by the original Witnessing Society, the submitter should authorize the Witnessing Society to make the information available to the Verifying Society.

#### **6 New ship (as per MARPOL Annex VI Regulation 2) designed before the entry into force of the MARPOL Annex VI amendments introducing the EEDI**

It is expected that the towing tank tests of a new ship performed before the entry into force of MARPOL Annex VI amendments introducing the EEDI have not been witnessed by a Verifier. In this case, towing tank test results provided by a tank test organization with quality control certified according to a recognized scheme or with experience acceptable to the Verifying Society may be accepted by the Verifying Society.

#### **Attached:**

2020 Industry Guidelines for calculation and verification of the Energy Efficiency Design Index (EEDI)

2020 INDUSTRY GUIDELINES FOR CALCULATION AND VERIFICATION OF THE ENERGY  
EFFICIENCY DESIGN INDEX (EEDI)

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## Part I - Scope of the Industry Guidelines

### 1 Scope of the Guidelines

#### 1.1 Objective

The objective of these Industry Guidelines for calculation and verification of the Energy Efficiency Design Index (EEDI), hereafter designated as "the Industry Guidelines", is to provide details and examples of calculation of attained EEDI and to support the method and role of the verifier in charge of conducting the survey and certification of EEDI in compliance with latest IMO Resolutions with respect to following Guidelines:

- 2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships, Res. MEPC.308(73) adopted on 26 October 2018, as amended by res. MEPC.322(74) adopted on 17 May 2019, referred to as the "IMO Calculation Guidelines" in the present document.
- 2014 Guidelines on survey and certification of EEDI, Res. MEPC.254(67) adopted on 17 October 2014, as amended (MEPC.1/Circ.855/Rev.2), referred to as the "IMO Verification Guidelines" in the present document
- 2013 interim Guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions, Res. MEPC.232(65) as amended (MEPC.1/Circ.850/Rev.2)
- 2013 Guidance on treatment of innovative energy efficiency technologies for calculation and verification of the attained EEDI, MEPC.1/Circ.815
- 2012 interim Guidelines for the calculation of the coefficient  $k_{\text{w}}$  for decrease in ship speed in a representative sea condition for trial use, MEPC.1/Circ.796.

In the event that the IMO Guidelines are amended, then pending amendment of these Industry Guidelines, calculation and verification of EEDI are to be implemented in compliance with the amended IMO Guidelines.

#### 1.2 Application

These Guidelines apply to new ships as defined in regulation 2.23 of MARPOL Annex VI of 400 gross tonnage and above of the ship types to which Regulation 20 of MARPOL Annex VI is applicable and defined under regulations of MARPOL Annex VI

The calculation and verification of EEDI shall be performed for each:

1. new ship before ship delivery
2. new ship in service which has undergone a major conversion
3. new or existing ship which has undergone a major conversion that is so extensive that the ship is regarded by the Administration as a newly constructed ship

The Industry Guidelines shall not apply to ships which have non-conventional propulsion, such as diesel-electric propulsion, turbine propulsion or hybrid propulsion systems, with the exception of cruise passenger ships with diesel-electric propulsion and LNG carriers having diesel-electric or steam turbine propulsion systems.

The Industry Guidelines shall not apply to category A ships as defined in the Polar Code



## Part II - Explanatory notes on calculation of EEDI

### 2 Introduction

The attained Energy Efficiency Design Index (EEDI) is a measure of a ship's energy efficiency determined as follows:

$$EEDI = \frac{CO_2 \text{ emission}}{\text{Transport work}}$$

The CO<sub>2</sub> emission is computed from the fuel consumption taking into account the carbon content of the fuel. The fuel consumption is based on the power used for propulsion and auxiliary power measured at defined design conditions.

The transport work is estimated by multiplying the ship capacity as defined in the IMO Calculation Guidelines by the ship's reference speed at the corresponding draft. The reference speed is determined at 75% of the rated installed power in general and 83% of the rated installed propulsion power for LNG carriers having diesel electric or steam turbine propulsion systems.

### 3 EEDI formula

The EEDI is provided by the following formula:

$$\frac{\left( \prod_{j=1}^n f_j \right) \left( \sum_{i=1}^{n_{ME}} P_{ME(i)} \cdot C_{FME(i)} \cdot SFC_{ME(i)} \right) + (P_{AE} \cdot C_{FAE} \cdot SFC_{AE}) + \left( \left( \prod_{j=1}^n f_j \right) \cdot \sum_{i=1}^{n_{PTI}} P_{PTI(i)} - \sum_{i=1}^{n_{eff}} f_{eff(i)} \cdot P_{AE_{eff(i)}} \right) C_{FAE} \cdot SFC_{AE} - \left( \sum_{i=1}^{n_{eff}} f_{eff(i)} \cdot P_{AE_{eff(i)}} \cdot C_{FME} \cdot SFC_{ME} \right)}{f_i \cdot f_e \cdot f_l \cdot \text{Capacity} \cdot f_w \cdot V_{ref} \cdot f_m}$$

With the following notes:

The global  $f_i$  factor may also be written:

$$f_i = \left( \prod_{i=1}^m f_i \right)$$

where each individual  $f_i$  factor is explained under section 9 of this document.

If part of the normal maximum sea load is provided by shaft generators, the term  $P_{AE} \cdot C_{FAE} \cdot SFC_{AE}$  may be replaced by:

$$\left( P_{AE} - 0.75 \cdot \sum_{i=1}^{n_{PTO}} P_{PTO(i)} \right) \cdot C_{FAE} \cdot SFC_{AE} + 0.75 \cdot \sum_{i=1}^{n_{PTO}} P_{PTO(i)} \cdot C_{FME(i)} \cdot SFC_{ME(i)}$$

with the condition  $0.75 \cdot \sum_{i=1}^{n_{PTO}} P_{PTO(i)} \leq P_{AE}$ .

Where the total propulsion power is limited by verified technical means as indicated under section 6, the term  $\left( \sum_{i=1}^{n_{ME}} P_{ME(i)} \cdot C_{FME(i)} \cdot SFC_{ME(i)} + \sum_{i=1}^{n_{PTI}} P_{PTI(i)} \cdot C_{FAE} \cdot SFC_{AE} \right)$  is to be replaced by 75 percent of the limited total propulsion power multiplied by the average weighted value of  $(SFC_{ME} \cdot C_{FME})$  and  $(SFC_{AE} \cdot C_{FAE})$ .

Due to the uncertainties in the estimation of the different parameters, the accuracy of the calculation of the attained EEDI cannot be better than 1%.

Therefore, the values of attained and required EEDI have to be reported with no more than three significant figures (for instance, 2.23 or 10.3) and compliance with Regulations 20, 21 of Chapter 4 of MARPOL Annex VI is to be verified in accordance with this accuracy.

## **4 Fuel consumption and Fuel Conversion Factor**

### **4.1 General**

The conversion factor CF and the specific fuel consumption, SFC, are determined from the results recorded in the parent engine NOx Technical File as defined in the NOx Technical Code 2008.

The fuel grade used during the test of the engine in the test bed measurement of SFC determines the value of the CF conversion factor according to the table provided under paragraph "CF ; Conversion factor between fuel consumption and CO<sub>2</sub> emission" of the IMO Calculation Guidelines.

SFC is the corrected specific fuel consumption, measured in g/kWh, of the engines or steam turbines as defined under paragraph "SFC, Certified specific fuel consumption" of the IMO Calculation guidelines.

For main engines certified to the E2 or E3 test cycles of the NOx Technical Code 2008, the engine Specific Fuel Consumption (SFC<sub>ME(i)</sub>) is that recorded in the test report included in a NOx Technical File for the parent engine(s) at 75% of MCR power.

For engines certified to the D2 or C1 test cycles of the NOx Technical Code 2008, the engine Specific Fuel Consumption (SFC<sub>AE(i)</sub>) is that recorded in the test report included in a NOx Technical File for the parent engine(s) at 50% of MCR power or torque rating.

At the design stage, in case of unavailability of test reports in the NOx Technical File, the SFC value given by the manufacturer with the addition of the guarantee tolerance is to be used.

### **4.2 Dual-fuel engines**

Gas fuel may be used as primary fuel for one or more of the main and auxiliary engine(s) in accordance with the IMO Verification Guidelines.

For these dual-fuel engines, the C<sub>F</sub> factor and the Specific Fuel Consumption for gas (LNG) and for pilot fuel should be combined at the relevant EEDI load point as described in the IMO Calculation Guidelines.

### **4.3 LNG carriers with steam turbine propulsion**

The Specific Fuel Consumption of the steam turbine should be determined during the running tests of the main boilers and steam turbines on board under load during the sea trials. For preliminary estimate of EEDI, manufacturer's certificate is to be used.



## 5 Capacity, power and speed

### 5.1 Capacity

The capacity of the ship is computed as a function of the gross tonnage for passenger and cruise passenger ships and of the deadweight for other types of ships as indicated the IMO Calculation Guidelines.

For the computation of the deadweight according to the IMO Calculation Guidelines, the lightweight of the ship and the displacement at the summer load draught are to be based on the results of the inclining test or lightweight check provided in the final stability booklet. At the design stage, the deadweight may be taken in the provisional documentation.

### 5.2 Power

The installed power for EEDI determination is taking into account the propulsion power and in general a fixed part of the auxiliary power, measured at the output of the crankshaft of main or auxiliary engine.

For LNG carriers having diesel electric propulsion system, the power  $P_{ME}$  is 83% of the rated output of the electrical propulsion motor(s) divided by the electrical chain efficiency from the output of the auxiliary engines to the output of the propulsion motor(s).

The total propulsion power is conventionally taken as follows:

$$\sum_{i=1}^{n_{ME}} P_{ME(i)} + \sum_{i=1}^{n_{PTI}} (P_{PTI(i)} \cdot \eta_{PTI(i)}) \cdot \eta_{cen}$$

In this formula:

- The value of  $P_{ME(i)}$  may be limited by verified technical means (see 6 below)
- The total propulsion power may be limited by verified technical means. In particular an electronic engine control system may limit the total propulsion power, whatever the number of engines in function (see 6 below)

If shaft motors are installed (PTI), then in principle 75% of the shaft motor propulsion power is accounted for in the EEDI calculation. Detailed explanation about this is given in section 6.

The auxiliary power can be nominally defined as a specified proportion of main engine power aiming to cover normal maximum sea load for propulsion and accommodation<sup>1</sup>. The nominal values are 2.5% of main engine power plus 250 kW for installed main engine power equal to or above 10 MW. 5% of main engine power will be accounted if less than 10 MW main engine power is installed. Alternatively, as explained below, the value for auxiliary power can be taken from the electric power table (EPT) of the ship.

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<sup>1</sup> under "PAE : Auxiliary engine power" of the IMO Calculation Guidelines.



For Passenger ships, Ro-Ro Passenger Ships and Cruise Passenger Ships, the  $P_{AE}$  value should be estimated by the consumed electric power (excluding propulsion) in conditions when the ship is engaged in a voyage at reference speed ( $V_{ref}$ ), as given in the electric power table (EPT), divided by the average efficiency of the generator(s) weighted by power.

As an option for other vessel types, if the difference between  $P_{AE}$  value calculated by paragraphs "PAE ; Auxiliary engine power" of IMO Calculation Guidelines and  $P_{AE}$  based on EPT, leads to a variation of the computed EEDI value exceeding 1%, the value for auxiliary power could be taken from the EPT.

### 5.3 Speed $V_{ref}$

The speed  $V_{ref}$  is the ship speed, measured in knots, verified during sea trials and corrected to be given in the following ideal conditions:

- in deep water of 15°C
- assuming the weather is calm with no wind, no current and no waves
- in the loading condition corresponding to the Capacity
- at the total propulsion power defined in 5.2 taking into account shaft generators and shaft motors

## 6 Shaft generator and shaft motor

### 6.1 Introduction and background

As for paragraphs " $P_{PTO(i)}$  ; Shaft generator" and " $P_{PTI(i)}$  ; Shaft Motor" of IMO Calculation Guidelines, content of this section applies to ships other than LNG carriers having diesel-electric propulsion system.

Ships need electrical power for the operation of engine auxiliary systems, other systems, crew accommodation and for any cargo purposes. This electrical power can be generated by diesel-generator sets (gen-sets), shaft generators, waste heat recovery systems driving a generator and possibly by other innovative technologies, e.g. solar panels.

Diesel-generator sets and shaft generators are the most common systems. While diesel-generator sets use a diesel engine powering a generator, a shaft generator is driven by the main engine. It is considered that due to the better efficiency of the main engine and efficiency of the shaft generator less CO<sub>2</sub> is emitted compared to gen-set operation.

The EEDI formula expresses the propulsion power of a vessel as 75% of the main engine power  $P_{ME}$ . It is also termed shaft power  $P_s$ , which corresponds to the ship's speed  $V_{ref}$  in the EEDI formula.

$P_{AE}$  - the auxiliary power - is also included in the EEDI formula. However, this power demand is largely dependent on loading and trading patterns and it must also incorporate safety aspects, for example, the provision of a spare generator set. As noted in section 5, the auxiliary power can generally be taken into account as a fixed proportion of the main engine power (i.e. nominally 2.5% plus 250kW) <sup>2</sup>.

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<sup>2</sup> c.f.: precise instruction in IMO Calculation Guidelines.

The use of shaft generators is a well proven and often applied technology, particularly for high electrical power demands related to the payload e.g. reefer containers. Usually a ship design implements a main engine to reach the envisaged speed with some provision of sea margin. For the use of a shaft generator past practice and understanding was to install a bigger main engine to reach the same speed compared to the design without a shaft generator and to then have the excess power available from the main engine at any time for generation of electrical power. As a rule of thumb, one more cylinder was added to the main engine to cover this additional power demand.

The difficulty with this issue for calculation of the EEDI is that the excess power could be used to move the ship faster in the case where the shaft generator is not in use which would produce a distortion between ship designs which are otherwise the same.

The IMO Calculation Guidelines take these circumstances into account and offer options for the use of shaft generators. These options are described in detail, below.

Further, electric shaft motors operate similarly to shaft generators; sometimes a shaft generator can act as a shaft motor. The possible influence of shaft motors has also been taken into account in the IMO Calculation Guidelines and is also illustrated, below.

## **6.2 Main engine power without shaft generators**

The main engines are solely used for the ship's propulsion. For the purpose of the EEDI, the main engine power is 75 % of the rated installed power  $MCR_{ME}$  for each main engine:

$$P_{ME(i)} = 0.75 \times MCR_{ME(i)}$$

## **6.3 Main engine power with shaft generators**

Shaft generators produce electric power using power from the prime mover (main engine). Therefore the power used for the shaft generator is not available for the propulsion. Hence  $MCR_{ME}$  is the sum of the power needed for propulsion and the power needed for the shaft generator. Thus at least a part of the shaft generator's power should be deductible from the main engine power ( $P_{ME}$ ).

The power driving the shaft generator is not only deducted in the calculation. As this power is not available for propulsion this yields a reduced reference speed. The speed is to be determined from the power curve obtained at the sea trial as explained in the schematic figure provided in paragraph "Option 2 of  $P_{PTO(i)}$  ; Shaft generator" of the IMO Calculation Guidelines.

It has been defined that 75% of the main engine power is entered in the EEDI calculation. To induce no confusion in the calculation framework, it has therefore also been defined to take into account 75% of the shaft power take off.

For the calculation of the effect of shaft generators, two options are available.



### 6.3.1 Option 1

For this option,  $P_{PTO(i)}$  is defined as 75% of the rated electrical output power  $MCR_{PTO}$  of each shaft generator. The maximum allowable deduction is limited by the auxiliary power  $P_{AE}$  as described in Paragraph "PAE ; Auxiliary engine power" of the IMO Calculation Guidelines.

Then the main engine power  $P_{ME}$  is:

$$P_{PTO(i)} = 0.75 \times MCR_{PTO(i)}$$

$$\sum P_{ME(i)} = 0.75 \times \sum (MCR_{ME(i)} - P_{PTO(i)}) \text{ with } 0.75 \times \sum P_{PTO(i)} \leq P_{AE}$$

This means, that only the maximum amount of shaft generator power that is equal to  $P_{AE}$  is deductible from the main engine power. In doing so, 75% of the shaft generator power to be used in the EEDI calculation must NOT be greater than the auxiliary power calculated in accordance to Para. "PAE ; Auxiliary engine power" of IMO Calculation Guidelines.

Higher shaft generators output than  $P_{AE}$  will not be accounted for under option 1.

### 6.3.2 Option 2

The main engine power  $P_{ME}$  to be considered for the calculation of the EEDI is defined as 75% of the power to which the propulsion system is limited. This can be achieved by any verified technical means, e.g. by electronic engine controls.

$$P_{ME(i)} = 0.75 \times P_{shaft,limit}$$

This option is to cover designs with the need for very high power requirements (e.g., pertaining to the cargo). With this option it is ensured that the higher main engine power cannot be used for a higher ship speed. This can be safeguarded by the use of verified technical devices limiting the power to the propulsor.

For example, consider a ship having a 15 MW main engine with a 3 MW shaft generator. The shaft limit is verified to 12 MW. The EEDI is then calculated with only 75% of 12 MW as main engine power as, in any case of operation, no more power than 12 MW can be delivered to the propulsor, irrespective of whether a shaft generator is in use or not.

It is to be noted that the guidelines do not stipulate any limits as to the value of the shaft limit in relation to main engine power or shaft generator power.

### 6.3.3 The use of specific fuel oil consumption and CF-factor

Shaft generators are driven by the main engine, therefore the specific fuel oil consumption of the main engine is allowed to be used to the full extent if 75% of the shaft generator power is equal to  $P_{AE}$ .

In the case shaft generator power is less than  $P_{AE}$  then 75% of the shaft generator power is calculated with the main engine's specific fuel oil consumption and the remaining part of the total  $P_{AE}$  power is calculated with SFC of the auxiliaries ( $SFC_{AE}$ ).

The same applies to the conversion factor  $C_F$ , if different fuels are used in the EEDI calculation.



#### 6.4 Total shaft power with shaft motors

In the case where shaft motor(s) are installed, the same guiding principles as explained for shaft generators, above, apply. But in contrast to shaft generators, motors do increase the total power to the propulsor and do increase ships' speed and therefore must be included in the total shaft power within the EEDI calculation. The total shaft power is thus main engine(s) power plus the additional shaft motor(s) power:

$$\sum P_{ME(i)} + \sum P_{PTI(i),Shaft}$$

Where:

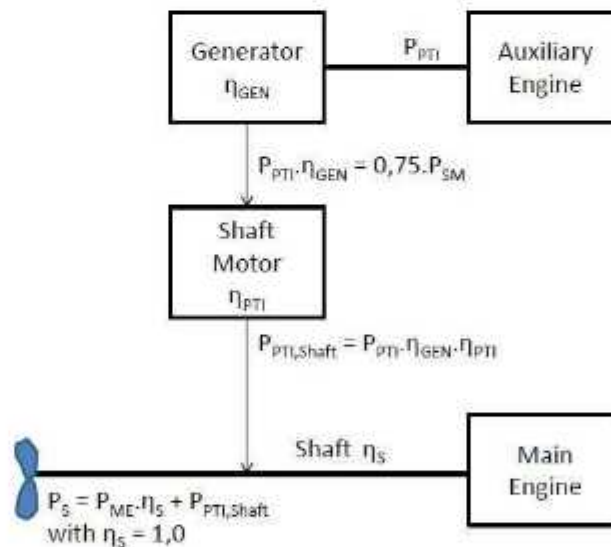
$$\sum P_{PTI(i),Shaft} = \sum (0.75 \cdot P_{SM,max(i)} \cdot \eta_{PTI(i)})$$

and  $\sum P_{ME}$  may be 0(zero) if the ship is a diesel-electric cruise passenger ship.

Similar to the shaft generators, only 75% of the rated power consumption  $P_{SM,max}$  (i.e. rated motor output divided by the motor efficiency) of each shaft motor divided by the weighted average efficiency of the generator(s)  $\eta_{Gen}$  is taken into account for EEDI calculation<sup>3</sup>.

$$\sum P_{PTI(i)} = \frac{\sum (0.75 \cdot P_{SM,max(i)})}{\eta_{Gen}}$$

Figure 1.1 provides the notations used for the power and efficiencies used in IMO Calculation Guidelines and the present document.



**Figure 1.1: flow of power in a generic shaft motor installation**

A power limitation similar to that described above for shaft generators can also be used for shaft motors. So if a verified technical measure is in place to limit the propulsion output, only 75% of limited power is to be used for EEDI calculation and also for that limited power  $V_{ref}$  is determined.

<sup>3</sup> The efficiency of shaft generators in the previous section has consciously not been taken into account in the denominator as inefficient generator(s) would increase the deductible power.

A diagram is inserted to highlight where the mechanical and electrical efficiencies or the related devices (PTI and Generator's) are located:

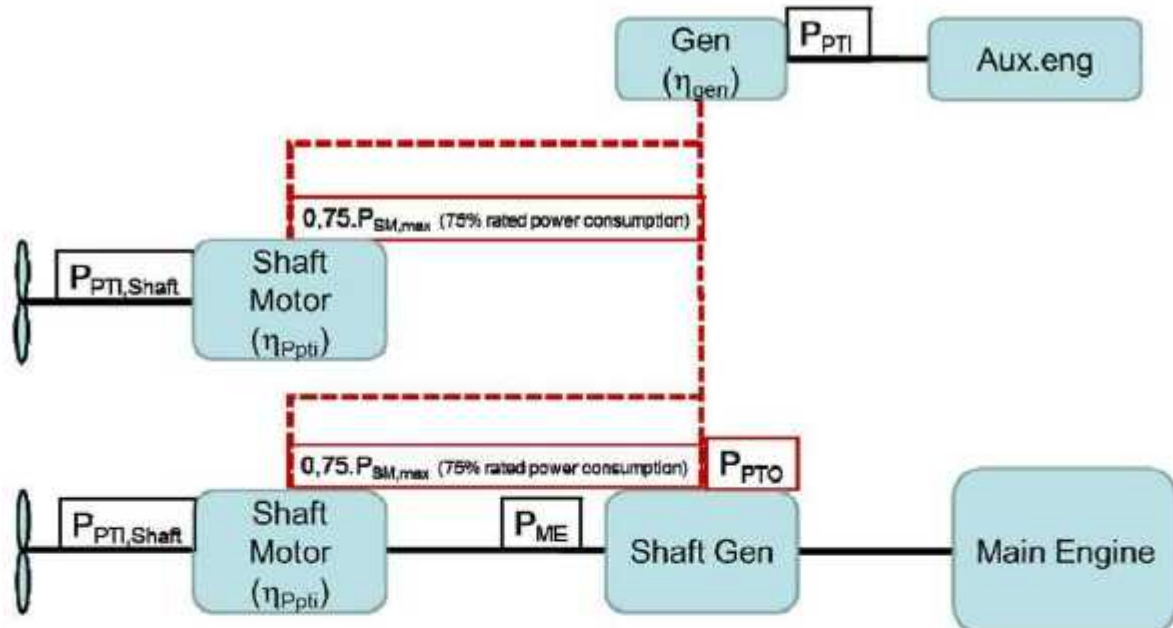


Figure 1.2: Typical arrangement of propulsion and electric power system

## 6.5 Calculation examples

For these calculation examples the ships' following main parameters are set as:

$MCR_{ME} = 20,000 \text{ kW}$   
 $Capacity = 20,000 \text{ DWT}$   
 $C_{F,ME} = 3.206$   
 $C_{F,AE} = 3.206$   
 $SFC_{ME} = 190 \text{ g/kWh}$   
 $SFC_{AE} = 215 \text{ g/kWh}$   
 $v_{ref} = 20 \text{ kn}$  (without shaft generator/motor)

### 6.5.1 One main engine, no shaft generator

$MCR_{ME} = 20,000 \text{ kW}$   
 $P_{ME} = 0.75 \times MCR_{ME} = 0.75 \times 20,000 \text{ kW} = 15,000 \text{ kW}$   
 $P_{AE} = (0.025 \times 20,000) + 250 \text{ kW} = 750 \text{ kW}$   
 $EEDI = ((15,000 \times 3.206 \times 190) + (750 \times 3.206 \times 215)) / (20 \times 20,000)$   
 $= 24.1 \text{ g CO}_2 / t \text{ nm}$

### 6.5.2 One main engine, $0.75 \times P_{PTO} < P_{AE}$ , option 1

$$MCR_{PTO} = 500 kW$$

$$P_{PTO} = 500 kW \times 0.75 = 375 kW$$

$$MCR_{ME} = 20,000 kW$$

$$P_{ME} = 0.75 \times (MCR_{ME} - P_{PTO}) = 0.75 \times (20,000 kW - 375 kW) = 14,719 kW$$

$$P_{AE} = (0.025 \times MCR_{ME}) + 250 kW = 750 kW$$

$$v_{ref} = 19.89 kn : \text{The speed at } P_{ME} \text{ determined from the power curve}$$

$$EEDI = \left( (P_{ME} \times C_{F,ME} \times SCF_{ME}) + (0.75 \times P_{PTO} \times C_{F,ME} \times SCF_{ME}) + ((P_{AE} - 0.75 \times P_{PTO}) \times C_{F,AE} \times SCF_{AE}) \right) / (DWT \times v_{ref})$$

$$= 23.8 \text{ g CO}_2 / t nm \approx 1\%$$

### 6.5.3 One main engine, $0.75 \times P_{PTO} = P_{AE}$ , option 1

$$MCR_{PTO} = 1,333 kW$$

$$P_{PTO} = 1,333 kW \times 0.75 = 1,000 kW$$

$$MCR_{ME} = 20,000 kW$$

$$P_{ME} = 0.75 \times (MCR_{ME} - P_{PTO}) = 0.75 \times (20,000 kW - 1,000 kW) = 14,250 kW$$

$$P_{AE} = (0.025 \times MCR_{ME}) + 250 kW = 750 kW$$

$$v_{ref} = 19.71 kn : \text{The speed at } P_{ME} \text{ determined from the power curve}$$

$$EEDI = \left( (P_{ME} \times C_{F,ME} \times SCF_{ME}) + (0.75 \times P_{PTO} \times C_{F,ME} \times SCF_{ME}) \right) / (DWT \times v_{ref})$$

$$= 23.2 \text{ g CO}_2 / t nm \approx 4\%$$

### 6.5.4 One main engine with shaft generator, $0.75 \times P_{PTO} > P_{AE}$ , option 1

$$MCR_{PTO} = 2,000 kW$$

$$0.75 \times P_{PTO} = 0.75 \times 2,000 kW \times 0.75 = 1,125 kW > P_{AE} \Rightarrow P_{PTO} = P_{AE} / 0.75 = 1,000 kW$$

$$MCR_{ME} = 20,000 kW$$

$$P_{ME} = 0.75 \times (MCR_{ME} - P_{PTO}) = 0.75 \times (20,000 kW - 1,000 kW) = 14,250 kW$$

$$P_{AE} = (0.025 \times MCR_{ME}) + 250 kW = 750 kW$$

$$v_{ref} = 19.71 kn : \text{The speed at } P_{ME} \text{ determined from the power curve}$$

$$EEDI = \left( (P_{ME} \times C_{F,ME} \times SCF_{ME}) + (0.75 \times P_{PTO} \times C_{F,ME} \times SCF_{ME}) \right) / (DWT \times v_{ref})$$

$$= 23.2 \text{ g CO}_2 / t nm \approx 4\%$$

### 6.5.5 One main engine with shaft generator, $0.75 \times P_{PTO} > P_{AE}$ , option 2

$$MCR_{PTO} = 2,000 kW$$

$$MCR_{ME} = 20,000 kW$$

$$P_{Shaft, generator} = 18,000 kW$$

$$P_{ME} = (0.75 \times P_{Shaft, generator}) = 0.75 \times (18,000 kW) = 13,500 kW$$

$$P_{AE} = (0.025 \times MCR_{ME}) + 250 kW = 750 kW$$

$$v_{ref} = 19.41 kn : \text{The speed at } P_{ME} \text{ determined from the power curve}$$

$$EEDI = \left( (P_{ME} \times C_{F,ME} \times SCF_{ME}) + (P_{AE} \times C_{F,ME} \times SCF_{ME}) \right) / (DWT \times v_{ref})$$

$$= 22.4 \text{ g CO}_2 / t nm \approx 7\%$$



### 6.5.6 One main engine, one shaft motor

$$MCR_{ME} = 18,000 kW$$

$$P_{ME} = 0.75 \times MCR_{ME} = 0.75 \times 18,000 kW = 13,500 kW$$

$$P_{AE} = \left\{ 0.025 \times \left( MCR_{ME} + \frac{P_{PTI}}{0.75} \right) \right\} + 250 kW = \left\{ 0.025 \times \left( 18000 + \frac{1612.9}{0.75} \right) \right\} + 250 kW = 754 kW$$

$$P_{SM,max} = 2,000 kW$$

$$P_{PTI} = 0.75 \times P_{SM,max} / \eta_{Gec} = 1,612.9 kW$$

$$\eta_{PTI} = 0.97$$

$$\eta_{Gec} = 0.93$$

$$P_{Shaft} = P_{ME} + P_{PTI,Shaft} = P_{ME} + (P_{PTI} \cdot \eta_{PTI}) \cdot \eta_{Gec} = 13,500 kW + (1612.9 \cdot 0.97) \cdot 0.93 = 14,955 kW$$

$$V_{ref} = 20 kn$$

$$EEDI = ((P_{ME} \times C_{F,ME} \times SFC_{ME}) + (P_{AE} \times C_{F,AE} \times SFC_{AE}) + (P_{PTI} \times C_{F,AE} \times SFC_{AE})) / (DWT \times V_{ref})$$

$$= 24.6 g CO_2 / t nm \quad \approx - 2\%$$

## 7 Weather factor $f_w$

$f_w$  is a non-dimensional coefficient indicating the decrease of speed in representative sea conditions of wave height, wave frequency and wind speed (e.g. Beaufort Scale 6), and is taken as 1.0 for the calculation of attained EEDI.

When a calculated  $f_w$  factor is used, the attained EEDI using calculated  $f_w$  shall be presented as "attained EEDI<sub>weather</sub>" in order to clearly distinguish it from the attained EEDI under regulations 20 in MARPOL Annex VI.

Guidelines for the calculation of the coefficient  $f_w$  for the decrease of ship speed in respective sea conditions are provided in MEPC.1/Circ.796, as amended.

## 8 Correction factor for ship specific design elements $f_j$

Except in the cases listed below, the value of the  $f_j$  factor is 1.0.

For Finnish-Swedish ice class notations or equivalent notations of the Classification Societies, the  $f_j$  power correction factor is indicated in the IMO Calculation Guidelines<sup>4</sup>.

For shuttle tankers with propulsion redundancy defined as oil tankers between 80,000 and 160,000 deadweight equipped with dual-engines and twin-propellers and assigned the class notations covering dynamic positioning and propulsion redundancy, the  $f_j$  factor is 0.77.

The total shaft propulsion power of shuttle tankers with redundancy is usually not limited by verified technical means.

For ro-ro cargo and ro-ro passenger ships, the correction factor  $f_{jRoRo}$  is to be computed according to the IMO calculation Guidelines.

For general cargo ships, the correction factor  $f_j$  is to be computed according to the IMO Calculation Guidelines.

$f_j$  factors for ice-class and for ship's type can be cumulated (multiplied) for ice-classed general cargo ships or ro-ro cargo or ro-ro passenger ships.

## 9 Capacity factor $f_i$ and Correction Factor $f_m$ for ice-classed ships having IA Super or IA

Except in the cases listed below, the value of the  $f_i$  factor is 1.0.

For Finnish-Swedish ice class notations or equivalent notations of the Classification Societies, the  $f_i$  capacity correction factor is indicated in the IMO Calculation Guidelines<sup>4</sup>.

For a ship with voluntary structural enhancement, the  $f_{IVSE}$  ship specific voluntary structural enhancement factor is to be computed according to the IMO Calculation Guidelines.

For bulk carriers and oil tankers built in accordance with the Common Structural Rules and assigned the class notation CSR, the  $f_{iCSR}$  factor is to be computed according to the IMO Calculation Guidelines.

$f_i$  capacity factors can be cumulated (multiplied), but the reference design for calculation of  $f_{IVSE}$  is to comply with the ice notation and/or Common Structural Rules as the case may be.

For ice-classed ships having IA Super or IA, the factor,  $f_m = 1.05$  should apply according to 2.2.19 of the IMO Calculation Guidelines.

## 10 Cubic capacity correction factor $f_c$ and cargo gears factor $f_i$

Except in the cases listed below, the value of the  $f_c$  and  $f_i$  factors is 1.0.

For chemical tankers as defined in regulation 1.16.1 of MARPOL Annex II, the  $f_c$  factor is to be computed according to the IMO Calculation Guidelines.

For gas carriers having direct diesel driven propulsion constructed or adapted and used for the carriage in bulk of liquefied natural gas, the  $f_c$  factor is to be computed according to the IMO Calculation Guidelines. This factor is not to be applied to LNG carriers defined in regulation 2.38 of MARPOL Annex VI.

For ro-ro passenger ships having a DWT/GT-ratio of less than 0.25, the cubic capacity correction factor  $f_{cRoPax}$  is to be computed according to the IMO Calculation Guidelines.

For bulk carriers having R of less than 0.55 (e.g. wood chip carriers), the cubic capacity correction factor,  $f_c$  bulk carriers designed to carry light cargoes, =  $R-0.15$  should apply according to the IMO Calculation Guidelines. where, R is the capacity ratio of the deadweight of the ship (tonnes) divided by the total cubic capacity of the cargo tanks of the ship (m<sup>3</sup>)

For general cargo ships only equipped with cranes, side loaders or ro-ro ramps, the  $f_i$  correction factor is to be computed according to the IMO Calculation Guidelines.

## 11 Innovative energy efficient technologies

Innovative energy efficient technologies are to be taken into account according to the 2013 Guidance on treatment of innovative energy efficiency technologies for calculation and verification of the attained EEDI, MEPC.1/Circ.815 as amended.

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<sup>4</sup> Tables 1 and 2 in IMO Calculation Guidelines refer to Finnish/Swedish ice classed ships usually trading in the Baltic Sea. Justified alternative values for  $f_i$  and  $f_j$  factors may be accepted for ice-classed ships outside this scope of application (e.g. very large ships or POLAR CLASS)



## 12 Example of calculation

### 12.1 List of input parameters for calculation of EEDI

The input parameters used in the calculation of the EEDI are provided in Table 1.

The values of all these parameters are to be indicated in the EEDI Technical File and the documents listed in the "source" column are to be submitted to the verifier.

For electrical generator, the rated electrical output in kW is related to the rated apparent power output in kVA by the following relation:  $MCR_{PTO} \text{ (kW)} = KVA_{PTO} * 0.8$  where 0.8 is the conventional power factor.

**Table 1: input parameters for calculation of EEDI**

Symbol	Name	Usage	Source	Scope
	Service notation	Capacity, $f_i$ , $f_j$ and $f_c$ factors		For the ship
	Class notations	$f_j$ for shuttle tanker, $f_{iCSR}$	Classification file	
	Ice notation	$f_i$ , $f_j$ for ice class		
Lpp	Length between perpendiculars (m)	$f_i$ , $f_j$ for ice class, $f_{jRoRo}$ , $f_j$ for general cargo ships		
Bs	Breadth (m)	$f_{jRoRo}$ , $f_j$ for general cargo ships		
ds	Summer load line draught (m)	$f_{jRoRo}$ , $f_j$ for general cargo ships		
$\nabla$	Volumetric displacement	$f_{jRoRo}$ , $f_j$ for general cargo ships		
$\Delta$	Displacement @ summer load draught (t)	deadweight, $f_{IVSE}$ , $f_{cRoPax}$ , $f_i$ for general cargo ships, $f_c$ for bulk carriers	final stability file	
LWT	Lighthouse weight (t)	deadweight, $f_{IVSE}$ , $f_{iCSR}$ , $f_{cRoPax}$ , $f_i$ for general cargo ships	Sheets of Submitter calculation for lightweight <sub>referencedesign</sub> lightweight check report	
GT	Gross tonnage	Capacity, $f_{cRoPax}$		
P <sub>AE</sub>	Auxiliary engine power (kW)	EEDI	Note: Computed from engines & PTIs powers or electric power table	
V <sub>ref</sub>	Reference speed (knot)	EEDI, $f_{jRoRo}$ , $f_j$ for general cargo ships	Sea trial report	
Cube	Total cubic capacity of the cargo tanks (m3)	$f_c$ for chemical tankers and gas carriers	Tonnage file	
Vgas(or liquid)	Tank volume for fuels (m3)	$f_{DFgas}$ , $f_{DFliquid}$ availability ratios	Capacity plan	
SWL	Safe working load of the crane (t)	$f_i$ for general cargo ships		
Reach	Reach of the crane (m)	$f_i$ for general cargo ships		

Symbol	Name	Usage	Source	Scope
MCR	Rated installed power (kW)	$P_{ME}$	EIAPP certificate or nameplate (if less than 130 kW)	Per engine (nME + nGEN)
$MCR_{lim}$	Limited rated output power after PTO in (kW)	$P_{ME}$ with PTO option 2	Verification file	
$MPP_{Motor}$	Rated output of motor (kW)	$P_{ME}$ for LNG carriers having diesel electric propulsion system	Certificate of the product	
$\eta$	Electrical efficiency	$P_{ME}$ for LNG carriers having diesel electric propulsion system		
$MCR_{SteamTurbine}$	Rated installed power (kW)	$P_{ME}$ for LNG carriers having steam turbine propulsion system	Certificate of the product	
	Fuel grade	$C_F$ , SFC	NOX Technical File of the parent engine	
SFC	Corrected specific fuel consumption (g/kWh)	EEDI	NOx Technical File of the parent engine	
$KVA_{PTO}$	Rated electrical apparent output power (kVA)	$P_{ME}$	Nameplate of the shaft generator	Per shaft generator (nPTO)
$P_{PTI,Shaft}$	Mechanical output power (kW)	EEDI	Nameplate of the shaft motor	Per shaft motor (nPTI)
$\eta_{PTI}$	efficiency	power		
$\eta_{GEN}$	efficiency	power		Per generator (nGEN)
$P_{SHAFTlim}$	Limited shaft propulsion power (kW)	Limited power where means of limitation are fitted	Verification file	Per shaftline (nSHAFT)

## 12.2 Sample calculation of EEDI

A sample of document to be submitted to the verifier is provided in Appendix 2.

In addition, Appendix 6 contains a list of sample calculations of EEDI, as follows:

- Appendix 6.1: Cruise passenger ship with diesel-electric propulsion
- Appendix 6.2: LNG carrier with diesel-electric propulsion
- Appendix 6.3: Diesel-driven LNG carrier with re-liquefaction system
- Appendix 6.4: LNG carrier with steam turbine propulsion

## Part III - Verification of EEDI

### 13 Verification process

Attained EEDI is to be computed in accordance with the IMO Calculation Guidelines and Part II of the present Industry Guidelines. Survey and certification of the EEDI are to be conducted according to the IMO verification Guidelines, on two stages:

1. preliminary verification at the design stage
2. final verification at the sea trial

The flow of the survey and certification process is presented in Figure 2.

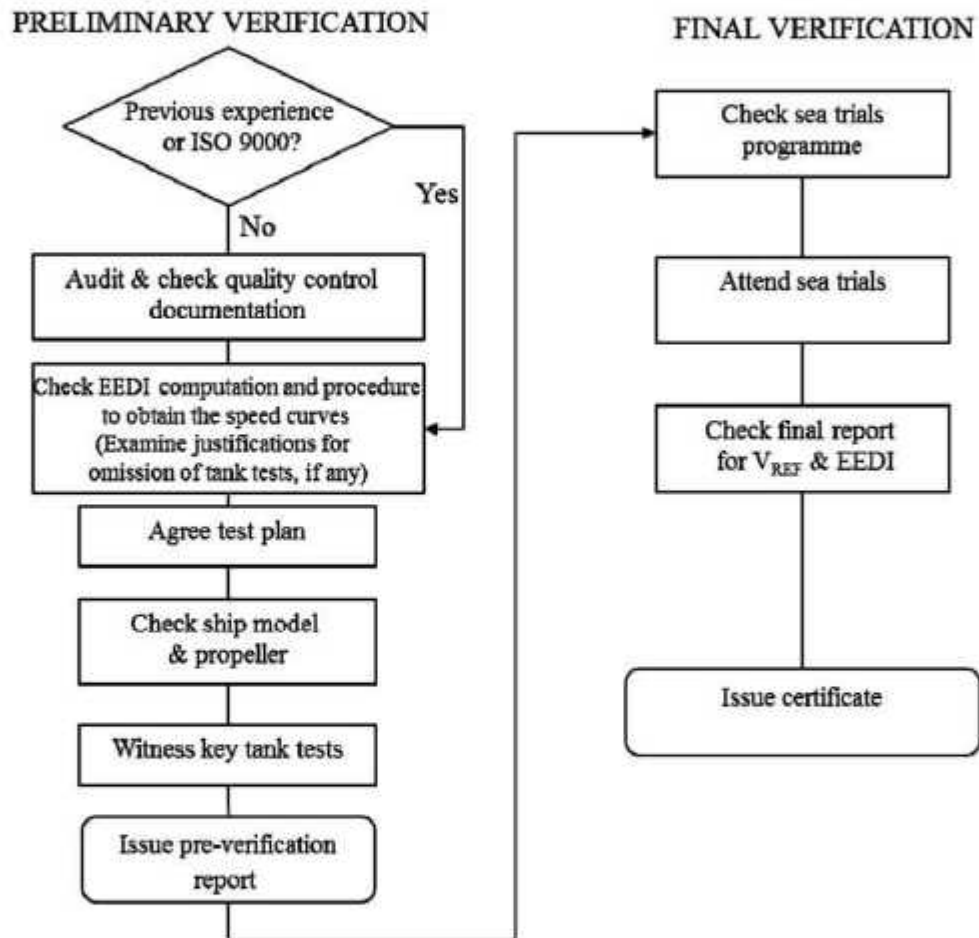


Figure 2: Flow of survey and certification process by verifier

### 14 Documents to be submitted

A sample of documents to be submitted to the verifier including additional information for verification is provided in Appendix 2.

The following information/documents are to be submitted by the submitter to the verifier at the design stage. Reference is to be made also to Appendix 1, Appendix 3 and Appendix 4



**Table 2: documents to be submitted at the design stage**

EEDI Technical File	EEDI Technical File as defined in the IMO Verification Guidelines. See example of the EEDI Technical File in Appendix 1 of IMO Verification Guidelines.
NOx Technical File	<p>Copy of the NOx Technical File and documented summary of the SFC correction for each type of main and auxiliary engine with copy of EIAPP certificate.</p> <p>Note: if the NOx Technical File has not been approved at the time of the preliminary verification, the SFC value with the addition of the guarantee tolerance is to be provided by Manufacturer. In this case, the NOx Technical File is to be submitted at the final verification stage.</p>
Electric Power Table	If $P_{AE}$ is significantly different from the values computed using the formula in the IMO Calculation Guidelines
Ship lines and model particulars	<ul style="list-style-type: none"> <li>- Lines of ship</li> <li>- Report including the particulars of the ship model and propeller model</li> </ul>
Verification file of power limitation technical arrangement	If the propulsion power is voluntarily limited by verified technical means
Power curves	Power-speed curves predicted at full scale in sea trial condition and EEDI condition
Description of the towing tank test facility and towing tank test organisation quality manual	<p>If the verifier has no recent experience with the towing tank test facility and the towing tank test organization quality system is not ISO 9001 certified.</p> <ul style="list-style-type: none"> <li>- Quality management system of the towing tank test including process control, justifications concerning repeatability and quality management processes</li> <li>- Records of measuring equipment calibration as described in Appendix 3</li> <li>- Standard model-ship extrapolation and correlation method (applied method and tests description)</li> </ul>
Gas fuel oil general arrangement plan	If gas fuel is used as the primary fuel of the ship fitted with dual fuel engines. Gas fuel storage tanks (with capacities) and bunkering facilities are to be described.
Towing Tank Tests Plan	Plan explaining the different steps of the towing tank tests and the scheduled inspections allowing the verifier to check compliance with the items listed in Appendix 1 concerning tank tests
Towing Tank Tests Report	<ul style="list-style-type: none"> <li>- Report of the results of the towing tank tests at sea trial and EEDI condition as required in Appendix 4</li> <li>- Values of the experience-based parameters defined in the standard model-ship correlation method used by the towing tank test organization/shipyard</li> <li>- Reasons for exempting a towing tank test, only if applicable</li> <li>- Numerical calculations report and validation file of these calculations, only if calculations are used to derive power curves</li> </ul>
Ship reference speed $V_{ref}$	Detailed calculation process of the ship speed, which is to include the estimation basis of experience-based parameters such as roughness coefficient, wake scaling coefficient

The following information is to be submitted by the submitter to the verifier at the final verification stage (and before the sea trials for the programme of sea trials):

**Table 3: documents to be submitted at the final verification stage**

Programme of sea trials	Description of the test procedure to be used for the speed trial, with number of speed points to be measured and indication of PTO/PTI to be in operation, if any.
Sea trials report	Report of sea trials with detailed computation of the corrections allowing determination of the reference speed $V_{ref}$
Final stability file	Final stability file including lightweight of the ship and displacement table based on the results of the inclining test or the lightweight check
Final power curves	Final power curve in the EEDI condition showing the speed adjustment methodology
Revised EEDI Technical File	Including identification of the parameters differing from the calculation performed at the initial verification stage
Ship lines	Lines of actual ship

Concerning confidential information of submitters that may be contained in the above mentioned documents, reference is to be made to IMO Verification Guidelines,

## 15 Preliminary verification at the design stage

### 15.1 Scope of the verifier work

For the preliminary verification of the EEDI at the design stage, the verifier:

- Review the EEDI Technical File, check that all the input parameters (see 12.1 above) are documented and justified and check that the possible omission of a towing tank test has been properly justified
- Check that the ITTC procedures and quality system are implemented by the organization conducting the towing tank tests. The verifier should possibly audit the quality management system of the towing tank if previous experience is insufficiently demonstrated
- Witness the towing tank tests according to a test plan initially agreed between the submitter and the verifier
- Check that the work done by the towing tank test organisation is consistent with the present Guidelines. In particular, the verifier will check that the power curves at full scale are determined in a consistent way between sea trials and EEDI loading conditions, applying the same calculation process of the power curves and considering justifiable differences of experience based parameters between the two conditions
- Issue a pre-verification report

### 15.2 Definitions

*Experience-based parameters* means parameters used in the determination of the scale effects coefficients of correlation between the towing tank model scale results and the full scale predictions of power curves.

This may include:

1. Hull roughness correction
2. Wake correction factor
3. Air resistance correction factor (due to superstructures and deck load)
4. Appendages correction factor (for appendages not present at model scale)



5. Propeller cavitation correction factor
6. Propeller open-water characteristics correction
7.  $C_P$  and  $C_N$  (see below)
8.  $\Delta C_{FC}$  and  $\Delta w_C$  (see below)

*Ship of the same type* means a ship of which hull form (expressed in the lines such as sheer plan and body plan) excluding additional hull features such as fins and of which principal particulars are identical to that of the base ship.

Definition of survey methods directly involving the verifier: Review and Witness.

*Review* means the act of examining documents in order to determine identification and traceability and to confirm that requested information are present and that EEDI calculation process conforms to relevant requirements.

*Witness* means the attendance at scheduled key steps of the towing tank tests in accordance with the agreed Test Plan to the extent necessary to check compliance with the survey and certification requirements.

### **15.3 Towing tank tests and numerical calculations**

There are two loading conditions to be taken into account for EEDI: EEDI loading condition and sea trial condition.

The speed power curves for these two loading conditions are to be based on towing tank test measurements. Towing tank test means model towing tests, model self-propulsion tests and model propeller open water tests.

Numerical calculations may be accepted as equivalent to model propeller open water tests.

Possible omission of towing tank tests is addressed in the IMO Verification Guidelines

Numerical calculations may be submitted to justify derivation of speed power curves, where only one parent hull form have been verified with towing tank tests, in order to evaluate the effect of additional hull features such as fore bulb variations, fins and hydrodynamic energy saving devices.

These numerical tests may include CFD calculation of propulsive efficiency at reference speed  $V_{ref}$  as well as hull resistance variations and propeller open water efficiency.

In order to be accepted, these numerical tests are to be carried out in accordance with defined quality and technical standards (ITTC 7.5-03-01-04 at its latest revision or equivalent). The comparison of the CFD-computed values of the unmodified parent hull form with the results of the towing tank tests must be submitted for review.

### **15.4 Qualification of verifier personnel**

Surveyors of the verifier are to confirm through review and witness as defined in 15.2 that the calculation of EEDI is performed according to the relevant requirements listed in 1.1. The surveyors are to be qualified to be able to carry out these tasks and procedures are to be in place to ensure that their activities are monitored.

### **15.5 Review of the towing tank test organisation quality system**



The verifier is to familiarize with the towing tank test organization test facilities, measuring equipment, standard model-ship extrapolation and correlation method (applied method and tests description) and quality system for consideration of complying with the requirements of 15.6 prior to the test attendance when the verifier has no recent experience of the towing tank test facilities.

When in addition the towing tank test organization quality control system is not certified according to a recognized scheme (ISO 9001 or equivalent) the following additional information relative to the towing tank test organization is to be submitted to the verifier:

1. descriptions of the towing tank test facility; this includes the name of the facility, the particulars of towing tanks and towing equipment, and the records of calibration of each monitoring equipment as described in Appendix 3
2. quality manual containing at least the information listed in the ITTC Sample quality manual (2002 issue) Records of measuring equipment calibration as described in Appendix 3

### **15.6 Review and Witness**

The verifier is to review the EEDI Technical File, using also the other documents listed in table 2 and submitted for information in order to verify the calculation of EEDI at design stage. This review activity is described in Appendix 1. Since detailed process of the towing tank tests depends on the practice of each submitter, sufficient information is to be included in the document submitted to the verifier to show that the principal scheme of the towing tank test process meets the requirements of the reference documents listed in Appendix 1 and Appendix 4.

Prior to the start of the towing tank tests, the submitter is to submit a test plan to the verifier. The verifier reviews the test plan and agrees with the submitter which scheduled inspections will be performed with the verifier surveyor in attendance in order to perform the verifications listed in Appendix 1 concerning the towing tank tests.

Following the indications of the agreed test plan, the submitter will notify the verifier for the agreed tests to be witnessed. The submitter will advise the verifier of any changes to the activities agreed in the Test Plan and provide the submitter with the towing tank test report and results of trial speed prediction.

### **15.7 Model-ship correlation**

Model-ship correlation method followed by the towing tank test organization or shipyard is to be properly documented with reference to the 1978 ITTC Trial prediction method given in ITTC Recommended Procedure 7.5-02-03-1.4 rev.02 of 2011 or subsequent revision, mentioning the differences between the followed method and the 1978 ITTC trial prediction method and their global equivalence.

Considering the formula giving the total full scale resistance coefficient of the ship with bilge keels and other appendages:

$$C_{TS} = \frac{S_S + S_{BK}}{S_S} \cdot [(1 + k) \cdot C_{FS} + \Delta C_F + C_A] + C_R + C_{AAS} + C_{AppS}$$

The way of calculating the form factor  $k$ , the roughness allowance  $\Delta C_F$ , the correlation allowance  $C_A$ , the air resistance coefficient  $C_{AAS}$  and the appendages coefficient  $C_{AppS}$  are to

be documented (if they are taken as 0, this has to be indicated also), as indicated in Appendix 4.

The correlation method used is to be based on thrust identity and the correlation factors is to be according to method 1 ( $C_P - C_N$ ) or method 2 ( $\Delta C_{FC} - \Delta w_C$ ) of the 1978 ITTC Trial prediction method. If the standard method used by the towing tank test organization doesn't fulfil these conditions, an additional analysis based on thrust identity is to be submitted to the verifier.

The verifier will check that the power-speed curves obtained for the EEDI condition and sea trial condition are obtained using the same calculation process and properly documented as requested in Appendix 4 "Witnessing of model test procedures". In particular, the verifier will compare the differences between experience based coefficients  $C_p$  and  $\Delta C_{FC}$  between the EEDI condition ( $\nabla_{full}$ ) and sea trial condition if different from EEDI condition ( $\nabla$ ) with the indications given in Figures 3.1 and 3.2 extracted from a SAJ-ITTC study on a large number of oil tankers. If the difference is significantly higher than the values reported in the Figures, a proper justification of the values is to be submitted to the verifier.

NB: The trends in Figures 3.1 and 3.2 are based on limited data and may be revised in the future. The displayed trends depend on the method used to analyze the model tests behind the data including the form factor and other correlation factor relations. Other values may be accepted if based on sufficient number of data.

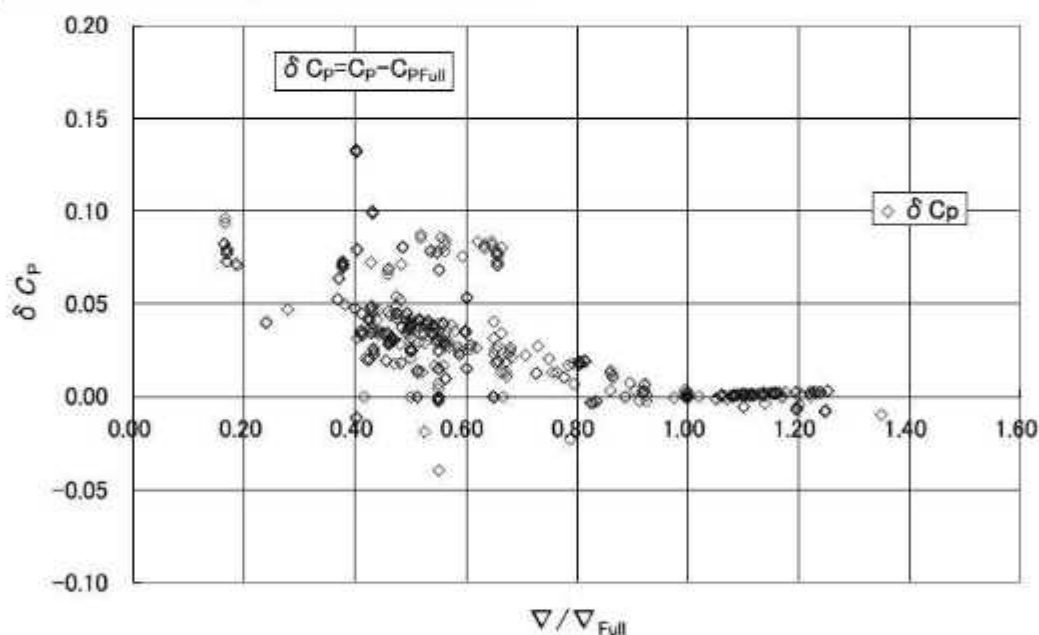
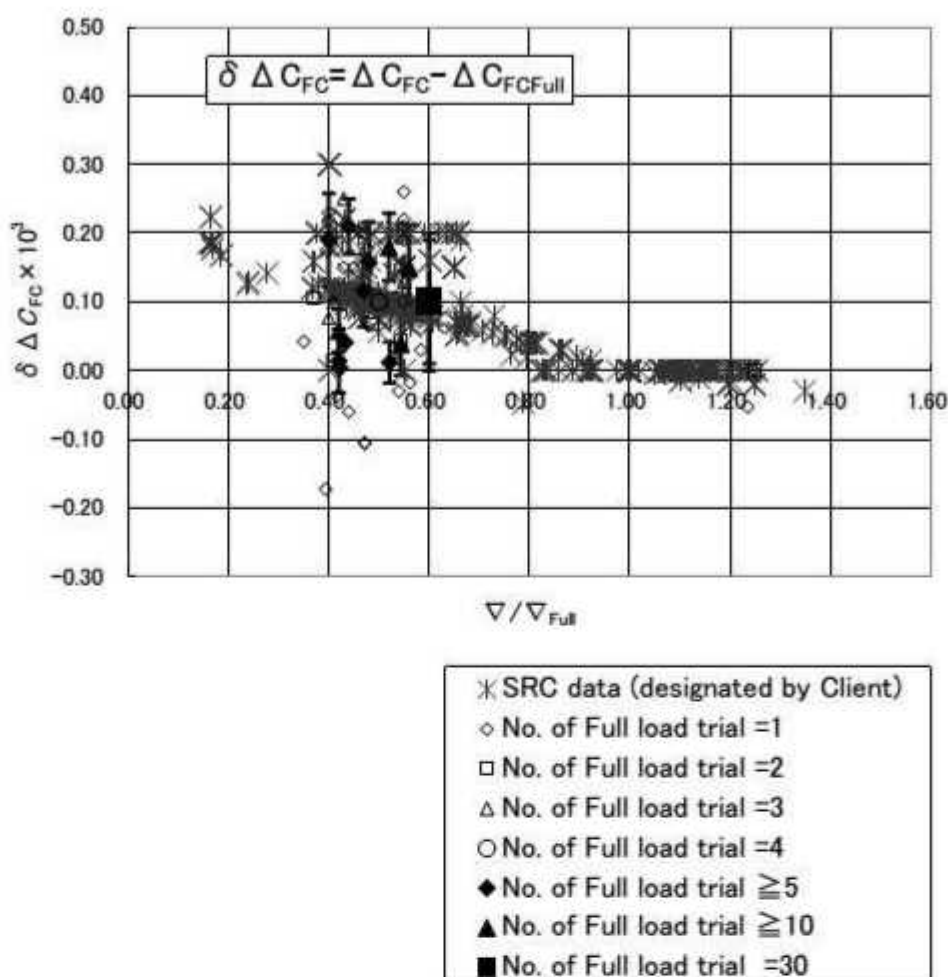


Figure 3.1: Variation of  $C_P - C_{PFull}$  as a function of the displacement ratio





**Figure 3.2: Variation of  $\Delta C_{FC}$  as a function of the displacement ratio**

## 15.8 Pre-verification report

The verifier issues the report on the "Preliminary Verification of EEDI" after it has verified the attained EEDI at the design stage in accordance with paragraphs 4.1 and 4.2 of the IMO Verification Guidelines.

A sample of the report on the "Preliminary Verification of EEDI" is provided in Appendix 5.

## 16 Final verification at sea trial

### 16.1 Sea trial procedure

For the verification of the EEDI at sea trial stage, the verifier shall:

- Examine the programme of the sea trial to check that the test procedure and in particular that the number of speed measurement points comply with the requirements of the IMO Verification Guidelines (see note below).
- Perform a survey to ascertain the machinery characteristics of some important electric load consumers and producers included in the EPT, if the power  $P_{AE}$  is directly computed from the EPT data's.
- Attend the sea trial and notes the main parameters to be used for the final calculation of the EEDI, as given under 4.3.3 of the IMO Verification Guidelines



- Review the sea trial report provided by the submitter and check that the measured power and speed have been corrected accordingly (see note below).
- Check that the power curve estimated for EEDI condition further to sea trial is obtained by power adjustment.
- Review the revised EEDI Technical File.
- Issue or endorse the International Energy Efficiency Certificate.

Note: For application of the present Guidelines, sea conditions and ship speed should be measured in accordance with ITTC Recommended Procedure 7.5-04-01-01.1 Speed and Power Trials 2017 or ISO 15016:2015.

Table 4 lists data which are to be measured and recorded during sea trials:

**Table 4: Measured data during sea trials**

Symbol	Name	Measurement	Remark
	Time and duration of sea trial		
	Draft marks readings		
	Air and sea temperature		
	Main engine setting	Machinery log	
$\Psi_0$	Course direction (rad)	Compass	
$V_G$	Speed over ground (m/s)	GPS	
$n$	Propeller rpm (rpm)	Tachometer	
$P_s$	Power measured (kW)	Torsion meter or strain gauges (for torque measurement) or any alternative method that offer an equivalent level of precision and accuracy of power measurement	
$V_{WR}$	Relative wind velocity (m/s)	Wind indicator	
$\Psi_{WR}$	Relative wind direction (rad)	See above	
$T_m$	Mean wave period (seas and swell) (s)	Visual observation by multiple observers supplemented by hindcast data or wave measuring devices (wave buoy, wave radar, etc.)	
$H_{1/3}$	Significant wave height (seas and swell) (m)	See above	
$\chi$	Incident angle of waves (seas and swell) (rad)	See above	
$\delta_R$	Rudder angle (rad)	Rudder	
$\beta$	Drift angle (rad)	GPS	

Prior to the sea trial, the programme of the sea trials and, if available, additional documents listed in table 3 are to be submitted to the verifier in order for the verifier to check the procedure and to attend the sea trial and perform the verifications included in Appendix 1 concerning the sea trial.

The ship speed is to be measured at sea trial for at least three power settings of which range includes the total propulsion power defined in 5.2 according to the requirements of the IMO Verification Guidelines 4.3.6. This requirement applies individually to each ship, even if the ship is a sister ship of a parent vessel.

If it is physically impossible to meet the conditions in the ISO15016:2015 or ITTC Recommended Procedure 7.5-04-01-01, a practical treatment shall be allowed based on the documented mutual agreement among the owner, the verifier and the shipbuilder.

## 16.2 Estimation of the EEDI reference speed $V_{Ref}$

The adjustment procedure is applicable to the most complex case where sea trials cannot be conducted in EEDI loading condition. It is expected that this will be usually the case for cargo ships like bulk carriers for instance.

Ship speed should be measured in accordance with ISO 15016:2015 or ITTC Recommended Procedure 7.5-04-01-01.1, including the accuracy objectives under introduction section of ISO 15016:2015. In particular, if the shaft torque measurement device cannot be installed near the output flange of main engine, then the efficiency from the measured shaft power to brake horse power should be taken into account.

Using the speed-power curve obtained from the sea trials in the trial condition, the conversion of ship's speed from the trial condition to the EEDI condition shall be carried out by power adjustment as defined in Annex I of ISO 15016:2015.

The reference speed  $V_{ref}$  should be determined based on sea trials which have been carried out and evaluated in accordance with ISO 15016:2015 or equivalent (see note in 16.1).

Reference is made to paragraph 3 of Appendix 2 (Figure 3.1) where an example is provided.

## 16.3 Revision of EEDI Technical File

Reference is to be made to para 4.3.13 and para 4.3.14 of the IMO Verification Guidelines.

## 17 Verification of the EEDI in case of major conversion

In this section, a major conversion is defined as in MARPOL Annex VI regulation 2.24 and interpretations in MEPC.1/Circ.795/ Rev4 subject to the approval of the Administration.

For verification of the attained EEDI after a major conversion, no speed trials are necessary if the conversion or modifications don't involve a variation in reference speed.

In case of conversion, the verifier will review the modified EEDI Technical File. If the review leads to the conclusion that the modifications couldn't cause the ship to exceed the applicable required EEDI, the verifier will not request speed trials.

If such conclusion cannot be reached, like in the case of a lengthening of the ship, or increase of propulsion power of 10% or more, speed trials will be required.

If an Owner voluntarily requests re-certification of EEDI with IEE Certificate reissuance on the basis of an improvement to the ship efficiency, the verifier may request speed trials in order to validate the attained EEDI value improvement.

If speed trials are performed after conversion or modifications changing the attained EEDI value, tank tests verification is to be requested if the speed trials conditions differ from the EEDI condition. In this case, numerical calculations performed in accordance with defined quality and technical standards (ITTC 7.5-03-01-04 at its latest revision or equivalent) replacing tank tests may be accepted by the verifier to quantify influence of the hull modifications.

In case of major conversion of a ship without prior EEDI, EEDI computation is not required, except if the Administration considers that due to the extensive character of the conversion, the ship is to be considered as a new one.



### APPENDIX 1

#### Review and witness points

Ref.	Function	Survey method	Reference document	Documentation available to verifier	Remarks
01	EEDI Technical File	Review	IMO Verification Guidelines This document	Documents in table 2	
02	Limitation of power	Review	IMO Calculation Guidelines	Verification file of limitation technical means	Only if means of limitation are fitted
03	Electric Power Table	Review	Appendix 2 to IMO Calculation Guidelines Appendix 2 to IMO Verification Guidelines	EPT EPT-EEDI form	As described under paragraph 5.2 of this industry guideline.
04	Calibration of towing tank test measuring equipment	Review & witness	Appendix 3	Calibration reports	Check at random that measuring devices are well identified and that calibration reports are currently valid
05	Model tests – ship model	Review & witness	Appendix 4	Ship lines plan & offsets table Ship model report	Checks described in Appendix 4.1
06	Model tests – propeller model	Review & witness	Appendix 4	Propeller model report	Checks described in Appendix 4.2
07	Model tests – Resistance test, Propulsion test, Propeller open water test	Review & witness	Appendix 4	Towing tank tests report	Checks described in Appendix 4.3 Note: propeller open water test is not needed if a stock propeller is used. In this case, the open water characteristics of the stock propeller are to be annexed to the towing tank tests report.



Ref.	Function	Survey method	Reference document	Documentation available to verifier	Remarks
08	Model-ship extrapolation and correlation	Review	ITTC 7.5-02-03-01.4 1978 ITTC performance prediction method (rev.04 of 2017 or subsequent revision)  Appendix 4  This document 15.7	Documents in table 2	Check that the ship-model correlation is based on thrust identity with correlation factor according to method 1 ( $C_p - C_N$ ) or method 2 ( $\Delta C_{FD} - \Delta W_C$ )  Check that the power-speed curves obtained for the EEDI condition and sea trial condition are obtained using the same calculation process with justified values of experience-based parameters
09	Numerical calculations replacing towing tank tests	Review	ITTC 7.5-03-01-04 (latest revision) or equivalent	Report of calculations	For justification of calculations replacing model tests refer to 15.3.
10	Electrical machinery survey prior to sea trials	Witness	Appendix 2 to IMO Verification Guidelines		Only if $P_{AE}$ is computed from EPT
11	Programme of sea trials	Review	IMO Verification Guidelines	Programme of sea trials	Check minimum number of measurement points (3) Check the EEDI condition in EPT (if $P_{AE}$ is computed from EPT)
12	Sea trials	Witness	ISO 15016:2015 or ITTC 7.5-04-01-01.1 (latest revision)		Check: <ul style="list-style-type: none"> <li>• Propulsion power, particulars of the engines</li> <li>• Draught and trim</li> <li>• Sea conditions</li> <li>• Ship speed</li> <li>• Shaft power &amp; rpm</li> </ul> Check operation of means of limitations of engines or shaft power (if fitted) Check the power consumption of selected consumers included in sea trials condition EPT (if $P_{AE}$ is computed from EPT)

Ref.	Function	Survey method	Reference document	Documentation available to verifier	Remarks
13	Sea trials – corrections calculation	Review	ISO 15016:2015 or ITTC Recommended Procedure 7.5-04-01-01.1( latest revision)	Sea trials report	Check that the displacement and trim of the ship in sea trial condition has been obtained with sufficient accuracy Check compliance with ISO 15016:2015 or ITTC Recommended Procedure 7.5-04-01-01.1( latest revision)
14	Sea trials – adjustment from trial condition to EEDI condition	Review	This document 16.2	Power curves after sea trial	Check that the power curve estimated for EEDI condition is obtained by power adjustment
15	EEDI Technical File – revised after sea trials	Review	IMO Verification Guidelines	Revised EEDI Technical File	Check that the file has been updated according to sea trials results

## APPENDIX 2

### Sample of document to be submitted to the verifier including additional information for verification

**Caution**  
**Protection of Intellectual Property Rights**

This document contains confidential information (defined as additional information) of submitters. Additional information should be treated as strictly confidential by the verifier and failure to do so may lead to penalties. The verifier should note following requirements of IMO Verification Guidelines:

*"4.1.2 The information used in the verification process may contain confidential information of submitters, which requires Intellectual Property Rights (IPR) protection. In the case where the submitter want a non-disclosure agreement with the verifier, the additional information should be provided to the verifier upon mutually agreed terms and conditions."*

#### Revision list

B	01/05/2014	Final stage: sections 1 to 16	XYZ	YYY	ZZZ
A	01/01/2013	Design stage: sections 1 to 13	XXX	YYY	ZZZ
REV.	ISSUE DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED



## 1 General

This calculation of the Energy Efficiency Design Index (EEDI) is based on :

- All adopted MEPC resolutions regarding amendments to Chapter 4 of MARPOL Annex VI prior to the date of revision of this guideline
- Resolution MEPC.308(73) 2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships, as amended.

Calculations are being dealt with according to the Industry Guidelines on calculation and verification of EEDI, 2020 issue.

## 2 Data

### 2.1 Main parameters

Parameter	Value	Reference
Owner	OWNER	
Builder	YARD	
Hull No.	12346	
IMO No.	94111XX	
Ship's type	Bulk carrier	
Ship classification notations	I HULL, MACH, Bulk Carrier CSR BC-A (holds 2 and 4 may be empty) ESP GRAB[20] Unrestricted Navigation AUT-UMS, GREEN PASSPORT, INWATERSURVEY, MON-SHAFT	
HULL PARTICULARS		
Length overall	191.0 m	
Length between perpendiculars	185.0 m	
Breadth, moulded	32.25 m	
Depth, moulded	17.9 m	
Summer load line draught, moulded	12.70 m	
Deadweight at summer load line draught	55000 DWT	
Lightweight	11590 tons	
Owner's voluntary structural enhancements	No	
MAIN ENGINE		
Type & manufacturer	BUILDER 6SRT60ME	
Specified Maximum Continuous Rating (SMCR)	9200 kW x 105 rpm	
SFC at 75% SMCR	171 g/kWh	See paragraph 10.1
Number of set	1	
Fuel type	Diesel/Gas oil	
AUXILIARY ENGINES		

Parameter	Value	Reference
Type & manufacturer	BUILDER 5X28	
Specified Maximum Continuous Rating (SMCR)	650 kW x 700 rpm	
SFC at 50% SMCR	205 g/kWh	See paragraph 10.2
SFC at 75% SMCR (In case PAE is estimated by the electric power table (EPT) for the reason that PAE computed using the formula in the IMO Calculation Guidelines is significantly different from the total power used at normal seagoing)	199 g/kWh	See paragraph 10.2
Number of set	3	
Fuel type	Diesel/Gas oil	
OVERVIEW OF PROPULSION SYSTEM AND ELECTRICITY SUPPLY SYSTEM		See section 4
SHAFT GENERATORS		
Type & manufacturer	None	
Rated electrical output power		
Number of set	0	
SHAFT MOTORS		
Type & manufacturer	None	
Rated power consumption		
Efficiency		
Number of set	0	
MAIN GENERATORS		
Type & manufacturer	BUILDER AC120	
Rated output	605 kWe	
Efficiency	0.93	
Number of set	3	
PROPULSION SHAFT		
Propeller diameter	5.9 m	
Propeller number of blades	4	
Voluntarily limited shaft propulsion power	No	
Number of set	1	
ENERGY SAVING EQUIPMENT		See section 9
Description of energy saving equipment	Propeller boss cap fins	
Power reduction or power output	None	

## 2.2 Preliminary verification of attained EEDI

Parameter	Value	Reference
TOWING TANK TEST ORGANIZATION		
Identification of organization	TEST corp.	See section 6.
ISO Certification or previous experience?	Previous experience	
TOWING TANK TESTS		

Exemption of towing tank tests	No	
Process and methodology of estimation of		See section 7
the power curves		
Ship model information		See subparagraph 7.2.1
Propeller model information		See subparagraph 7.2.2
EEDI & sea trial loading conditions	EEDI: mean draft: 12.7 m Trim 0  Sea trial ( ballast ): mean draft: 5.8 m Trim 2.6 m by stern	
Propeller open water diagram (model, ship)		See paragraph 7.4
Experience based parameters		See paragraph 7.3
Power curves at full scale		See section 3
Ship Reference speed	14.25 knots	
ELECTRIC POWER TABLE (as necessary, as defined in IMO Calculation Guidelines)	As described under paragraph 5.2 of this industry guideline.	See section 5
CALCULATION OF ATTAINED EEDI	5.06	See section 11
CALCULATION OF REQUIRED EEDI	5.27	See section 12
CALCULATION OF ATTAINED EEDI <sub>weather</sub>	Not calculated	See section 13

### 2.3 Final verification of attained EEDI

Parameter	Value	Reference
SEA TRIAL LOADING CONDITION		
POWER CURVES		See section 3
Sea trial report with corrections		See section 15
Ship Reference speed	14.65 knots	
FINAL DEADWEIGHT		See section 14
Displacement	66171 tons	
Lightweight	11621 tons	
Deadweight	54550 DWT	
FINAL ATTAINED EEDI	4.96	See section 16

## 3 Power curves

The power curves estimated at the design stage and modified after the sea trials are given in Figure 3.1.



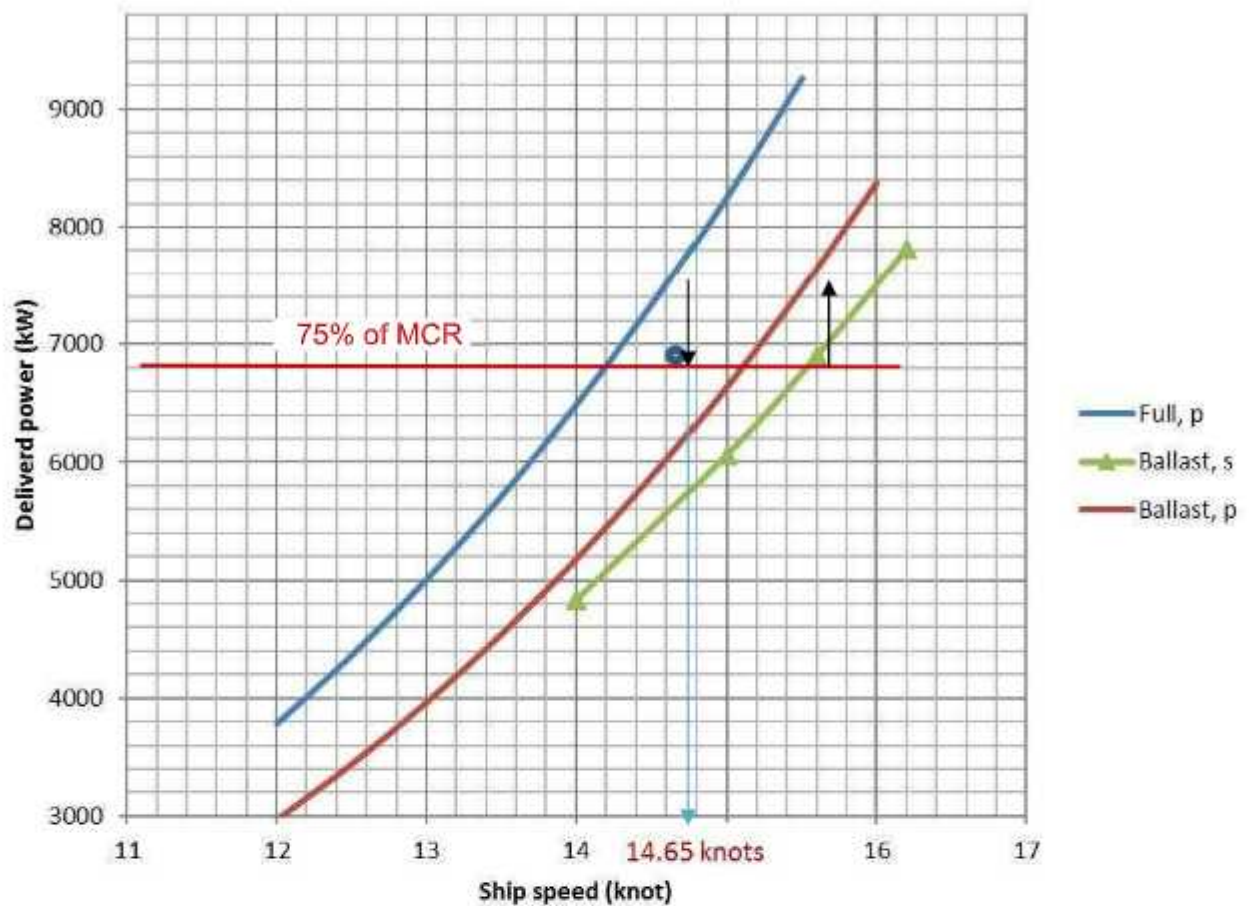


Figure 3.1: Power curves

#### 4 Overview of propulsion system and electric power system

Figure 4.1 shows the connections within the propulsion and electric power supply systems.

The characteristics of the main engines, auxiliary engines, electrical generators and propulsion electrical motors are given in table 2.1.

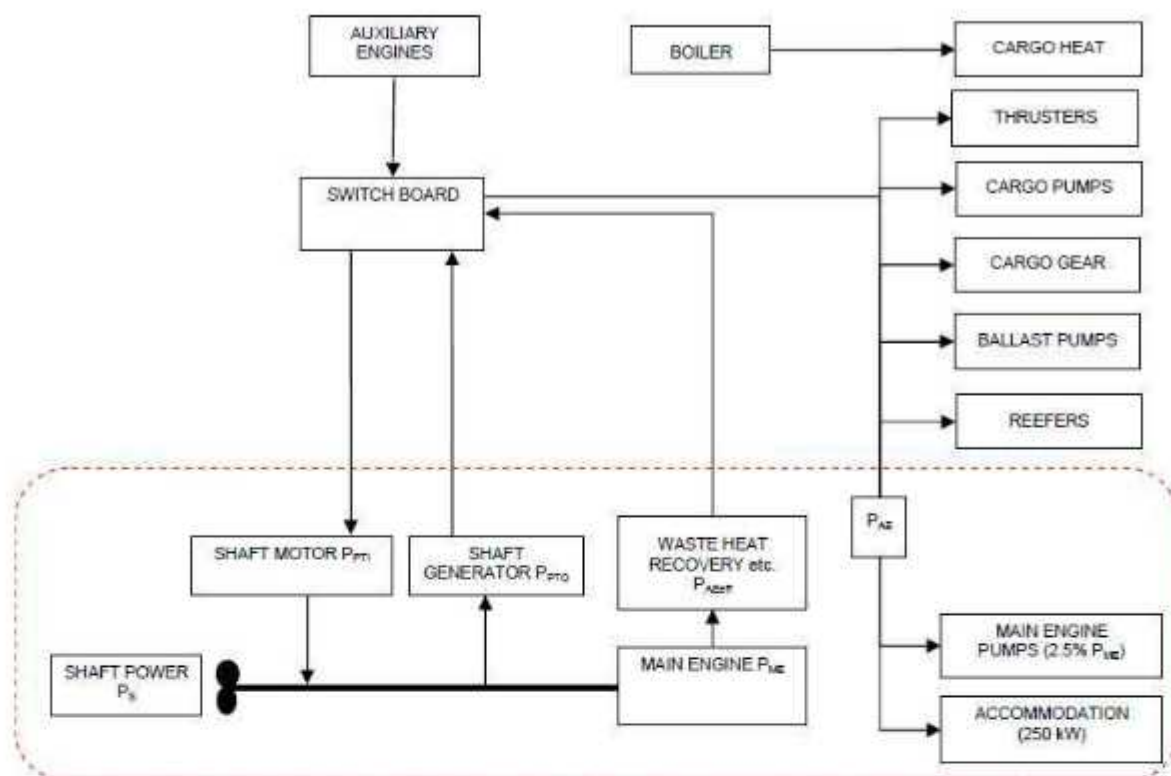


Figure 4.1 scheme of the propulsion and power generation systems

## 5 Electric power table

The electric power for the calculation of EEDI is provided in table 5.1.

Table 5.1: Electric power table for calculation of  $P_{AE}$ 

Id	Group	Description	Mech. Power "Pm"	El. Motor output	Efficiency "e"	Rated el. Power "Pr"	load factor "kl"	duty factor "kd"	time factor "kt"	use factor "ku"	Necessary power "Pload"
1	A	STEERING GEAR	N.A.	N.A.	N.A.	45,0	0,9	1	0,3	0,27	12,2
2	A	HULL CATHODIC PROTECTION	N.A.	N.A.	N.A.	10	1	1	1	1,00	10,0
3	A	CRANE	N.A.	N.A.	N.A.	10,00	0,2	1	1	0,20	2,0
4	A	COMPASS	N.A.	N.A.	N.A.	0,5	1	1	1	1,00	0,5
5	A	RADAR NO.1	N.A.	N.A.	N.A.	1,3	1	0,5	1	0,50	0,7
6	A	RADAR NO.2	N.A.	N.A.	N.A.	1,3	1	0,5	1	0,50	0,7
7	A	NAVIGATION EQUIPMENT	N.A.	N.A.	N.A.	5,0	1	1	1	1,00	5,0
8	A	INTERNAL COMM. EQUIPMENT	N.A.	N.A.	N.A.	2,5	1	1	0,1	0,10	0,2
9	A	RADIO EQUIPMENT	N.A.	N.A.	N.A.	3,5	1	1	0,1	0,10	0,4
10	A	MOORING EQ.	N.A.	N.A.	N.A.	7,0	1	1	0,1	0,10	0,7
11	B	MAIN COOLING SEA WATER PUMP NO.1	28,0	30	0,925	30,3	0,9	0,66	1	0,59	18,0
12	B	MAIN COOLING SEA WATER PUMP NO.2	28,0	30	0,925	30,3	0,9	0,66	1	0,59	18,0
13	B	MAIN COOLING SEA WATER PUMP NO.3	28,0	30	0,925	30,3	0,9	0,66	1	0,59	18,0
14	B	LT COOLING FW PUMP NO.1	28,0	30	0,925	30,3	0,9	0,66	1	0,59	18,0
15	B	LT COOLING FW PUMP NO.2	28,0	30	0,925	30,3	0,9	0,66	1	0,59	18,0
16	B	LT COOLING FW PUMP NO.3	28,0	30	0,925	30,3	0,9	0,66	1	0,59	18,0

Id	Group	Description	Mech. Power "Pm"	El. Motor output	Efficiency "e"	Rated el. Power "Pr"	load factor "kl"	duty factor "kd"	time factor "kt"	use factor "ku"	Necessary power "Pload"
17	B	M/E COOLING WATER PUMP NO.1	13,0	15	0,9	14,4	1	0,5	1	0,50	7,2
18	B	M/E COOLING WATER PUMP NO.2	13,0	15	0,9	14,4	1	0,5	1	0,50	7,2
19	C	MAIN LUB. OIL PUMP NO.1	55,0	90	0,94	58,5	0,9	0,5	1	0,45	26,3
20	C	MAIN LUB. OIL PUMP NO.2	55,0	90	0,94	58,5	0,9	0,5	1	0,45	26,3
21	C	H.F.O. TRANSFER PUMP	6,0	7,5	0,88	6,8	1	1	0,1	0,10	0,7
22	C	D.O. TRANSFER PUMP	6,0	7,5	0,88	6,8	1	1	0,1	0,10	0,7
23	C	L.O. TRANSFER PUMP	1,4	2,5	0,8	1,8	1	1	0,1	0,10	0,2
24	C	TECHNICAL FRESH WATER PUMP NO.1	2,5	3,5	0,85	2,9	1	0,5	0,1	0,05	0,1
25	C	TECHNICAL FRESH WATER PUMP NO.2	2,5	3,5	0,85	2,9	1	0,5	0,1	0,05	0,1
26	C	E/R SUPPLY FAN NO.1	14,0	20	0,9	15,5	0,9	1	1	0,90	14,0
27	C	E/R SUPPLY FAN NO.2	14,0	20	0,9	15,5	0,9	1	1	0,90	14,0
28	C	E/R SUPPLY FAN NO.3	14,0	20	0,9	15,5	0,9	1	1	0,90	14,0
29	C	E/R SUPPLY FAN NO.4	14,0	20	0,9	15,5	0,9	1	1	0,90	14,0
30	C	PURIFIER ROOM EXH. VENTILATOR	2,5	3	0,82	3,0	0,9	1	1	0,90	2,7
31	C	PUMP HFO SUPPLY UNIT NO.1	2,1	3	0,8	2,6	0,9	0,5	1	0,45	1,2
32	C	PUMP HFO SUPPLY UNIT NO.2	2,1	3	0,8	2,6	0,9	0,5	1	0,45	1,2
33	C	CIRC. PUMP FOR HFO SUPPLY UNIT NO.1	2,8	3,5	0,84	3,3	0,9	0,5	1	0,45	1,5
34	C	CIRC. PUMP FOR HFO SUPPLY UNIT NO.2	2,8	3,5	0,84	3,3	0,9	0,5	1	0,45	1,5
35	C	H.F.O. SEPARATOR NO.1	N.A.	N.A.	N.A.	6,5	0,9	0,5	0,9	0,41	2,6
36	C	H.F.O. SEPARATOR NO.2	N.A.	N.A.	N.A.	6,5	0,9	0,5	0,9	0,41	2,6
37	C	MAIN AIR COMPRESSOR NO.1	N.A.	N.A.	N.A.	43,0	1	0,5	0,1	0,05	2,2
38	C	MAIN AIR COMPRESSOR NO.2	N.A.	N.A.	N.A.	43,0	1	0,5	0,1	0,05	2,2
39	C	SERVICE AIR COMPRESSOR	N.A.	N.A.	N.A.	22,0	1	1	0,1	0,10	2,2
40	C	VENT. AIR SUPPLY	N.A.	N.A.	N.A.	1,0	1	1	0,5	0,50	0,1
41	C	BILGE WATER SEPARATOR	N.A.	N.A.	N.A.	1,5	1	1	0,1	0,10	0,2
42	C	M/E L.O. SEPARATOR	N.A.	N.A.	N.A.	6,5	0,9	1	0,2	0,18	1,2
43	C	G/E L.O. SEPARATOR	N.A.	N.A.	N.A.	6,5	0,9	1	0,2	0,18	1,2
44	D	HYDROPHORE PUMP NO.1	2,8	4	0,84	3,3	1	0,5	0,1	0,05	0,2
45	D	HYDROPHORE PUMP NO.2	2,8	4	0,84	3,3	1	0,5	0,1	0,05	0,2
46	D	HOT WATER CIRCULATING PUMP NO.1	0,5	1,0	0,8	0,8	1	0,5	0,2	0,10	0,1
47	D	HOT WATER CIRCULATING PUMP NO.2	0,5	1,0	0,8	0,8	1	0,5	0,2	0,10	0,1
48	E	E/R WORKSHOP WELDING SPACE EXH.	0,5	0,8	0,8	0,6	0,9	1	1	0,90	0,6
49	F	ECR COOLER UNIT	N.A.	N.A.	N.A.	4,2	1	1	0,5	0,50	2,1
50	F	FAN FOR AIR CONDITIONING PLANT	N.A.	N.A.	N.A.	8,0	0,9	1	0,5	0,45	3,6
51	F	COMP. AIR CONDITIONING PLANT NO.1	N.A.	N.A.	N.A.	10,0	0,9	1	0,5	0,45	4,5
52	F	COMP. AIR CONDITIONING PLANT NO.2	N.A.	N.A.	N.A.	10,0	0,9	1	0,5	0,45	4,5
53	F	COMP. AIR CONDITIONING PLANT NO.3	N.A.	N.A.	N.A.	10,0	0,9	1	0,5	0,45	4,5
54	F	COMP. AIR CONDITIONING PLANT NO.4	N.A.	N.A.	N.A.	10,0	0,9	1	0,5	0,45	4,5



Id	Group	Description	Mech. Power "Pm"	El. Motor output	Efficiency "e"	Rated el. Power "Pr"	load factor "kl"	duty factor "kd"	time factor "kt"	use factor "ku"	Necessary power "Pload"
55	G	FAN FOR GALLEY AIR COND. PLANT	N.A.	N.A.	N.A.	1,5	0,9	1	0,5	0,45	0,7
56	G	COMP. FOR GALLEY AIR COND. PLANT	N.A.	N.A.	N.A.	3,5	0,9	1	0,5	0,45	1,6
57	G	REF. COMPRESSOR NO.1	N.A.	N.A.	N.A.	4,0	1	0,5	0,1	0,05	0,2
58	G	REF. COMPRESSOR NO.2	N.A.	N.A.	N.A.	4,0	1	0,5	0,1	0,05	0,2
59	G	GALLEY EQUIPMENT	N.A.	N.A.	N.A.	80,0	0,5	1	0,1	0,05	4,0
60	H	VAC. COLLECTION SYSTEM	2,4	3,0	0,8	3,0	1	1	1	1,00	3,0
61	H	GALLEY EXH.	1,2	1,5	0,8	1,5	1	1	1	1,00	1,5
62	H	LAUNDRY EXH.	0,1	0,15	0,8	0,1	1	1	1	1,00	0,1
63	H	SEWAGE TREATMENT	N.A.	N.A.	N.A.	4,5	1	1	0,1	0,10	0,5
64	H	SEWAGE DISCHARGE	3	7,5	0,88	3,4	0,9	1	0,1	0,09	0,3
65	I	ACCOMMODATION LIGHTING	N.A.	N.A.	N.A.	16,0	1	1	0,5	0,5	8,0
66	I	E/R LIGHTING	N.A.	N.A.	N.A.	18,0	1	1	1	1,00	18,0
67	I	NAVIGATION LIGHTING	N.A.	N.A.	N.A.	0,9	1	0,5	1	0,50	0,4
68	I	BACK. NAV. LIGHTING	N.A.	N.A.	N.A.	0,9	1	0,5	1	0,50	0,4
									<b>TOTAL POWER</b>		<b>354,0</b>
<b>P<sub>AE</sub> = Total Power / (average efficiency of generators) = 354/0.93 = 381 kW</b>											

## 6 Towing Tank test organization quality system

Towing tank tests will be performed in TEST corp.

The quality control system of the towing tank test organization TEST corp. has been documented previously (see report 100 for the ship hull No. 12345) and the quality manual and calibration records are available to the verifier.

The measuring equipment has not been modified since the issue of report 100 and is listed in table 6.1.

**Table 6.1: List of measuring equipment**

	Manufacturer	Model	Series	Lab. Id.	status
Propeller dynamometer	B&N	6001	300	125-2	Calibrated 01/01/2011
...					

## 7 Estimation process of power curves at design stage

### 7.1 Test procedure

The tests and their analysis are conducted by TEST corp. applying their standard correlation method (document is given in annex 1).

The method is based on thrust identity and references ITTC Recommended Procedure 7.5 - 02 - 03 - 1.4 ITTC 1978 Trial Prediction Method (in its latest reviewed version of 2017), with prediction of the full scale rpm and delivered power by use of the  $C_P - C_N$  correction factors.

The results are based on a Resistance Test, a Propulsion Test and use the Open Water Characteristics of the model propeller used during the tests and the Propeller Open Water Characteristics of the final propeller given in 7.4.

Results of the resistance tests and propulsion tests of the ship model are given in the report of TEST corp. given in annex 2.

## 7.2 Speed prediction

The ship delivered power  $P_D$  and rate of revolutions  $n_S$  are determined from the following equations:

$$P_D = C_p \cdot P_{DS}$$

$$n_T = C_N \cdot n_S$$

Where  $C_N$  and  $C_P$  are experience-based factors and  $P_{DS}$  (resp.  $n_S$ ) are the delivered power (resp. rpm) obtained from the analysis of the towing tank tests.

The ship total resistance coefficient  $C_{TS}$  is given by:

$$C_{TS} = \frac{S_S + S_{BK}}{S_S} \cdot [(1+k) \cdot C_{FS} + \Delta C_F] + C_R + C_{AAS} + C_{AppS}$$

Where:

$S_S$ : ship hull wetted surface, here 9886 m<sup>2</sup>

$S_{BK}$ : wetted surface of bilge keels

$k$ : form factor. Here  $1+k = 1.38$  over the speed range, determined according to ITTC standard procedure 7.5-02-02-01

$C_{FS}$ : ship frictional resistance coefficient (computed according to ITTC 1957 formula)

$\Delta C_F$ : roughness allowance, computed according to Bowden-Davison formula. Here  $\Delta C_F = 0.000339$

$C_R$ : residual resistance coefficient

$C_{AAS}$ : air resistance coefficient

$C_{AppS}$ : ship appendages (propeller boss cap fins) resistance coefficient, computed as provided in annex 2.

The air resistance coefficient is computed according to the following formula:

$$C_{AAS} = C_{DA} \cdot \frac{\rho_A \cdot A_{VS}}{\rho_S \cdot S_S}$$

Where:

$C_{DA}$  is the air drag coefficient, here 0.8

$\rho_A$  and  $\rho_S$  are the air density and water density, respectively

$A_{VS}$  is the projected wind area, here 820 m<sup>2</sup>

$C_{AAS} = 7.9 \cdot 10^{-5}$

The delivered power  $P_D$  results of the towing tank tests are summarized in table 7.1 for the EEDI condition (scantling draft) and in table 7.2 for the sea trial condition (light ballast draft).

**Table 7.1: results of trial prediction in EEDI condition**

Model reference: SX100 - model scale: 40					
Loading condition: EEDI loading condition (12.70 m draft)					
Resistance test: R001		Propulsion test: P001		Model propeller: Prop01	
Ship speed V (knot)	Wake factor $W_{TM-WTS}$	Propeller thrust $T_S$ (kN)	Propeller torque $Q_S$ (kNm)	rpm on ship $n_S$	Delivered Power $P_D$ (kW)
12	0.098	522	467	78	3781
12.5	0.093	578	514	82	4362



13	0.089	638	563	86	5004
13.5	0.081	701	615	90	5710
14	0.079	768	669	93	6486
14.5	0.086	838	727	97	7333
15	0.091	912	786	101	8257
15.5	0.099	990	849	105	9261
Experience-based factor $C_P$ : 1.01					
Experience based factor $C_N$ : 1.02					

**Table 7.2: results of trial prediction in sea trial condition**

Model reference: SX100 - model scale: 40					
Loading condition: Sea trial condition (5.80 m draft)					
Resistance test: R002		Propulsion test: POO2		Model propeller: Prop01	
Ship speed V (knot)	Wake factor $W_{TM-W_{TS}}$	Propeller thrust $T_s$ (kN)	Propeller torque $Q_s$ (kNm)	rpm on ship $n_s$	Delivered Power $P_D$ (kW)
12	0,079	406	379	72	2974
12,5	0,081	451	418	76	3445
13	0,083	500	459	79	3968
13,5	0,085	551	503	83	4545
14	0,087	606	549	87	5181
14,5	0,088	664	597	90	5878
15	0,091	725	648	94	6641
15,5	0,089	790	701	98	7474
Experience-based factor $C_P$ : 1.05					
Experience based factor $C_N$ : 1.03					

The predicted results are represented on the speed curves given in Figure 3.1. The EEDI condition results are indexed (Full, p), the sea trial condition results (Ballast, p).

### 7.3 Ship and propeller models

The ship model is at scale  $\lambda = 40$ . The characteristics are given in table 7.3.

**Table 7.3: characteristics of the ship model**

Identification (model number or similar)	SX 100
Material of construction	Wood
Principal dimensions	
Length between perpendiculars ( $L_{PP}$ )	4.625 m
Length of waterline ( $L_{WL}$ )	4.700 m
Breadth ( $B$ )	0.806 m
Draught ( $T$ )	0.317 m
Design displacement ( $\Delta$ ) (kg, fresh water)	1008.7 kg
Wetted surface area	6.25 m <sup>2</sup>
Details of turbulence stimulation	Sand strips
Details of appendages	rudder
Tolerances of manufacture	+/- 2.5 mm on length +/- 1 mm on breadth



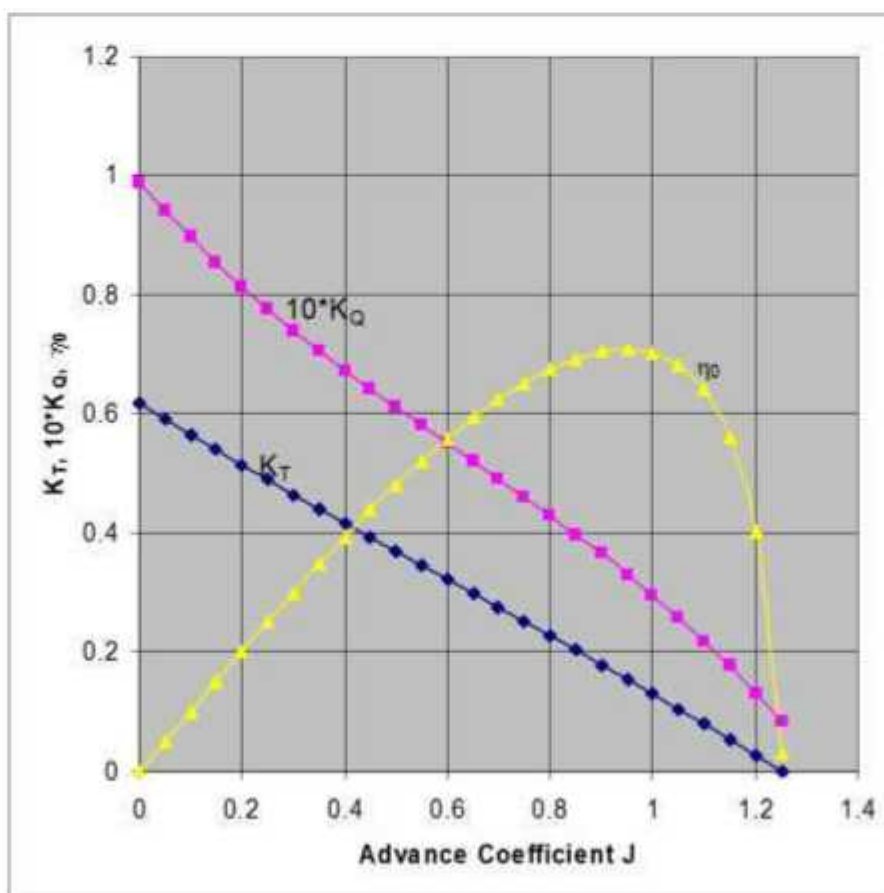
The propeller model used during the tests is a stock model with the following characteristics:

**Table 7.4: characteristics of the stock propeller used during the tests**

Identification (model number or similar)	Prop01
Materials of construction	aluminium
Blade number	4
Principal dimensions	
Diameter	147.5 mm
Pitch-Diameter Ratio ( $P/D$ )	0.68
Expanded blade Area Ratio ( $A_E/A_0$ )	0.60
Thickness Ratio ( $t/D$ )	0.036
Hub/Boss Diameter ( $d_h$ )	25 mm
Tolerances of manufacture	Diameter (D): $\pm 0.10$ mm Thickness (t): $\pm 0.10$ mm Blade width (c): $\pm 0.20$ mm Mean pitch at each radius (P/D): ..... $\pm 0.5\%$ of design value.

#### 7.4 Open water characteristics of propeller

The open water characteristics of the stock model propeller are given in annex 2. The open water characteristics of the ship propeller are given in Figure 7.1.



**Figure 7.1: open water characteristics of ship propeller**

**8 Lines and offsets of the ship**

The ships lines and offsets table are given in Annex 3.

**9 Description of energy saving equipment****9.1 Energy saving equipment of which effects are expressed as  $P_{AEff(i)}$  and/or  $P_{eff(i)}$  in the EEDI calculation formula**

None here.

**9.2 Other energy saving equipment**

The propeller boss cap fins are described in annex 4.

**10 Justification of SFC (documents attached to NO<sub>x</sub> technical file of the parent engine)****10.1 Main engine**

The shop test report for the parent main engine is provided in annex 5.1. The SFOC has been corrected to ISO conditions.

**10.2 Auxiliary engine**

The technical file of the EIAPP certificate of the auxiliary engines is provided in annex 5.2. The SFOC has been corrected to ISO conditions.

**11 Calculation of attained EEDI at design stage****11.1 Input parameters and definitions**

The EEDI quantities and intermediate calculations are listed in table 11.1:

**Table 11.1: Parameters in attained EEDI calculation**

EEDI quantity	Value	Remarks
$C_{FME}$	3.206	Marine Diesel oil is used for shop test of the main engine
$P_{ME}$	6900 kW	No shaft generator installed ( $P_{PTO} = 0$ ) MCR is 9200 kW $P_{ME} = 0.75 \times 9200 = 6\ 900$ kW
$SFC_{ME}$	171 g/kWh	According to parent engine shop test report in ISO conditions (see 10.1)
$C_{FAE}$	3.206	Marine diesel oil is used for shop test of the auxiliary engine
$P_{PTI}$	0	No shaft motor installed
$P_{AE}$	381 kW	MCR of the engine is 9200 kW, less than 10000kW $P_{AE} = 0.05 \cdot \left( \sum_{i=1}^{n_{ME}} MCR_{MEi} + \frac{\sum_{i=1}^{n_{PTI}} P_{PTI(i)}}{0.75} \right)$ $P_{AE} = 0.05 \cdot 9200 = 460 \text{ kW}$ <p>According to electric power table included in table 5.1, <math>\sum P_{load(i)} = 354</math> kW  The weighted average efficiency of generators = 0.93  (KWelec/kWmech)  <math>P_{AE} = \sum P_{load(i)} / 0.93 = 381</math> kW  The difference (460 – 381) KW is expected to vary EEDI by slightly</p>

		more than 1%, so 381 kW is considered.
SFC <sub>AE</sub> (at 75% MCR)	199 g/kWh	According to technical file of EIAPP certificate in ISO conditions (see 10.2). According to the IMO Calculation Guidelines, the SFC <sub>AE</sub> at 75% MCR should be used when P <sub>AE</sub> is estimated by the electric power table (EPT) for the reason that P <sub>AE</sub> computed using the formula in the IMO Calculation Guidelines is significantly different from the total power used at normal seagoing
P <sub>eff</sub>	0	No mechanical energy efficient devices The propeller boss cap fins act by reducing ship resistance
P <sub>AEeff</sub>	0	No auxiliary power reduction
f <sub>eff</sub>		Not relevant here (see above)
f <sub>j</sub>	1.0	The ship is a bulk carrier without ice notations. f <sub>j</sub> = 1.0
f <sub>i</sub>	1.017	No ice notation f <sub>ICE</sub> = 1.0 No voluntary structural enhancement for this ship f <sub>IVSE</sub> = 1.0 The ship has the notation Bulk carrier CSR: f <sub>CSR</sub> = 1 + 0.08*LWT <sub>CSR</sub> / DWT <sub>CSR</sub> = 1+0.08*11590/55000 = 1.017 f <sub>i</sub> = f <sub>ICE</sub> X f <sub>IVSE</sub> X f <sub>CSR</sub> = 1.017
f <sub>m</sub>	1.0	No ice notation
f <sub>w</sub>	1.0	For attained EEDI calculation under regulation 20 and 21 of MARPOL Annex VI, f <sub>w</sub> is 1.0
f <sub>c</sub>	1.0	The ship is a bulk carrier not designed to carry light cargoes, f <sub>c</sub> = 1.0
Capacity	55000	For a bulk carrier, Capacity is deadweight = 55 000 tons
V <sub>ref</sub>	14.25 knots	At design stage, reference speed is obtained from the towing tank test report and delivered power in scantling draft (EEDI) condition is given in table 7.1 In table 7.1 P <sub>D</sub> = 1.0 x P <sub>ME</sub> = 6900 kW The reference speed is read on the speed curve corresponding to table 7.1 at intersection between curve <i>Full, p</i> and 6900 kW V <sub>ref</sub> = 14.25 knots

## 11.2 Result

For this vessel, Attained EEDI is:

$$\frac{\left( \prod_{j=1}^x f_j \right) \left( \sum_{i=1}^{nME} P_{ME(i)} \cdot C_{FME(i)} \cdot SFC_{ME(i)} \right) + \left( P_{AE} \cdot C_{FAE} \cdot SFC_{AE} \right) + \left( \prod_{j=1}^v f_j \cdot \sum_{i=1}^{nPTI} P_{PTI(i)} - \sum_{i=1}^{nPTI} f_{eff(i)} \cdot P_{AEeff(i)} \right) \cdot C_{FAE} \cdot SFC_{AE}}{f_i \cdot f_c \cdot f_j \cdot Capacity \cdot f_w \cdot V_{ref} \cdot f_m} - \left( \sum_{i=1}^{nPTI} f_{eff(i)} \cdot P_{eff(i)} \cdot C_{FME} \cdot SFC_{ME} \right)$$

$$\text{Attained EEDI} = (6900 \cdot 3.206 \cdot 171 + 381 \cdot 3.206 \cdot 199) / (1.017 \cdot 55000 \cdot 14.25) = 5.05 \text{ g/t.nm}$$

## 12 Required EEDI

According to MARPOL Annex VI, Chapter 4, Regulation 21, the required EEDI is:  
(1-x/100) x reference line value

The reference line value = a\*b<sup>-c</sup> where a, b, c are given for a bulk carrier as:

$$a = 961.79 \quad b = \text{deadweight of the ship} \quad c = 0.477$$

$$\text{So reference line value} = 5.27 \text{ g/t.nm}$$



In Phase 0 (between 1 Jan 2013 and 31 Dec 2014) above 20000 DWT,  $x = 0$

So Required EEDI = 5.27 g/t.nm

Figure 12.1 provides the relative position of attained EEDI with reference to required value.

As a conclusion, for this vessel:

- attained EEDI = 5.05 g/t.nm
- required EEDI = 5.27 g/t.nm
- Regulation criteria is satisfied with 4.2% margin

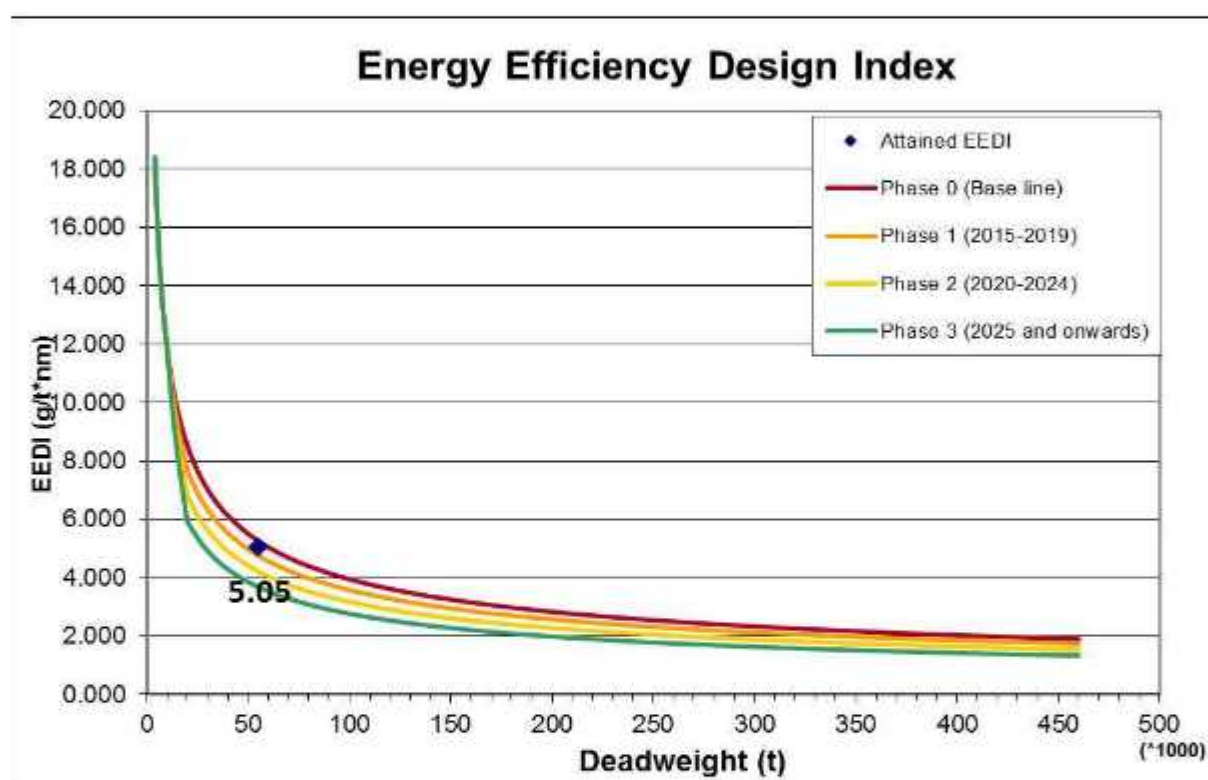


Figure 12.1: Required EEDI value

### 13 Calculation of attained EEDI<sub>weather</sub>

Not calculated.

### 14 Lightweight check report

The lightweight check report is provided in annex 6. The final characteristics of the ship are:

Displacement	66171 tons
Lightweight	11621 tons
Deadweight	54550 DWT

### 15 Sea trial report with corrections

The sea trial report is provided in annex 7. The results of the sea trial follow the assessment guideline of ISO 15016:2015 are given on curve *Ballast,s* on Figure 3.1.

## 16 Calculation of attained EEDI at final stage

### 16.1 Recalculated values of parameters

The EEDI quantities and intermediate calculations are listed in table 16.1. Parameters which have not been modified from the preliminary verification stage are marked "no change".

**Table 16.1: Parameters in attained EEDI calculation (final stage)**

EEDI quantity	Value	Remarks
$C_{FME}$	3.206	No change
$P_{ME}$	6900 kW	No change
$SFC_{ME}$	171 g/kWh	No change
$CF_{AE}$	3.206	No change
$P_{PTI}$	0	No change
$P_{AE}$	381 kW	The electric power table has been validated and endorsed (see the electric power table form in annex 8)
$SFC_{AE}$ at 75% MCR	199 g/kWh	No change
$P_{eff}$	0	No change
$P_{AEeff}$	0	No change
$f_{eff}$		No change
$f_j$	1.0	No change
$f_i$	1.017	Deadweight and lightweight are computed from lightweight check: $f_{iCSR} = 1 + 0.08 \cdot LWT_{CSR} / DWT_{CSR} = 1 + 0.08 \cdot 11621 / 54550 = 1.017$ $f_i = f_{ICE} \times f_{VSE} \times f_{iCSR} = 1.017$ (unchanged)
$f_c$	1.0	No change
$f_m$	1.0	No change
Capacity	54550 DWT	Deadweight has been computed from the lightweight check. See 14.
$V_{ref}$	14.65 knots	The reference speed in EEDI condition has been adjusted according to the delivered power adjustment methodology defined in Industry Guidelines. The reference speed is read on the speed curves diagram in Figure 3.1 $V_{ref} = 14.65$ knots

### 16.2 Final result

Attained EEDI =  $(6900 \cdot 3.206 \cdot 171 + 381 \cdot 3.206 \cdot 199) / (1.017 \cdot 54550 \cdot 14.65) = 4.95$  g/t.nm

Required EEDI in Phase 0:  $961.79 \cdot 54550^{-0.477} = 5.29$  g/t.nm

**Regulation criteria is satisfied with 6.4% margin**

## List of annexes to the Document

Annex 1	Standard model-ship extrapolation and correlation method
Annex 2	Towing tank tests report
Annex 3	Ship lines and offsets table
Annex 4	Description of energy saving equipment
Annex 5	5.1 NO <sub>x</sub> Technical File of main engine(s) 5.2 NO <sub>x</sub> Technical File of auxiliary engines
Annex 6	Lightweight check report
Annex 7	Sea trials report
Annex 8	EPT-EEDI form



## **APPENDIX 3**

### **Verifying the calibration of model test equipment**

#### **Quality Control System**

The existence of a Quality Control System is not sufficient to guarantee the correctness of the test procedures; QS, including ISO 9000, only give documentary evidence what is to be and has been done. Quality Control Systems do not evaluate the procedures as such.

The Test institute should have a quality control system (QS). If the QS is not certified ISO 9000 a documentation of the QS should be shown. A Calibration Procedure is given in ITTC Recommended Procedures 7.6-01-01.

#### **1. Measuring Equipment**

An important aspect of the efficient operation of Quality System according to measuring equipment is a full identification of devices used for the tests.

Measuring equipment instruments shall have their individual records in which the following data shall be placed:

- name of equipment
- manufacturer
- model
- series
- laboratory identification number ( optionally)
- status ( verified, calibration, indication )

Moreover the information about the date of last and next calibration or verification shall be placed on this record. All the data shall be signed by authorised officer.

#### **2. Measuring Standards**

Measuring standards used in laboratory for calibration purposes shall be confirmed (verified) by Weights and Measures Office at appropriate intervals (defined by the Weights and Measures Office).

All measuring standards used in laboratory for the confirmation purposes shall be supported by certificates, reports or data sheets for the equipment confirming the source, uncertainty and conditions under which the results were obtained.

#### **3. Calibration**

The calibration methods may differ from institution to institution, depending on the particular measurement equipment. The calibration shall comprise the whole measuring chain (gauge, amplifier, data acquisition system etc.).

The laboratory shall ensure that the calibration tests are carried out using certified measuring standards having a known valid relationship to international or nationally recognised standards.

##### **a) Calibration Report**

“Calibration reports” shall include:

- identification of certificate for measuring standards
- description of environmental conditions
- calibration factor or calibration curve
- uncertainty of measurement
- minimum and maximum capacity" for which the error of measuring instrument is within specified (acceptable) limits.

b) Intervals of Confirmation

The measuring equipment (including measuring standards) shall be confirmed at appropriate (usually periodical) intervals, established on the basis of their stability, purpose and wear. The intervals shall be such that confirmation is carried out again prior to any probable change in the equipment accuracy, which is important for the equipment reliability. Depending on the results of preceding calibrations, the confirmation period may be shortened, if necessary, to ensure the continuous accuracy of the measuring equipment.

The laboratory shall have specific objective criteria for decisions concerning the choice of intervals of confirmation.

c) Non - Conforming Equipment

Any item of measuring equipment

- that has suffered damage,
- that has been overloaded or mishandled,
- that shows any malfunction,
- whose proper functioning is subject to doubt,
- that has exceeded its designated confirmation interval, or
- the integrity of whose seal has been violated, shall be removed from service by segregation, clear labelling or cancelling.

Such equipment shall not be returned to service until the reasons for its nonconformity have been eliminated and it is confirmed again.

If the results of calibration prior to any adjustment or repair were such as to indicate a risk of significant errors in any of the measurements made with the equipment before the calibration, the laboratory shall take the necessary corrective action.

#### **4. Instrumentation**

Especially the documentation on the calibration of the following Instrumentation should be shown.

a) Carriage Speed

The carriage speed is to be calibrated as a distance against time. Period between the calibrations is to be in accordance with the internal procedure of the towing tank test organisation.

b) Water Temperature

Measured by calibrated thermometer with certificate (accuracy 0.1°C).

c) Trim Measurement

Calibrated against a length standard. Period between the calibrations is to be in accordance with the internal procedure of the towing tank test organisation.

d) Resistance Test

Resistance Test is a force measurement. It is to be calibrated against a standard weight. Calibration normally before each test series.

e) Propulsion Test

During Self Propulsion Test torque, thrust and rate of revolutions are measured. Thrust and Torque are calibrated against a standard weight. Rate of revolution is normally measured by a pulse tachometer and an electronic counter which can be calibrated e.g. by an oscillograph.

Period between the calibrations is to be in accordance with the internal procedure of the towing tank test organisation.

f) Propeller Open Water Test

During Propeller Open Water Test torque, thrust and rate of revolutions are measured. Thrust and Torque are calibrated against a standard weight. Rate of revolution is normally measured by a pulse tachometer and an electronic counter which can be calibrated e.g. by an oscillograph.

Period between the calibrations is to be in accordance with the internal procedure of the towing tank test organisation.

Examples of documentation sheets are given in the Annexes 1 and 2:





## ANNEX 2: SAMPLE OF CALIBRATION CERTIFICATE.

QM 4.10.6.2	<b>CALIBRATION CERTIFICATE</b>				<b>NO.</b>	<input style="width: 90%;" type="text"/>
	for				<b>LIN</b>	<input style="width: 90%;" type="text"/>
	<input style="width: 100%;" type="text" value="PROPELLER"/>					
Calibration Instructions		<input style="width: 100%;" type="text"/>		Calibrated by :		<input style="width: 100%;" type="text"/>
Date of calibration		<input style="width: 100%;" type="text"/>		Checked by :		<input style="width: 100%;" type="text"/>
Measurement combination						
<b>DYNAMOMETER</b>						
LIN	<input style="width: 100%;" type="text"/>	Manufacturer	<input style="width: 100%;" type="text"/>	Model	<input style="width: 100%;" type="text"/>	
		Serial No	<input style="width: 100%;" type="text"/>	Date of purchased	<input style="width: 100%;" type="text"/>	
		Work instruction	<input style="width: 100%;" type="text"/>	Last calibration	<input style="width: 100%;" type="text"/>	
Cable						
<b>AMPLIFIER</b>						
LIN	<input style="width: 100%;" type="text"/>	Manufacturer	<input style="width: 100%;" type="text"/>	Model	<input style="width: 100%;" type="text"/>	
		Serial No	<input style="width: 100%;" type="text"/>	Date of purchased	<input style="width: 100%;" type="text"/>	
		Work instruction	<input style="width: 100%;" type="text"/>	Type of transducer	<input style="width: 100%;" type="text"/>	
		Excitation	<input style="width: 100%;" type="text"/>	Frequency of excit.	<input style="width: 100%;" type="text"/>	
		<b>Thrust :</b> Amp. gain	<input style="width: 100%;" type="text"/>	Zero not load	<input style="width: 100%;" type="text"/>	
		<b>Torque :</b> Amp. gain	<input style="width: 100%;" type="text"/>	Zero not load	<input style="width: 100%;" type="text"/>	
Cable						
<b>A/C TRANSDUCER</b>						
LIN	<input style="width: 100%;" type="text"/>	Manufacturer	<input style="width: 100%;" type="text"/>	Model	<input style="width: 100%;" type="text"/>	
		Serial No	<input style="width: 100%;" type="text"/>	Date of purchased	<input style="width: 100%;" type="text"/>	
		Work instruction	<input style="width: 100%;" type="text"/>	Certificate No	<input style="width: 100%;" type="text"/>	
<b>MEASUREMENT STANDARDS</b>						
		Mass	<input style="width: 100%;" type="text"/>	Certificate No	<input style="width: 100%;" type="text"/>	
		Length arm of force	<input style="width: 100%;" type="text"/>	Certificate No	<input style="width: 100%;" type="text"/>	
		Voltmeter	<input style="width: 100%;" type="text"/>	Certificate No	<input style="width: 100%;" type="text"/>	

<b>QM</b> <b>4.10.6.2</b>	<h2 style="margin: 0;">CALIBRATION RESULTS</h2>			
Environmental condition				
Place of test : <input style="width: 100px;" type="text"/>				
Temperature :	initial	<input style="width: 100px;" type="text"/>	final	<input style="width: 100px;" type="text"/>
Dampness :	initial	<input style="width: 100px;" type="text"/>	final	<input style="width: 100px;" type="text"/>
Computation results of calibrations test				
Executed program	procedure	certificate NO.		
<input style="width: 100px;" type="text"/>	<input style="width: 100px;" type="text"/>	<input style="width: 100px;" type="text"/>	<input style="width: 100px;" type="text"/>	
<b>Thrust</b>		<b>Torque</b>		
Drift :	<input style="width: 100px;" type="text"/>	<input style="width: 100px;" type="text"/>		
Non Linearity errors :	<input style="width: 100px;" type="text"/>	<input style="width: 100px;" type="text"/>		
Hysteresis :	<input style="width: 100px;" type="text"/>	<input style="width: 100px;" type="text"/>		
Precision errors :	<input style="width: 100px;" type="text"/>	<input style="width: 100px;" type="text"/>		
Total uncertainty :	<input style="width: 100px;" type="text"/>	<input style="width: 100px;" type="text"/>		
Calibration factor :	<input style="width: 100px;" type="text"/>	<input style="width: 100px;" type="text"/>		
Calibration requests :				
Specified limits of	<b>Thrust</b>	<b>Torque</b>		
errors :	<input style="width: 100px;" type="text"/>	<input style="width: 100px;" type="text"/>		
Maximum capacity :	<input style="width: 100px;" type="text"/>	<input style="width: 100px;" type="text"/>		
Minimum capacity :	<input style="width: 100px;" type="text"/>	<input style="width: 100px;" type="text"/>		
<b>Note : tests and computations results are included in report</b> <input style="width: 100px;" type="text"/>				
Prepared by : ..... Approved by : ..... Date : .....				



## APPENDIX 4

### Review and witnessing of model test procedures

The Model Tests are to be witnessed by the verifier. Special attention is to be given to the following items:

#### 1. Ship Model

##### Hydrodynamic Criteria

- a) *Model Size*: The model should generally be as large as possible for the size of the towing tank taking into consideration wall, blockage and finite depth effects, as well as model mass and the maximum speed of the towing carriage (ITTC Recommended Procedure 7.5-02-02-01 Resistance Test).
- b) *Reynolds Number*: The Reynolds Number is to be, if possible, above  $2.5 \times 10^5$ .
- c) *Turbulence Stimulator*: In order to ensure turbulent flow, turbulence stimulators have to be applied.

##### Manufacture Accuracy

With regard to accuracy the ship model is to comply with the criteria given in ITTC Recommended Procedure 7.5-01-01-01, Ship Models.

The following points are to be checked:

- a) *Main dimensions*:  $L_{PP}$ ,  $B$ .
- b) *Surface finish*: Model is to be smooth. Particular care is to be taken when finishing the model to ensure that geometric features such as knuckles, spray rails, and boundaries of transom sterns remain well-defined.
- c) *Stations and Waterlines*: The spacing and numbering of displacement stations and waterlines are to be properly defined and accurately marked on the model.
- d) *Displacement*: The model is to be run at the correct calculated displacement. The model weight is to be correct to within 0.2% of the correct calculated weight displacement. In case the marked draught is not met when the calculated displacement has been established the calculation of the displacement and the geometry of the model compared to the ship has to be revised. (Checking the Offsets).

##### Documentation in the report

Identification (model number or similar)  
Materials of construction  
Principal dimensions  
Length between perpendiculars ( $L_{PP}$ )  
Length of waterline ( $L_{WL}$ )  
Breadth ( $B$ )  
Draught ( $T$ )  
For multihull vessels, longitudinal and transverse hull spacing  
Design displacement ( $\Delta$ ) (kg, fresh water)

Hydrostatics, including water plane area and wetted surface area  
Details of turbulence stimulation  
Details of appendages  
Tolerances of manufacture

## **2. Propeller Model**

The Manufacturing Tolerances of Propellers for Propulsion Tests are given IN ITTC Recommended Procedures 7.5-01-01-01, Ship Models Chapter 3.1.2. Attention: Procedure 7.5 – 01-02-02 Propeller Model Accuracy is asking for higher standards which are applicable for cavitation tests and not required for self-propulsion tests.

### **Propeller Model Accuracy**

#### ***Stock Propellers***

During the "stock-propeller" testing phase, the geometrical particulars of the final design propeller are normally not known. Therefore, the stock propeller pitch (in case of CPP) is recommended to be adjusted to the anticipated propeller shaft power and design propeller revolutions. (ITTC Recommended Procedure 7.5-02-03-01.1 Propulsion/Bollard Pull Test).

#### ***Adjustable Pitch Propellers***

Before the Tests the pitch adjustment is to be controlled.

#### ***Final Propellers***

Propellers having diameter (D) typically from 150 mm to 300 mm is to be finished to the following tolerances:

Diameter (D)  $\pm 0.10$  mm

Thickness (t)  $\pm 0.10$  mm

Blade width (c)  $\pm 0.20$  mm

Mean pitch at each radius (P/D):  $\pm 0.5\%$  of de-sign value.

Special attention is to be paid to the shaping accuracy near the leading and trailing edges of the blade section and to the thickness distributions. The propeller will normally be completed to a polished finish.

#### **Documentation in the report**

Identification (model number or similar)

Materials of construction

Principal dimensions

Diameter

Pitch-Diameter Ratio ( $P/D$ )

Expanded blade Area Ratio ( $A_E/A_0$ )

Thickness Ratio ( $t/D$ )

Hub/Boss Diameter ( $d_h$ )

Tolerances of manufacture

## **3. Model Tests**

### **a) Resistance Test**

The Resistance Test is to be performed acc. to ITTC Recommended Procedure 7.5-02-02-01 Resistance Test.

#### **Documentation in the report**

Model Hull Specification:

- Identification (model number or similar)
- Loading condition
- Turbulence stimulation method
- Model scale
- Main dimensions and hydrostatics (see ITTC Recommended Procedure 7.5-01-01-01 Ship Models and chapter 2 of this paper).

Particulars of the towing tank, including length, breadth and water depth

Test date

Parametric data for the test:

- Water temperature
- Water density
- Kinematic viscosity of the water
- Form factor (even if  $(1+k) = 1.0$  is applicable, this is to be stated)
- $\Delta C_F$  or  $C_A$

For each speed, the following measured and extrapolated data is to be given as a minimum:

- Model speed
- Resistance of the model
- Sinkage fore and aft, or sinkage and trim

## **b) Propulsion Test**

The Propulsion Test is to be performed acc. to ITTC Recommended Procedure 7.5-02-03-01.1 Propulsion Test/Bollard Pull.

### **Documentation in the report**

Model Hull Specification:

- Identification (model number or similar)
- Loading condition
- Turbulence stimulation method
- Model scale
- Main dimensions and hydrostatics (see ITTC Recommended Procedure 7.5-01-01-01 Ship Models and chapter 2 of this paper).

Model Propeller Specification:

- Identification (model number or similar)
- Model Scale
- Main dimensions and particulars (see ITTC Recommended Procedure 7.5-01-01-01 Ship Models and chapter 3 of this paper)

Particulars of the towing tank, including length, breadth and water depth

Test date

Parametric data for the test:

- Water temperature
- Water density
- Kinematic viscosity of the water
- Form factor (even if  $(1+k) = 1.0$  is applicable, this is to be stated)
- $\Delta C_F$  or  $C_A$
- Appendage drag scale effect correction factor (even if a factor for scale effect correction is not applied, this is to be stated).

For each speed the following measured data and extrapolated data is to be given as a minimum:

- Model speed
- External tow force
- Propeller thrust,
- Propeller torque



- Rate of revolutions.
- Sinkage fore and aft, or sinkage and trim
- The extrapolated values are also to contain the resulting delivered power  $P_D$ .

**c) Propeller Open Water Test**

In many cases the Propeller Open Water Characteristics of a stock propeller will be available and the Propeller Open Water Test need not be repeated for the particular project. A documentation of the Open Water Characteristics (Open Water Diagram) will suffice.

In case of a final propeller or where the Propeller Open Water Characteristics is not available the Propeller Open Water Test is to be performed acc. to ITTC Recommended Procedure 7.5-02-03-02.1 Open Water Test.

**Documentation in the report**

Model Propeller Specification:

- Identification (model number or similar)
- Model scale
- Main dimensions and particulars (see recommendations of ITTC Recommended Procedure 7.5-01-01-01 Ship Models and chapter 3 of this paper)
- Immersion of centreline of propeller shaft in the case of towing tank

Particulars of the towing tank or cavitation tunnel, including length, breadth and water depth or test section length, breadth and height.

Test date

Parametric data for the test:

- Water temperature
- Water density
- Kinematic viscosity of the water
- Reynolds Number (based on propeller blade chord at  $0.7R$ )

For each speed the following data is to be given as a minimum:

- Speed
- Thrust of the propeller
- Torque of the propeller
- Rate of revolution
- Force of nozzle in the direction of the propeller shaft (in case of ducted propeller)

Propeller Open Water Diagram

#### 4. Speed Trial Prediction

The principal steps of the Speed Trial Prediction Calculation are given in ITTC Recommended Procedure 7.5 - 02 - 03 -1.4 ITTC 1978 Trial Prediction Method (in its latest reviewed version of 2017). The main issue of a speed trial prediction is to get the loading of the propeller correct and also to assume the correct full scale wake. The right loading of the propeller can be achieved by increasing the friction deduction by the added resistance (e.g. wind resistance etc.) and run the self-propulsion test already at the right load or it can be achieved by calculation as given in Procedure 7.5-02-03-1.4.

A wake correction is always necessary for single screw ships. For twin screw ships it can be neglected unless the stern shape is of twin hull type or other special shape.

The following scheme indicates the main components of a speed trial prediction. It is to be based on a Resistance Test, a Propulsion Test and an Open Water Characteristics of the used model propeller during the tests and the Propeller Open Water Characteristics of the final propeller.

##### **Documentation**

Model Hull Specification:

- Identification (model number or similar)
- Loading condition
- Turbulence stimulation method
- Model scale
- Main dimensions and hydrostatics (see ITTC Recommended Procedure 7.5-01-01-01 Ship Models and chapter 2 of this paper).

Model Propeller Specification:

- Main dimensions and particulars (see ITTC Recommended Procedure 7.5-01-01-01 Ship Models and chapter 3 of this paper)

Particulars of the towing tank, including length, breadth and water depth

Resistance Test Identification (Test No. or similar)

Propulsion Test Identification (Test No. or similar)

Open Water Characteristics of the model propeller

Open Water Characteristics of ship propeller

Ship Specification:

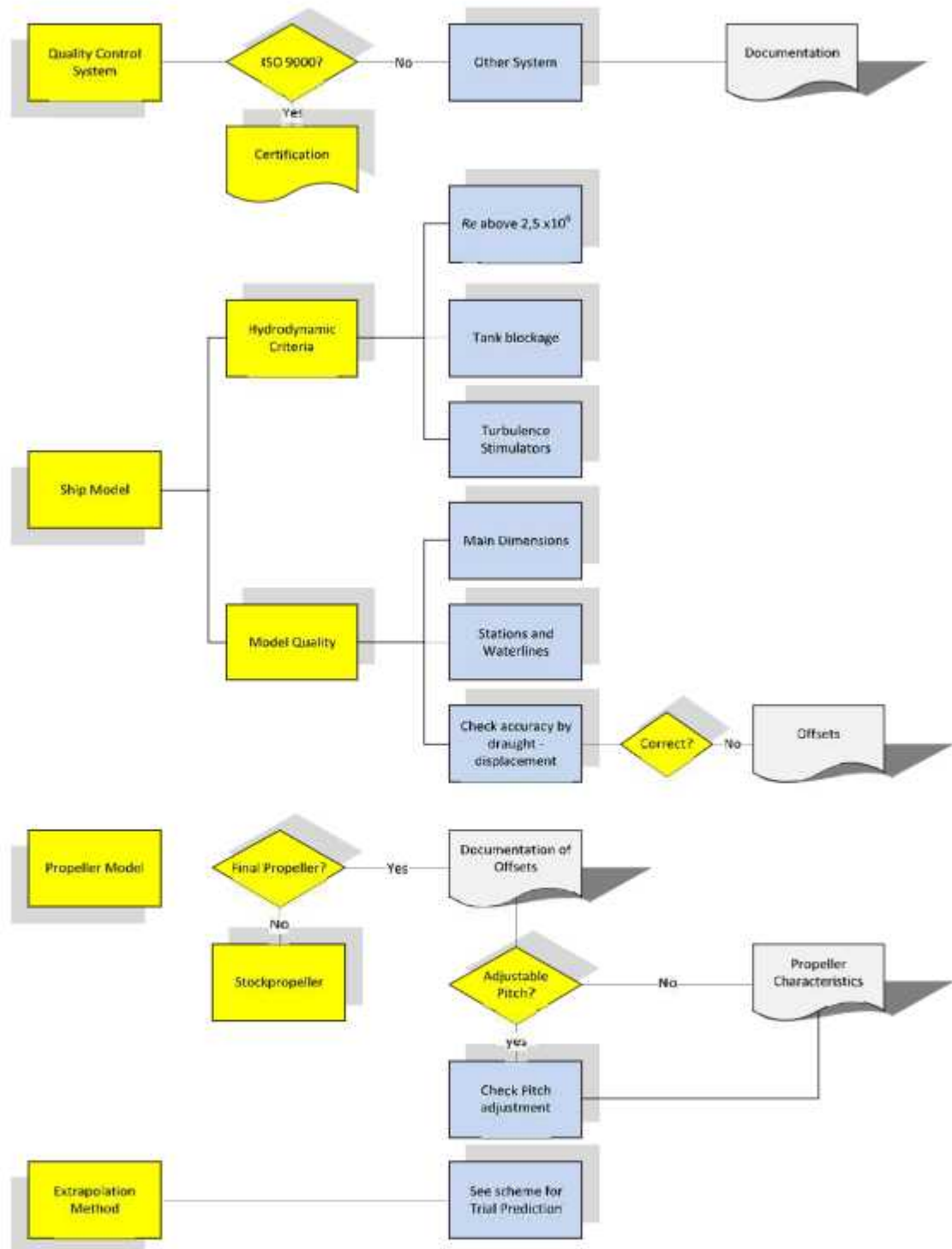
- Projected wind area
- Wind resistance coefficient
- Assumed BF
- $C_p$  and  $C_n$





# Scheme for review and witnessing Model Tests

## Checking of Model Testing Procedure



## APPENDIX 5

### Sample report “Preliminary Verification of EEDI”

#### ATTESTATION PRELIMINARY VERIFICATION OF ENERGY EFFICIENCY DESIGN INDEX (EEDI) by VERIFIER

Statement N° EEDI/YYYY/XXX

**Ship particulars:**

Ship Owner: \_\_\_\_\_

Shipyard: \_\_\_\_\_

Ship's Name: \_\_\_\_\_

IMO Number: \_\_\_\_\_

Hull number: \_\_\_\_\_

Building contract date: \_\_\_\_\_

Type of ship: \_\_\_\_\_

Port of registry: \_\_\_\_\_

Deadweight: \_\_\_\_\_

**Summary results of EEDI**

Reference speed	VV.V knots
Attained EEDI	X.XX g/t.nm
Required EEDI	Y.YY g/t.nm

**Supporting documents**

Title	ID and/or remarks
EEDI Technical File	RRRR dated DD/MM/YYYY

This is to certify:

- 1 That the attained EEDI of the ship has been calculated according to the 2018 *Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships*, IMO resolution MEPC.308(73) as amended.
- 2 That the preliminary verification of the EEDI shows that the ship complies with the applicable requirements in regulation 20 and regulation 21 of MARPOL Annex VI as amended.

Completion date of preliminary verification of EEDI: xx/xx/xxxx

Issued at: \_\_\_\_\_ on: \_\_\_\_\_

Signature of the Verifier

## **APPENDIX 6**

### **Sample calculations of EEDI**

#### **Content**

Appendix 6.1: Cruise passenger ship with diesel-electric propulsion

Appendix 6.2: LNG carrier with diesel-electric propulsion

Appendix 6.3: Diesel-driven LNG carrier with re-liquefaction system

Appendix 6.4: LNG carrier with steam turbine propulsion



## Appendix 6.1

### Sample calculation for diesel-electric cruise passenger ship

#### 1. Preliminary calculation of attained EEDI at design stage

Attained EEDI for cruise passenger ship having diesel electric propulsion system is calculated as follows at design stage.

For a diesel-electric cruise passenger ship:

$$P_{ME} = 0, P_{PTI} \neq 0, P_{PTO} = 0$$

#### 1) Input

The table below lists the input information needed at the design stage and verified at the final stage:

Symbol	Name	Value	Source
MPP	Rated output of electric propulsion motors	2 x 20000 kW	From EEDI technical file
$\eta_{PTI}$	Efficiency of transformer + converter + propulsion motor at 75% of rated motor output	0.945	From electric power table
$\eta_{GEN}$	Power-weighted average efficiency of generators	0.974	Calculation from individual generator efficiencies given in electric power table: $0.975 \cdot 19000 + 0.972 \cdot 14000 / (14000 + 19000)$
$HLOAD_{Max}$	Consumed electric power excluding propulsion in cruise most demanding conditions	15 779 kW	From electric power table for the most demanding cruise contractual conditions (here extreme summer conditions 28°C during 80% of the time)
$SFC_{AE}$	Power-weighted average of specific oil consumption among all engines at 75% of the MCR power	185 g/kWh	From NOx technical file
GT	Gross Tonnage	160000 ums	From EEDI technical file

*MCR* of auxiliary diesel engines      19,000 kW x 2 + 14,000 kW x 2

*MPP*      20,000 kW x 2

*SFC<sub>AE</sub>* recorded in the test report annexed to the NOx technical file at 75% of MCR power and corrected to the ISO standard reference conditions.

185 g/kWh for both types of engines (19,000 kW and 14,000 kW)

#### 2) Calculation of $\Sigma P_{PTI}$

The input is the rated output of the electric propulsion motors, MPP, which can be identified with the quantity noted  $P_{PTI,Shaft}$  in 2.2.5.3 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

The term  $P_{PTI}$  is then computed as follows:

$$\begin{aligned}\sum P_{PTI(i)} &= \frac{\sum(0.75 \times MPP(i))}{\eta_{PTI} \times \eta_{Gen}} \\ \sum P_{PTI(i)} &= \frac{2 \times 0.75 \times 20,000}{0.945 \times 0.974} \\ \sum P_{PTI(i)} &= 32,593kW\end{aligned}$$

Where  $\eta_{PTI}$  is the chain efficiency of the transformer, frequency converter and electric motor, as given by the manufacturer at 75% of the rated motor output and  $\eta_{Gen}$  is the weighted average efficiency of the generators.

### 3) Value of $P_{AE}$

$P_{AE}$  is estimated by the consumed electric power, excluding propulsion, in most demanding (i.e. maximum electricity consumption) cruise conditions as given in the electric power table provided by the submitter, divided by the average efficiency of the generators.

The most demanding conditions maximise the design electrical load and correspond to contractual ambient conditions leading to the maximum consumption off heating ventilation and air conditioning systems, in accordance with Note 3 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

In this example, the most demanding condition corresponds to extreme summer conditions, where the external air temperature is 28°C during 80% of the time.

$$\begin{aligned}P_{AE} &= \frac{HLOAD_{MAX}}{\eta_{Gen}} \\ &= \frac{15,779kW}{0.974} \\ &= 16,200kW\end{aligned}$$

### 4) $V_{ref}$ at EEDI condition

$V_{ref}$  is obtained by the preliminary speed-power curves as the model tank test results at EEDI condition at design stage. Suppose that  $V_{ref}$  of 22.5 kn is obtained at 75% of  $MPP$ , in this example calculation at design stage.

### 5) Calculation of the attained EEDI at design stage

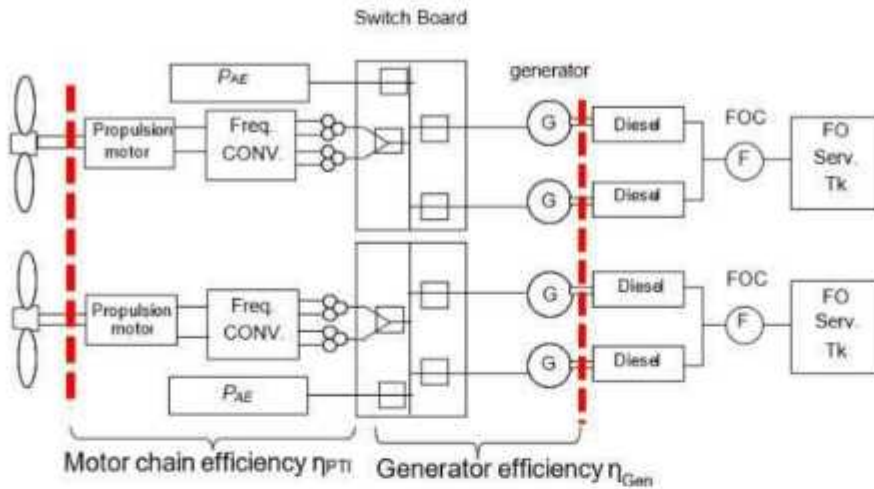
EEDI is calculated in accordance with paragraph 2 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships". The primary fuel is marine Gas Oil in this example.

$$\begin{aligned}EEDI &= \frac{(P_{AE} + \sum P_{PTI(i)}) \cdot (C_{FAE} \cdot SFC_{AE})}{Capacity \cdot V_{ref}} \\ &= \frac{(16200 + 32593) \times 185 \times 3.206}{160,000(UMS) \times 22.5(kn)} = 8.04\end{aligned}$$

## 2. Final calculation of attained EEDI at sea trial

Attained EEDI at sea trial of cruise passenger ship having diesel electric propulsion system is calculated as follows.

### 1) Typical configuration and example of measurement points at sea trial



### 2) Specifications

Chain efficiency of the electric motor  $\eta_{PTI}$  and generator efficiency  $\eta_{Gen}$  can be confirmed during the sea trials at EEDI conditions (i.e. 75% of the rated motor output) taking into account the power factor  $\cos\phi$  of the electric consumers.

$SFC_{AE}$  is computed from the NOx technical file if this file was not available at the preliminary stage.

Gross tonnage is confirmed at 160,000 ums.

Prior to sea trials, an on-board survey is performed to ensure that data read on the nameplates of the main electrical pieces of equipment comply with those recorded in the submitted electric power table.

### 3) $V_{ref}$ at EEDI condition

$V_{ref}$  is obtained by the speed-power curves as a result of the sea trial in accordance with the paragraph 4.3.9 of "2014 guidelines on survey and certification of the energy efficiency design index (EEDI)" as amended. Suppose that  $V_{ref}$  of 18.7kn is obtained at 75% of  $MPP$ , in this example calculation at sea trial.

During the sea trials, the shaft power transferred to the propellers  $P_{PTI,Shaft}$  must be obtained. It could be measured by a torsiometer fitted on the propeller shaft, or obtained from the computation of the power consumption of the motor  $P_{SM}$  through the following relation:

$$P_{PTI,Shaft} = P_{SM} \times \eta_{PTI}$$

### 4) Calculation of the attained EEDI at sea trial

EEDI is calculated in accordance with paragraph 2 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships". The primary fuel is marine Gas Oil in this example.



$$\begin{aligned}
 EEDI &= \frac{(P_{AE} + \sum_i P_{PM}(i)) \cdot (C_{FAE} \cdot SFC_{AE})}{Capacity \cdot V_{ref}} \\
 &= \frac{(16200 + 32593) \times 185 \times 3.206}{160,000(\text{UMS}) \times 22.7(\text{kn})} = 7.97
 \end{aligned}$$

## Appendix 6.2

### Sample calculation for LNG carrier having diesel electric propulsion system

#### 1. Preliminary calculation of attained EEDI at design stage

Attained EEDI for LNG carrier having diesel electric propulsion system at design stage is calculated as follows.

##### 1) Specifications

MCR of main engines	10,000 (kW) x 3 + 6,400 (kW) x 1
MPP <sub>Motor</sub>	24,000 (kW)
SFC <sub>ME(i)_electric, gas mode at 75% of MCR</sub>	162.0 (g/kWh) (for 10,000 (kW)-Engines) (SFC with the addition of the guarantee tolerance)
	162.6 (g/kWh) (for 6,400 (kW)-Engine) (Ditto)
SFC <sub>ME(i)_Pilotfuel</sub>	6.0 (g/kWh) (for 10,000 (kW)-Engines), 6.1 (g/kWh) (for 6,400 (kW)-Engine)
Deadweight	75,000 (ton)

##### 2) $\eta_{electrical}$ at design stage

$\eta_{electrical}$  is set as 0.913 in accordance with paragraph 2.2.5.1 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

##### 3) Calculation of $P_{ME}$

$P_{ME}$  is calculated in accordance with paragraph 2.2.5.1 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

$$P_{ME} = 0.83 \times \frac{MPP_{Motor}}{\eta_{electrical}} = 0.83 \times \frac{24,000}{0.913} = 21,818(kW)$$

##### 4) Calculation of $P_{AE}$

$P_{AE}$  is calculated in accordance with paragraph 2.2.5.6.1 and 2.2.5.6.3 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

$$\begin{aligned}
 P_{AE} &= \left( 0.025 \times \sum_{i=1}^{nME} MCR_{ME(i)} + \sum_{i=1}^{nPTI} P_{PTI(i)} / 0.75 \right) + 250 \quad \text{and/or ,} \\
 &+ CargoTankCapacity_{LNG} \times BOR \times COP_{reliquefy} \times R_{reliquefy} \quad (1) \text{ and/or, (Not Applicable)} \\
 &+ 0.33 \sum_{i=1}^{nME} SFC_{ME(i),gasmode} \times \frac{P_{ME(i)}}{1000} \quad (2) \text{ and/or, (Not Applicable)} \\
 &= 0.02 \times \sum_{i=1}^{nME} P_{ME(i)} \quad (3) \\
 &= \{(0.025 \times 24,000) + 250\} + 0 + 0 + (0.02 \times 21,818) \\
 &= 1,286(kW)
 \end{aligned}$$





## 2) Specifications

$MCR$  of main engines 10,000 (kW) x 3 + 6,400 (kW) x 1

$MPP_{Motor}$  24,000 (kW)

$SFC_{ME(i)_{electric, gas mode at 75\% of MCR}}$

161.6 (g/kWh) (for 10,000 (kW)-Engines) (SFC of the test report in the NOx technical file)

162.2 (g/kWh) (for 6,400 (kW)-Engine) (Ditto)

$SFC_{ME(i)_{Pilotfuel}}$  6.0 (g/kWh) (for 10,000 (kW)-Engines), 6.1 (g/kWh) (for 6,400 (kW)-Engine)

$Deadweight$  75,500 (ton)

## 3) $\eta_{electrical}$ at sea trial

$\eta_{electrical}$  is set as 0.913 in accordance with paragraph 2.2.5.1 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

## 4) Calculation of $P_{ME}$

$P_{ME}$  is calculated in accordance with paragraph 2.2.5.1 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

$$P_{ME} = 0.83 \times \frac{MPP_{Motor}}{\eta_{electricity}} = 0.83 \times \frac{24,000}{0.913} = 21,818(kW)$$

## 5) Calculation of $P_{AE}$

$P_{AE}$  is calculated in accordance with paragraph 2.2.5.6.1 and 2.2.5.6.3 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

$$P_{AE} = \left( 0.025 \times \sum_{i=1}^{n_{ME}} MCR_{ME(i)} + \sum_{i=1}^{n_{PTI}} PTI(i) / 0.75 \right) + 250 \quad \text{and/or;}$$

$$+ CargoTankCapacity_{LNC} \times BOR \times COP_{reliquery} \times R_{reliquery} \quad \dots (1) \text{ and/or; (Not Applicable)}$$

$$+ 0.33 \times \sum_{i=1}^{n_{ME}} SFC_{ME(i), gasmode} \times \frac{P_{ME(i)}}{1000} \quad \dots (2) \text{ and/or; (Not Applicable)}$$

$$+ 0.02 \times \sum_{i=1}^{n_{ME}} P_{ME(i)} \quad \dots (3)$$

$$= \{(0.025 \times 24,000) + 250\} + 0 + 0 + (0.02 \times 21,818)$$

$$= 1,286(kW)$$

Note:

\*1: The value of  $MPP_{Motor}$  is used instead of  $MCR_{ME}$  in accordance with paragraph 2.2.5.6.3.4

## 6) $V_{ref}$ at EEDI condition

$V_{ref}$  is obtained by the speed-power curves as a result of the sea trial in accordance with paragraph 4.3.9 of the "2014 guidelines on survey and certification of the energy efficiency design index (EEDI)" as amended. Suppose that  $V_{ref}$  of 18.5kn is obtained at 83% of  $MPP_{Motor}$ , in this example calculation at sea trial.

## 7) Calculation of the attained EEDI at sea trial

EEDI is calculated in accordance with paragraph 2 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships". The primary fuel is LNG in this example calculation. In this case,  $SFC_{AE(i)_{electric, gas mode at 75\% of MCR}}$  is equal to  $SFC_{ME(i)_{electric, gas mode at 75\% of MCR}}$  and  $SFC_{AE(i)_{Pilotfuel}}$  is equal to  $SFC_{ME(i)_{Pilotfuel}}$ .

$$EEDI = \frac{P_{ME} \cdot (C_{PME\_Gas} \cdot SFC_{ME\_Gas} + C_{PME\_Pilotfuel} \cdot SFC_{ME\_Pilotfuel}) + P_{AE} \cdot (C_{FAE\_Gas} \cdot SFC_{AE\_Gas} + C_{FAE\_Pilotfuel} \cdot SFC_{AE\_Pilotfuel})}{Capacity \cdot V_{ref}}$$

$$= \frac{21,818 \times (2,750 \times 161.7 + 3,206 \times 6.0) + 1,286 \times (2,750 \times 161.7 + 3,206 \times 6.0)}{75,500(DWT) \times 18.5(kn)} = 7.67$$

Note:

\*1: The average weighed value of  $SFC_{ME(i)_{electric, gas mode at 75\% of MCR}}$  and  $SFC_{AE(i)_{electric, gas mode at 75\% of MCR}}$  is used;

$$\frac{161.6 \times 10,000(kW) \times 3 + 162.2 \times 6,400(kW)}{10,000(kW) \times 3 + 6,400(kW)} = 161.7(g/kWh)$$

\*2: The average weighed value of  $SFC_{ME(i)_{Pilotfuel}}$  and  $SFC_{AE(i)_{Pilotfuel}}$  is used;

$$\frac{6.0 \times 10,000(kW) \times 3 + 6.1 \times 6,400(kW)}{10,000(kW) \times 3 + 6,400(kW)} = 6.0(g/kWh)$$

### Appendix 6.3

#### Sample calculation for LNG carrier having diesel driven with re-liquefaction system

##### 1. Preliminary calculation of attained EEDI at design stage

Attained EEDI for LNG carrier having diesel driven with re-liquefaction system at design stage is calculated as follows.

##### 1) Specifications

$MCR_{ME(i)}$	18,660 x 2 (kW) = 37,320 (kW)
$SFC_{ME(i)}_{at 75\% of MCR}$	165.0 (g/kWh)
$SFC_{AE(i)}_{at 50\% of MCR}$	198.0 (g/kWh)
$CargoTankCapacity_{LNG}$	211,900 (m <sup>3</sup> )
$BOR$	0.15 (%/day)
$COP_{cooling}$	0.166
$COP_{reliquefy}$	15.142
$\left[ COP_{reliquefy} = \frac{425(kg/m^3) \times 511(kJ/kg)}{24(h) \times 3600(sec) \times COP_{cooling}} = 15.142 \right]$	
$R_{reliquefy}$	1
$Deadweight$	109,000 (ton)

##### 2) Calculation of $P_{ME}$

$P_{ME}$  is calculated in accordance with paragraph 2.2.5.1 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

$$P_{ME(i)} = 0.75 \times MCR_{ME(i)} \\ = 0.75 \times (18,660 + 18,660) = 27,990(kW)$$

##### 3) Calculation of $P_{AE}$

$P_{AE}$  is calculated in accordance with paragraph 2.2.5.6.1 and 2.2.5.6.3 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

$$P_{AE} = 0.025 \times \sum 0.0_{ME(i)} + 250 \\ + CargoTankCapacity_{LNG} \times BOR \times COP_{reliquefy} \times R_{reliquefy} \\ = 0.025 \times 37,320 + 250 \\ + 211,900 \times 0.15/100 \times 15.142 \times 1 \\ = 5,996 (kW)$$

##### 4) $V_{ref}$ at EEDI condition

$V_{ref}$  is obtained by the preliminary speed-power curves as the model tank test results at EEDI condition at design stage.

Suppose that  $V_{ref}$  of 19.7kn is obtained at 75% of  $MCR_{ME(i)}$ , in this example calculation at design stage.

##### 5) Calculation of the attained EEDI on design stage

EEDI is calculated in accordance with paragraph 2 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".



$$EEDI = \frac{P_{ME} \cdot C_{FME} \cdot SFC_{ME} + P_{AE} \cdot C_{FAE} \cdot SFC_{AE}}{Capacity \cdot V_{ref}}$$

$$= \frac{27,990 \times 3.206 \times 165.0 + 5,996 \times 3.206 \times 198.0}{109,000(DWT) \times 19.7(kn)} = 8.668$$

## 2. Final calculation of attained EEDI at sea trial

Attained EEDI for LNG carrier having diesel driven with re-liquefaction system at sea trial is calculated as follows.

### 1) Specifications

$MCR_{ME(i)}$	18,660 x 2 (kW) = 37,320 (kW)
$SFC_{ME(i)}_{at 75\% of MCR}$	165.5 (g/kWh)
$SFC_{AE(i)}_{at 50\% of MCR}$	198.5 (g/kWh)
$CargoTankCapacity_{LNG}$	211,900 (m <sup>3</sup> )
$BOR$	0.15 (%/day)
$COP_{cooling}$	0.166
$COP_{reliquefy}$	15.142

$$COP_{reliquefy} = \frac{425 (kg / m^3) \times 511 (kJ / kg)}{24 (h) \times 3600 (sec) \times COP_{cooling}} = 15.142$$

$R_{reliquefy}$	1
$Deadweight$	109,255 (ton)

$SFC_{ME(i)}_{at 75\% of MCR}$  and  $SFC_{AE(i)}_{at 50\% of MCR}$  are in accordance with paragraph 2.2.7.1 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

$Deadweight$  is in accordance with paragraph 4.3.10 of the "2014 guidelines on survey and certification of the energy efficiency design index (EEDI)" as amended.

### 2) Measured values at sea trial

$Relation between SHP_{seatrial}$  and Ship's speed shall be measured and verified at sea trial.

### 3) Calculation of $P_{ME}$

$P_{ME}$  is calculated in accordance with paragraph 2.2.5.1 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

$$P_{ME(i)} = 0.75 \times MCR_{ME(i)}$$

$$= 0.75 \times (18,660 + 18,660) = 27,990(kW)$$

### 4) Calculation of $P_{AE}$

$P_{AE}$  is calculated in accordance with paragraph 2.2.5.6.3.1 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

$$P_{AE} = 0.025 \times \sum 0.0_{ME(i)} + 250$$

$$+ CargoTankCapacity_{LNG} \times BOR \times COP_{reliquefy} \times R_{reliquefy}$$

$$= 0.025 \times 37,320 + 250$$

$$+ 211,900 \times 0.15/100 \times 15.142 \times 1$$

$$= 5,996 (kW)$$

### 5) $V_{ref}$ at EEDI condition

$V_{ref}$  is obtained by the speed-power curves as a result of the sea trial in accordance with paragraph 4.3.9 of the "2014 guidelines on survey and certification of the energy efficiency design index (EEDI)" as amended.

Suppose that  $V_{ref}$  of 19.8kn is obtained at 75% of  $MCR_{ME(i)}$ , in this example calculation at sea trial.

### 6) Calculation of the attained EEDI at sea trial

EEDI is calculated in accordance with paragraph 2 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

$$\begin{aligned}
 EEDI &= \frac{P_{MR} \cdot C_{FME} \cdot SFC_{MR} + P_{AE} \cdot C_{FAE} \cdot SFC_{AE}}{Capacity \cdot V_{ref}} \\
 &= \frac{27,990 \times 3.206 \times 165.5 + 5,996 \times 3.206 \times 198.5}{109,255(DWT) \times 19.8(kn)} = 8.629
 \end{aligned}$$

## Appendix 6.4

### Sample calculation for LNG carrier having steam turbine propulsion system

#### 1. Preliminary calculation of attained EEDI at design stage

Attained EEDI for LNG carrier having steam turbine propulsion system at design stage is calculated as follows.

##### 1) Specifications

$MCR_{\text{Steam turbine}}$	25,000 (kW)
$SFC_{\text{Steam turbine}}$	241.0 (g/kWh)
Deadweight	75,000 (ton)

##### 2) Calculation of $P_{ME}$

$P_{ME}$  is calculated in accordance with paragraph 2.2.5.1 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

$$\begin{aligned} P_{ME} &= 0.83 \times MCR_{\text{SteamTurbine}} \\ &= 0.83 \times 25,000 = 20,750(\text{kW}) \end{aligned}$$

##### 3) Calculation of $P_{AE}$

$P_{AE}$  is treated as 0(zero) because electric load ( $P_{\text{generator\_seatrial}}$ ) is supposed to be included in  $SFC_{\text{SteamTurbine}}$ , in accordance with paragraph 2.2.5.6.5 and 2.2.7.2.1 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

$$P_{AE} = 0$$

##### 4) $V_{ref}$ at EEDI condition

$V_{ref}$  is obtained by the preliminary speed-power curves as the model tank test results at EEDI condition at design stage.

Suppose that  $V_{ref}$  of 18.7kn is obtained at 83% of  $MCR_{\text{SteamTurbine}}$ , in this example calculation at design stage.

##### 5) Calculation of the attained EEDI on design stage

EEDI is calculated in accordance with paragraph 2 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

The primary fuel is LNG in this example calculation.

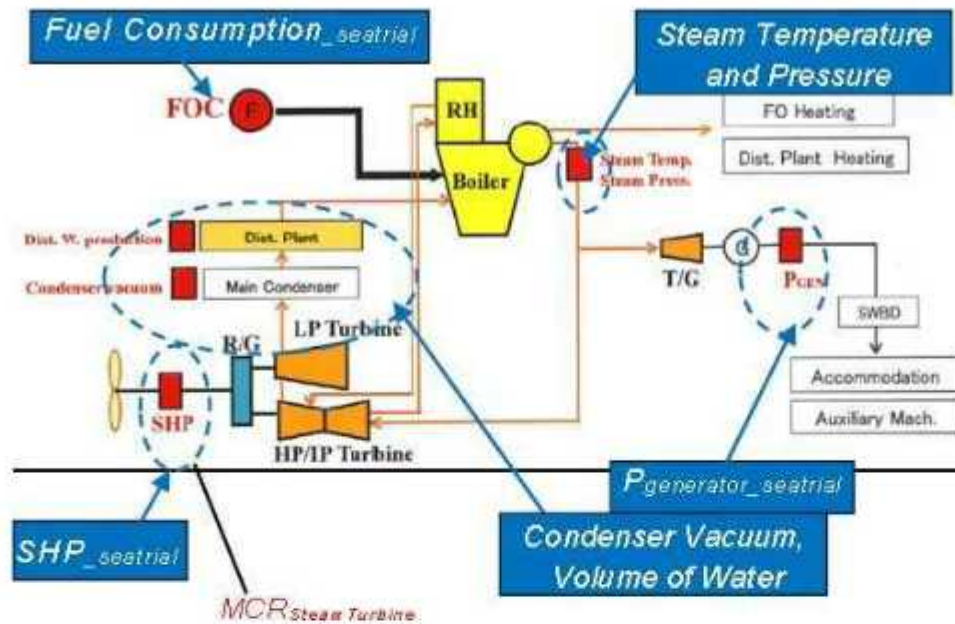
$$\begin{aligned} EEDI &= \frac{P_{ME} \cdot C_{PMF} \cdot SFC_{ME} + P_{AE} \cdot C_{PAE} \cdot SFC_{AE}}{\text{Capacity} \cdot V_{ref}} \\ &= \frac{20,750 \times 2.750 \times 241.0 + 0}{75,000(\text{DWT}) \times 18.7(\text{kn})} = 9.81 \end{aligned}$$

#### 2. Final calculation of attained EEDI at sea trial

Attained EEDI for LNG carrier having steam turbine propulsion system at sea trial is calculated as follows.



### 1) Typical configuration and example of measurement points at sea trial



In addition to the above, in order to correct measured *Fuel Consumption* to the design conditions corresponding to the SNAME condition, inlet air temperature, sea water temperature, steam temperature, steam pressure, etc. are measured, as appropriate.

$P_{AE}$  is treated as 0(zero) because electric load ( $P_{generator\_seatrial}$ ) is supposed to be included in  $SFC_{SteamTurbine}$ , in accordance with paragraph 2.2.5.6.5 and 2.2.7.2.1 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

### 2) Specifications

$MCR_{Steam\ turbine}$	25,000 (kW)
$SFC_{Steam\ turbine}$	241.0 (g/kWh)
<i>Deadweight</i>	75,000 (ton)

### 3) Measured values at sea trial

$P_{generator\_seatrial}$	980 (kW)
$SH_{P\_seatrial}$	21,520 (kW)
$Fuel\ Consumption_{seatrial}$	$5.95 \times 10^6$ (g/hour)

Each  $Fuel\ Consumption_{(j)\_seatrial}$  should be corrected in accordance with paragraph 2.2.7.2 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

Coefficient of flow meter	1.0010
Steam temperature	500 degree Celsius
Steam pressure	5.85 (MPaG)

Condenser vacuum	725 (mmHg)
Dist. water production	28.5 (t/day)
Inlet air temperature of FAN	45 degree Celsius
Lower calorific value of fuel used at sea trial	42,030 (kJ/kg)

#### 4) Calculation of $SFC_{SteamTurbine}$ at sea trial

$SFC_{SteamTurbine}$  is calculated in accordance with paragraph 2.2.7.2 of the "2018\_guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

$$\begin{aligned}
 SFC_{SteamTurbine} &= \frac{FuelConsumption_{SeaTrial}}{SHP_{SeaTrial}} \\
 &= \frac{5.95 \times 10^6}{21,520} \times C_1 \times C_2 \times C_3 \times C_4 \times C_5 \times C_6 \times C_7^{-1} \\
 &= \frac{5.95 \times 10^6}{21,520} \times 0.9871 \times 0.8756 \times 1.0010 \times 1.0001 \times 1.0035 \\
 &\quad \times 0.9999 \times 1.0028 \\
 &= 240.7 \text{ (g/kWh)}
 \end{aligned}$$

Note:

- \*1:  $SFC$  should be corrected to the value corresponding to SNAME and EEDI conditions, in accordance with paragraph 2.2.7.2 .2 and .3 of the "2018\_guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships". Coefficients from C1 to C7 represent as follows.

C1: Coefficient of electric power to the electric load equivalent to

$$P_{AE} = 0.025 \times MCR_{Steam turbine} + 250 = 875 \text{ (kW)}$$

C2: Coefficient of LCV to the standard LCV of 48,000 kJ/kg for LNG fuel

C3: Coefficient of flow meter

C4: Coefficient of steam temperature and steam pressure

C5: Coefficient of condenser vacuum for steam turbine

C6: Coefficient of water feed of condenser

C7: Coefficient of inlet air temperature

$SFC_{SteamTurbine}$  is calculated as the value to include all losses of machinery and, gears necessary for main propulsion system and the specified electric load of  $P_{AE}$ .

Minimum two  $SFC_{SteamTurbine}$  at around the EEDI power are obtained at the sea trial. However in this example calculation, all  $SFC_{SteamTurbine} (i)$  are supposed to the same value of 240.7 g/kWh.

#### 5) Calculation of $P_{ME}$

$P_{ME}$  is calculated in accordance with paragraph 2.2.5.1 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

$$\begin{aligned}
 P_{ME} &= 0.83 \times MCR_{SteamTurbine} \\
 &= 0.83 \times 25,000 = 20,750 \text{ (kW)}
 \end{aligned}$$

### 6) Calculation of $P_{AE}$

$P_{AE}$  is treated as 0(zero) because electric load ( $P_{generator\_seatrial}$ ) is supposed to be included in  $SFC_{SteamTurbine}$ , in accordance with paragraph 2.2.5.6.5 and 2.2.7.2.1 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

$$P_{AE} = 0$$

### 7) $V_{ref}$ at EEDI condition

$V_{ref}$  is obtained by the speed-power curves as a result of the sea trial in accordance with paragraph 4.3.9 of the "2014 guidelines on survey and certification of the energy efficiency design index (EEDI)" as amended.

Suppose that  $V_{ref}$  of 18.8kn is obtained at 83% of  $MCR_{SteamTurbine}$ , in this example calculation at sea trial.

### 8) Calculation of the attained EEDI at sea trial

EEDI is calculated in accordance with paragraph 2 of the "2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships".

The primary fuel is LNG in this example calculation.

$$\begin{aligned} EEDI &= \frac{P_{ME} \cdot C_{FME} \cdot SFC_{ME} + P_{AE} \cdot C_{FAE} \cdot SFC_{AE}}{Capacity \cdot V_{ref}} \\ &= \frac{20,750 \times 2.750 \times 240.7 + 0}{75,000(DWT) \times 18.8(kn)} = 9.74 \end{aligned}$$

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# BCS-PR 40 Procedural Requirements for MLC, 2006 Certification

## INTRODUCTION

The "Procedural Requirements for MLC, 2006 Certification" reflect the Maritime Labour Convention, 2006 "Guidelines for Flag State Inspections".

This document and its Annexes provide the Classification Societies with procedures and criteria for the conduct of inspections to verify compliance with the requirements of the Maritime Labour Convention, 2006 ("Convention" or "MLC, 2006") and for the issuance of the corresponding Maritime Labour Certificate (MLC) and Declaration of Maritime Labour Compliance (DMLC), including interim MLCs and MLCs of shortened validity. Also provided are procedures governing the actions to be taken by Classification Societies when deficiencies associated with the MLC, 2006, are identified by Port State Control Officers (PSCOs). In this document, the terms Flag State, Flag and Administration are regarded as interchangeable.

Any certificates issued must comply with the format required by the Administration.

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Note:

1. This Procedural Requirement applies from 1 May 2019.

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## **1. GENERAL**

### **1.1 Definitions**

1.1.1 "Inspection" means a process of systematic and independent verification, through the collection of objective evidence, to determine whether the conditions, procedures and processes on board comply with the flag State requirements for the implementation of the MLC, 2006, (DMLC Part I) and whether the processes are effective in achieving the objectives of the MLC, 2006, through measures as defined in DMLC Part II.

1.1.2 "Inspector" means a person who is qualified and authorized to carry out MLC inspections in accordance with the requirements of BCS Procedural Requirement 10B (BCS-PR 10B).

1.1.3 "DMLC" means Declaration of Maritime Labour Compliance referred to in Regulation 5.1.3 of MLC, 2006. The DMLC consists of two parts:

- (i) Part I: Drawn up by the Competent Authority referencing national requirements subject to inspection and certification;
- (ii) Part II: Drawn up by the Shipowner describing the measures for initial and on-going compliance to meet the requirements of the DMLC Part I and for continuous improvement.

1.1.4 "Deficiency" means a breach of the requirements of the Convention as implemented through the national laws and regulations of the Administration.

1.1.5 "Serious deficiency" means deficiency that constitute a serious or repeated breach of the requirements of the Convention (including seafarer's rights) or that represent a significant danger to seafarer's health, safety or security.

1.1.6 "Observation" means a statement of fact made during an inspection and substantiated by objective evidence. It may also be a statement made by the inspector referring to a weakness in MLC procedures that if not addressed may lead to a deficiency in the future.

1.1.7 "Shipowner" means Shipowner as defined in Article II of the MLC, 2006.

1.1.8 "Cold lay-up" means that a ship is taken out of service, moored in a secure location and all systems are shut down with minimum ongoing maintenance to prevent deterioration of the hull structure and machinery. Watch men or a specialist lay-up crew may be employed to ensure the safety and security of the ship.

### **1.2 Scope and application**

1.2.1 This document establishes basic procedures for:

- (i) the review and certification of DMLC Part II;
- (ii) the conduct of interim, initial, intermediate, renewal and additional shipboard inspections against the MLC, 2006, as implemented in national legislation referenced in the DMLC Part I
- (iii) the issuance of MLC to ships and their subsequent endorsement.

1.2.2 This document is intended for use by Classification Societies when they are acting as Recognised Organisations on behalf of Administrations under the provision of MLC, 2006, Reg. 5.1.2 and when conducting inspections for voluntary certification of vessels.

1.2.3 This document also establishes basic procedures for Classification Societies to follow when potential failures of the MLC system are identified by Port State Control Officers.

## **2 VERIFYING COMPLIANCE WITH MLC, 2006**

### **2.1 Responsibilities of the Classification Society**

2.1.1 During verification of compliance with the requirements of the MLC, 2006, provisions of the "Guidelines for Flag State Inspections" shall be taken into consideration.

2.1.2 A Classification Society performing verification of compliance with MLC, 2006, shall have, within its organisation, competencies in relation to:

- (i) MLC, 2006, applicable rules, regulations and relevant international instruments;
- (ii) plan approval, inspection and certification relevant to MLC, 2006;
- (iii) knowledge of ship operations;
- (iv) understanding of the constitution of ILO.

2.1.3 MLC, 2006, certification services shall be provided by qualified inspectors.

2.1.4 A Classification Society performing MLC, 2006, certification shall have implemented a documented system for the qualification and continuous updating of the competence of personnel who perform verification of compliance with the MLC, 2006.

This system shall provide for:

- (i) theoretical training covering competence requirements as specified in BCS-PR 10 B;
- (ii) supervised practical training as specified in BCS-PR 10B;
- (iii) maintenance of records of the theoretical and practical training undertaken by each trainee.

### **2.2 Responsibilities of the inspector(s)**

2.2.1 The inspector is responsible for:

- (i) planning for an efficient inspection;
- (ii) ensuring a DMLC review has been conducted;
- (iii) complying with applicable requirements;
- (iv) clearly communicating deficiencies and observations;
- (v) reporting inspection results;



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- (vi) reviewing rectification plans and verifying effectiveness of corrective actions taken by the Master or Shipowner.

### **3 THE CERTIFICATION PROCESS**

#### **3.1 Plan Approval/Examination for newbuildings and substantial alterations to accommodation**

3.1.1 Requirements related to accommodation and recreational facilities, as stipulated in MLC, 2006, Regulation 3.1, must be verified during the plan approval/examination and survey process by the Classification Society responsible for the newbuilding or substantial alterations project. Following the ship construction, the Classification Society shall issue a Statement or other documentary evidence confirming that the ship was built or substantial alterations were made to the accommodation of an existing ship in accordance with the requirements of the MLC, 2006, Regulation 3.1 and the relevant flag State requirements.

3.1.2 Exemptions are only to be considered where Regulation 3.1 clearly specifies that the Competent Authority (after consultation with the shipowners' and seafarers' organisations) may grant exemptions. When in doubt regarding requirements from Regulation 3.1 a Classification Society should seek clarification from the Administration as appropriate.

#### **3.2 Certification activities**

3.2.1 A Maritime Labour Certificate (MLC) shall be issued to a ship following an initial or renewal inspection.

3.2.2 The issuance of a MLC is conditional upon:

- (i) a DMLC review and approval have been completed by the Classification Society that inspects the ship for MLC, 2006, unless already approved by the Administration;
- (ii) deficiencies have been rectified or a plan for rectification has been accepted.

3.2.3 On completion of the initial or renewal inspection, a Maritime Labour Certificate not exceeding five (5) years may be issued. A certificate of shorter validity may be issued in accordance with Classification Society procedures and flag State requirements.

3.2.4 When the renewal inspection has been completed within three (3) months before the expiry of the existing MLC, the new MLC shall be valid from the date of completion of the renewal inspection for a period not exceeding five (5) years from the date of expiry of the existing certificate.

3.2.5 When the renewal inspection is completed more than three (3) months before the expiry date of the existing MLC, the new MLC shall be valid for a period not exceeding five (5) years from the date of completion of the renewal inspection.

3.2.6 Where, after a renewal inspection is completed prior to the expiry of a MLC, the ship is found to continue to meet national laws and regulations or other measures implementing the requirements of the Convention, but a new certificate cannot immediately be issued at the renewal inspection and made available on board that ship, the Classification Society duly authorized for this purpose, may extend the validity of the MLC for a further period not exceeding five (5) months from the expiry date of the existing MLC, and endorse the MLC accordingly. The new MLC shall be valid for a period not exceeding five (5) years starting from the relevant dates provided for in para 3.2.4 and 3.2.5.

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3.2.7 When the renewal inspection has been completed after the expiry of the existing MLC, the new MLC shall be valid from the date of completion of the renewal inspection for a period not exceeding five (5) years from the date of expiry of the existing certificate.

### **3.3 Interim inspection**

3.3.1 Interim MLC may be issued under the following conditions:

- (i) to a new ship on delivery;
- (ii) when a ship changes flag;
- (iii) when a Shipowner assumes the responsibility for the operation of a ship which is new to that Shipowner.

3.3.2 In these circumstances, it may not be possible to verify full and effective implementation of procedures, but in order to issue an interim MLC the following must be confirmed during the inspection:

- (i) the ship has been inspected, as far as reasonable and practicable, for the matters listed in Appendix A5-I of MLC, 2006, taking into account verification of items stated below;
- (ii) the Shipowner has demonstrated to the competent authority or Classification Society that the ship has adequate procedures to comply with this Convention;
- (iii) the master is familiar with the requirements of the Convention and the responsibilities for implementation; and
- (iv) relevant information has been submitted to the competent authority to produce a DMLC.

3.3.3 An interim MLC may be issued for a maximum period of six (6) months. No subsequent interim MLC may be issued, nor may the existing interim MLC be extended.

### **3.4 DMLC Part II review process**

3.4.1 Before a ship is initially inspected for compliance with MLC, 2006, a DMLC Part II review shall be completed by the Classification Society that will inspect the ship unless carried out by the Administration. The scope of the review is to verify that the DMLC Part II, provided by the Shipowner, addresses the requirements in the DMLC Part I, issued by the Administration, including measures for initial and ongoing compliance.

3.4.2 The Shipowner's date of issue of the DMLC Part II shall be on or after the DMLC Part I issue date by the Administration. This does not apply to cases where the Administration re-issues DMLC Part I, which does not require any amendments to the existing DMLC Part II.

3.4.3 The Classification Society shall issue documentary evidence to reflect that a DMLC Part II review has been completed.



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### **3.5 Initial inspection**

3.5.1 An initial inspection may be carried out provided there is sufficient evidence that the Shipowner's measures specified in the DMLC Part II have been implemented for at least one (1) month.

### **3.6 Intermediate inspection**

3.6.1 The purpose is to verify:

- (i) ongoing compliance with MLC, 2006, as implemented through national laws and regulations;
- (ii) amendments to the DMLC Part I and Part II (if any) have been effectively implemented;
- (iii) that rectification to previous deficiencies have been completed.

3.6.2 The scope shall be the same as for initial inspection and shall be carried out between the second and the third anniversary date of the certificate.

### **3.7 Renewal inspection**

3.7.1 The scope shall be the same as for initial inspection.

### **3.8 Preparation for the inspection**

3.8.1 The inspector shall prepare an inspection plan taking into account hours of work/rest schedule for the seafarers. When the activities are planned to be carried out during hours of darkness the inspector's ability to gather information is not to be impaired (e.g. adequate and safe lighting to be provided as necessary).

3.8.2 The inspection plan shall be designed to be flexible in order to permit changes based on information gathered during the inspection and to permit the effective use of resources. The plan shall be agreed with the vessel's master and communicated to all those involved in the inspection.

3.8.3 Initial, intermediate and renewal inspections shall be performed only under normal operating conditions, e.g. when the ship is not in dry dock or in cold lay-up.

3.8.4 Interim inspections may be conducted in circumstances other than normal operating conditions, provided the ship is fully manned.

### **3.9 Executing the inspection**

3.9.1 MLC, 2006, inspection may be conducted during the same visit as ISM and ISPS audit, by harmonizing the overlapping requirements of these Codes/Convention, provided the ship is available for sufficient time. The scope of the audit(s) and inspection shall be the same as when they are carried out independently.

3.9.2 All scheduled inspections (initial, intermediate and renewal) shall be fully scoped inspections covering all of the aspects of MLC, 2006.

3.9.3 The inspection shall begin with an opening meeting.



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3.9.4 Working documents used to facilitate the inspection and to document results may include:

- (i) checklists;
- (ii) forms for reporting deficiencies and objective evidence.

3.9.5 The verification shall include review of documentation and records, visual observations, general discussion and private interviews with seafarers to confirm that the Shipowner's measures for seafarers working and living conditions as described in the DMLC Part II comply with the national requirements implementing the Convention. An inspection is based upon sampling within all areas and the inspector must use professional judgment to determine the depth of inspection for each requirement.

### **3.10 Inspection report**

3.10.1 The inspection report shall be accurate and complete, reflect the content of the inspection and should include the following:

- (i) ship name and IMO number;
- (ii) date of completion of the inspection;
- (iii) the scope and objectives of the inspection;
- (iv) serious deficiencies, deficiencies and observations issued during the inspection;
- (v) names of inspectors and their roles;
- (vi) MLC Shipowner name.

3.10.2 Any deficiencies identified shall be included in the inspection report, or in a separate deficiency report attached to the inspection report. The report is to be made available to the ship.

### **3.11 Rectification of deficiencies**

3.11.1 The deficiency as described should state clearly the act or situation identified as non-compliant and provide appropriate references to requirements in the DMLC Part I, Part II, flag State requirements, and/or the Convention, as appropriate.

3.11.2 The content of the deficiency shall be complete and concise and written in such a manner as to be easily understood. Clarity should not be sacrificed for the sake of brevity.

3.11.3 Deficiencies should be rectified at the time of inspection, whenever possible.

3.11.4 Before a MLC may be issued, endorsed or renewed the inspector would need to have confirmation either that all deficiencies noted during the inspection have been rectified or that a rectification action plan has been provided by the Shipowner and agreed by the inspector.

3.11.5 When considering which action or actions to take, the inspector should use professional judgement and take into account inter alia the following:

- (i) whether or not the deficiencies can be rapidly remedied in the port of inspection;

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- (ii) whether the deficiencies constitute a significant danger to seafarers' safety, health or security;
  - (iii) the seriousness of the breach of the requirements of the MLC, 2006;
  - (iv) length and nature of the intended voyage or service;
  - (v) prior history of similar deficiencies;
  - (vi) prior history with respect to rectifications.

3.11.6 Where deficiencies cannot be rectified, a rectification action plan shall be agreed at the time of inspection. The proposed plan shall be reviewed by the inspector to ensure the deficiency is properly addressed. The rectification action plan shall be implemented within a period not exceeding three (3) months from the completion of the inspection. The effectiveness of the corrective actions shall be verified not later than the next scheduled inspection (intermediate or renewal) or at any additional inspection that may be required whichever comes earlier.

3.11.7 Failure to implement the agreed corrective actions may be treated as grounds for invalidation of the MLC.

### **3.12 Follow-up of serious deficiencies**

3.12.1 A serious deficiency raised on a ship must be rectified or downgraded before a certificate is issued and the ship can sail. Downgrading can only take place after verifiable action has been taken to remove any significant danger to seafarers' safety, health or security (including seafarers' rights). A plan for implementation of corrective actions and rectification of outstanding deficiencies must be approved by the inspector where rectification is not possible at the time of inspection. The approved plan must be implemented within a time period not exceeding three (3) months from the date of inspection.

3.12.2 When a serious deficiency has been downgraded, at least one additional inspection should be carried out within an agreed time frame, in order to verify implementation of the corrective actions. A short term certificate valid up to three (3) months may be issued to allow for verification of necessary corrective actions during the additional inspection.

3.12.3 All serious deficiencies, including those that are downgraded during the inspection, shall be reported to the Administration.

### **3.13 Withdrawal of Certification**

3.13.1 A MLC may be withdrawn if:

- (i) rectification of deficiencies is not completed within the agreed time period, or
- (ii) where a periodical inspection has not been requested within the time window, or
- (iii) when the Shipowner does not make a request for inspection when substantial changes have been made to the structure (covered by Title 3 of MLC, 2006) of the ship, or
- (iv) a serious deficiency cannot be rectified or downgraded or an acceptable rectification plan cannot be provided for deficiencies raised.

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## **Annex 1**

### **SHIP TYPES ON MLC**

- 1 The ship type stated on the MLC shall be consistent with the ship type stated in the Safety Management Certificate (SMC).
- 2 The ship type stated shall be one of the following:
  - Passenger ship;
  - Passenger high-speed craft;
  - Cargo high-speed craft;
  - Bulk carrier;
  - Oil tanker;
  - Chemical tanker;
  - Gas carrier;
  - Mobile offshore drilling unit;
  - Other cargo ship.



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## **Annex 2**

### **PORT STATE CONTROL**

- 1 When attending a ship as a result of a Port State Control action, the Classification Society that issued the MLC shall consider the objective evidence presented by the PSCO.
- 2 Where the inspector considers that the evidence indicates the presence of a serious deficiency, the serious deficiency shall be documented and the Shipowner shall be notified immediately. The inspector shall proceed as indicated in "Follow-up of serious deficiencies".
- 3 In the absence of any specific instructions to the contrary, the scope of any additional inspection carried out following the detention of a ship that holds an interim MLC certificate shall include, as a minimum, the deficiencies identified by PSCO. Implementation will be verified to the extent that the available evidence permits.
- 4 In cases where the PSCO alleges that there is evidence of a serious deficiency, and the inspector of the MLC-issuing Classification Society considers that there is not, the PSCO, under the authority vested in the officer by the authorities of the port, will decide what further action is to be taken.
- 5 If the inspector of the MLC-issuing Classification Society disagrees with the actions taken by the PSCO, the inspector is to provide the PSCO with a written explanation of the disagreement and inform the flag State.

### Annex 3

#### CERTIFICATION SCENARIOS

	Scenario	Condition	Action required	DMLC Part II	Scope of Inspection and Certification
1	Change of ship's name	Conducted by a surveyor, an auditor or an inspector	Verification on board <sup>1</sup>	Amend DMLC Part II with the ship's new name, if applicable.	<ol style="list-style-type: none"> <li>1. Verify correct ship's name on all Certificates and Documents.</li> <li>2. Amend/reissue Maritime Labour Certificate (MLC) with the ship's new name, if applicable.</li> </ol> <p><i>Note:</i> MLC must be amended by issuing Classification Society or by special arrangement. Replacement MLC shall have the same expiry date as the current MLC.</p>
2	Change of flag	Conducted by an inspector	Interim inspection on board	---	<ol style="list-style-type: none"> <li>1. Check that the DMLC Part I or evidence for application to issue DMLC Part I to the Administration is on board.</li> <li>2. Interim inspection as required by MLC, 2006, A5.1.3.7.</li> <li>3. Issue Interim MLC.</li> </ol>
		<ol style="list-style-type: none"> <li>1. DMLC Part II has already been reviewed for the new flag.</li> <li>2. Conducted by an inspector.</li> </ol>	Additional inspection on board	---	<ol style="list-style-type: none"> <li>1. Verify compliance with the requirements of the DMLC Part II and MLC, 2006.</li> <li>2. Re-approve new DMLC Part II and issue a replacement MLC with same expiry date as the current MLC.</li> </ol>
3	Change in IMO ship type	<ol style="list-style-type: none"> <li>1. Conducted by an inspector.</li> <li>2. Substantial changes have been made to accommodation or DMLC Part II.</li> </ol>	Interim inspection on board	Verify amendments to DMLC Part II, if any, have been submitted for approval	<ol style="list-style-type: none"> <li>1. Interim verification as required by MLC, 2006, A5.1.3.7.</li> <li>2. Issue interim MLC with new ship type.</li> </ol>
4	Takeover from an organization not holding a QSCS certificate	Conducted by an inspector	Initial inspection on board	Review and approve DMLC Part II	<ol style="list-style-type: none"> <li>1. Inspection to address all elements of MLC, 2006.</li> <li>2. Issue MLC.</li> </ol>
5	Ship out of service between 3 and 6 months <sup>2</sup>	Conducted by an Inspector	Additional inspection if required by the flag State	---	Endorse MLC, as appropriate.
6	Ship more than 6 months out of service <sup>2</sup>	Conducted by an inspector	Additional, inspection on board	---	<ol style="list-style-type: none"> <li>1. Confirm continued compliance with the DMLC Part I and Part II.</li> <li>2. Endorse/re-issue MLC, as appropriate.</li> </ol>
7	Intermediate inspections requested after the end of the inspection time window	Conducted by an inspector	Intermediate inspection on board	---	<ol style="list-style-type: none"> <li>1. If reinstated, MLC to be endorsed with a statement (e.g. Validity reinstated with scope as initial). If re-issued, MLC to have same expiry date as previous certificate.</li> <li>2. Issue MLC deficiency if ISM audit is not held at the same time.</li> <li>3. Issue BCS-PR 17 report if ISM audit is not held at the same time.</li> </ol>

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	Scenario	Condition	Action required	DMLC Part II	Scope of Inspection and Certification
8	Change of shipowner's name, address or other changes not requiring attendance	---	Attendance on board not required	1. Company to submit the amended DMLC Part II. 2. Verify changes in amended DMLC Part II.	Issue replacement MLC with same expiry date as the original MLC.

Note: Above scenarios may be subject to flag State requirements and should only be applied in the absence of any instructions from the Administration.

<sup>1</sup> The verification on board may be carried out by a surveyor and the certificate reissued based on documentary evidence.

<sup>2</sup> These instructions do not apply to ships for which seasonal lay-ups are a normal part of their operational routine.