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COATING PERFORMANCE STANDARD

NR530 – JANUARY 2025

RULE NOTE

BUREAU VERITAS

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RULES, RULE NOTES AND GUIDANCE NOTES

NR530 DT R06 January 2025 takes precedence over previous revision.

The PDF electronic version of this document available on the Bureau Veritas Marine & Offshore website https://marine-offshore.bureauveritas.com/ is the official version and shall prevail if there are any inconsistencies between the PDF version and any other available version.

These rules are provided within the scope of the Bureau Veritas Marine & Offshore General Conditions, enclosed at the end of Part A of NR467, Rules for the Classification of Steel Ships. The latest version of these General Conditions is available on the Bureau Veritas Marine & Offshore website.

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NR530

COATING PERFORMANCE STANDARD

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Section 1 General

1 Application

1.1 General

1.1.1 This Rule Note applies to protective coatings used for:

- dedicated seawater ballast tanks of ships of not less than 500 gross tonnage and double-side skin spaces arranged in bulk carriers of length greater than or equal to 150 m
- void spaces in bulk carriers and oil tankers
- cargo oil tanks of crude oil tankers of 5,000 tonnes deadweight and above
- methanol fuel tanks.

1.1.2 It applies to ships complying with the requirements of the IMO Performance Standard for Protective Coating for dedicated seawater ballast tanks (IMO PSPC WBT), according to the procedure described in Sec 2.

1.1.3 It applies to bulk carriers and oil tanker complying with the requirements of the IMO Performance Standard for Protective Coating for void spaces (IMO PSPC VSP), according to the procedure described in Sec 3.

1.1.4 It applies to crude oil tankers complying with the requirements of the IMO Performance Standard for Protective Coating for cargo oil tanks of crude oil tankers (IMO PSPC COT), according to the procedure described in Sec 4.

1.1.5 It applies to ships using or prepared to use methanol as fuel stored in tanks to be protected by a coating system according to the procedure described in Sec 5.

1.2 Additional service feature CPS(WBT)

1.2.1 The additional service feature **CPS(WBT)** is to be assigned to ships complying with the requirements of the Common Structural Rules for Bulk Carriers or the Common Structural Rules for Double Hull Oil Tankers, contracted for construction on or after the 8th December 2006, for which the requirements of this Rule Note are to be applied.

(Refer to NR467 Rules for the Classification of Steel Ships Pt A, Ch 1, Sec 2, [4.16.10]).

1.3 Additional class notation CPS(WBT)

1.3.1 The additional class notation **CPS(WBT)** may be assigned to ships, other than those subject to [1.2] above, complying with the requirements of this Rule Note.

(Refer to NR467 Rules for the Classification of Steel Ships Pt A, Ch 1, Sec 2,[6.24.4]).

1.4 Additional class notation CPS(VSP)

1.4.1 The additional class notation **CPS(VSP)** may be assigned to bulk carriers and oil tankers complying with the requirements of this Rule Note.

(Refer to NR467 Rules for the Classification of Steel Ships Pt A, Ch 1, Sec 2,[6.24.3]).

1.5 Additional class notation CPS(COT)

1.5.1 The additional class notation **CPS(COT)** may be assigned to crude oil tankers complying with the requirements of this Rule Note.

(Refer to NR467 Rules for the Classification of Steel Ships Pt A, Ch 1, Sec 2, [6.24.1]).

1.6 Additional class notation CPS(MFT)

1.6.1 The additional class notation **CPS(MFT)** may be assigned to ships using or prepared to use methanol as fuel stored in tanks to be protected by a coating system complying with the requirements of this Rule Note.

(Refer to NR467 Rules for the Classification of Steel Ships Pt A, Ch 1, Sec 2, [6.24.2]).

2 General

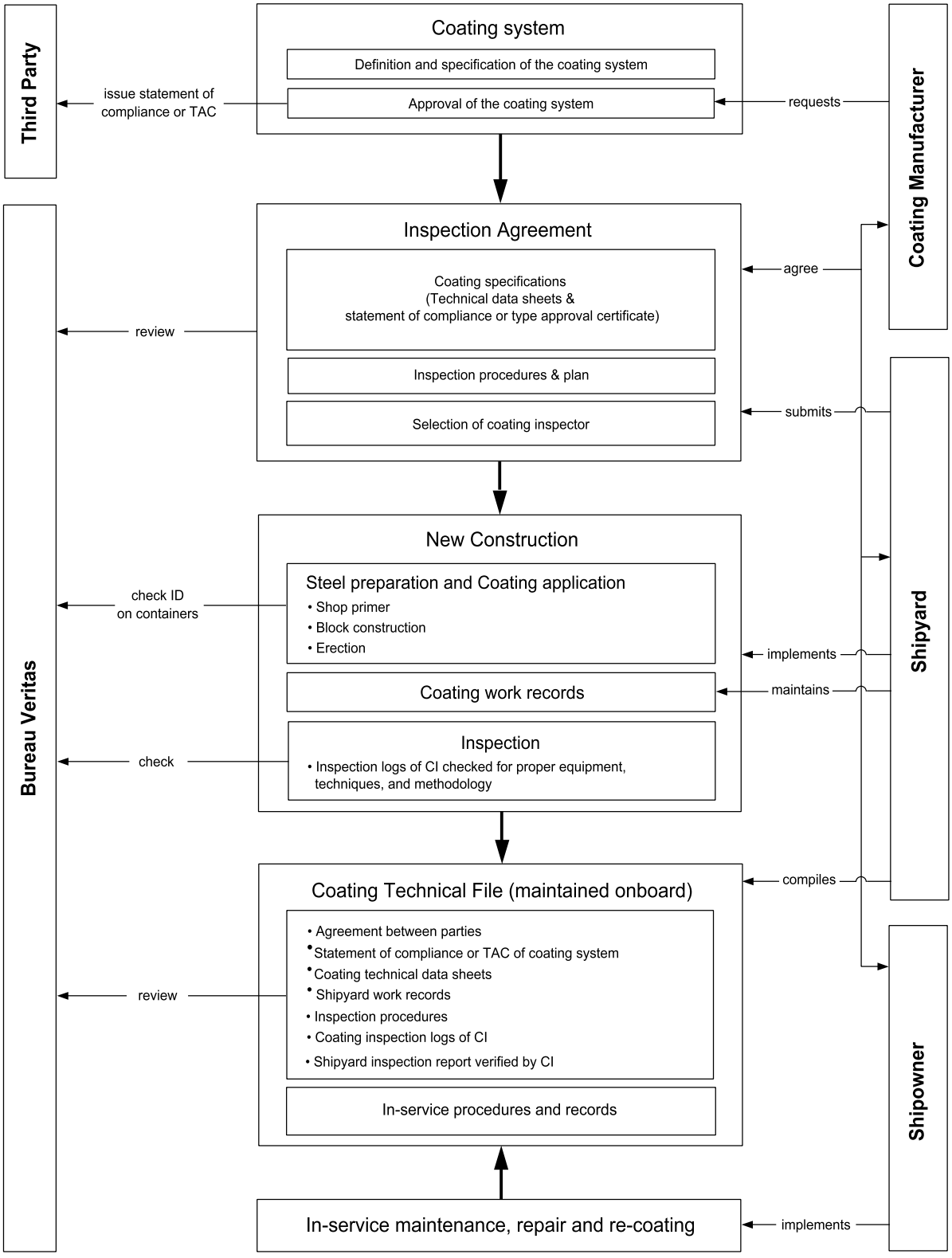
2.1 Reference documents

2.1.1 IMO PSPC WBT

IMO PSPC WBT is the “Performance Standard for Protective Coatings for dedicated seawater ballast tanks”, in all types of ships and double-side skin spaces of bulk carriers, adopted on 8 December 2006 by IMO Maritime Safety Committee under Resolution MSC.215(82).

A general view flow chart, pointing out items and tasks that are included inside of the PSPC WBT, is presented in Fig 1.

Figure 1 : PSPC Flow Chart



2.1.2 IMO PSPC VSP

IMO PSPC VSP is the "Performance Standard for Protective Coatings for void spaces on bulk carriers and oil tankers", adopted on October 2007 by IMO Maritime Safety Committee under Resolution MSC.244(83).

A general view flow chart, pointing out items and tasks that are included inside of the PSPC VSP, is presented in Fig 1.

2.1.3 IMO PSPC COT

IMO PSPC COT is the "Performance Standard for Protective Coatings for cargo oil tanks of crude oil tankers", adopted on 14 May 2010 by IMO Maritime Safety Committee under Resolution MSC.288(87).

A general view flow chart, pointing out items and tasks that are included inside of the PSPC COT, is presented in Fig 1.

2.1.4 IMO MSC.1/Circ.1279

IMO MSC.1/Circ.1279 is the "Guidelines for corrosion protection of permanent means of access arrangements", adopted on 23 May 2008 by IMO Maritime Safety Committee.

2.1.5 IACS UI SC223

IACS UI SC223 is the Unified Interpretation "For application of SOLAS regulation II-1/3-2 Performance Standard for Protective Coatings (PSPC) for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers, adopted by resolution MSC.215(82)".

2.1.6 IACS UI SC227

IACS UI SC227 is the Unified Interpretation for "The dedicated seawater ballast tanks in SOLAS Chapter II-1 (Regulation 3-2)".

2.1.7 IACS UI SC 259

IACS UI SC 259 is the Unified Interpretation for "application of SOLAS Regulation II-1/3-11".

2.1.8 IACS Recommendation 87

IACS Recommendation is the Guidelines for coatings maintenance and repairs.

2.1.9 IACS Recommendation 101

IACS Recommendation 101 is the "IACS Model Report for IMO Resolution MSC.215 (82) Annex 1 Test Procedures for Coating Qualification".

2.1.10 IACS Recommendation 102

IACS Recommendation 102 is the "IACS Model Report for IMO Resolution MSC.215 (82) Annex 1 Test Procedures for Coating Qualification, Section 1.7 - Crossover Test".

2.1.11 IACS Recommendation 116

IACS Recommendation 116 is the "Performance Standard for Protective Coatings for Cargo Oil Tanks of Crude Oil Tankers - 5 years field exposure test in accordance with MSC.288(87)".

2.2 Definitions

2.2.1 Seawater ballast tank

Seawater ballast tank is a tank which is used solely for salt water ballast.

It includes:

- segregated ballast tanks
- side ballast tanks
- ballast double bottom spaces
- topside tanks
- hopper side tanks
- peak tanks.

Holds of bulk carriers used for both cargo and salt water ballast are not considered as seawater ballast tanks in the scope of this Rule Note.

Ballast tanks identified as "Spaces included in Net Tonnage" in the 1969 ITC Certificate are not considered to be dedicated seawater ballast tanks.

Moreover, the following tanks are not considered to be dedicated seawater ballast tanks provided the coatings applied in the tanks as listed below are confirmed by the coating manufacturer to be resistant to the media stored in these tanks and provided such coatings are applied and maintained according to the coating manufacturer's procedures:

- seawater ballast tanks in passenger ships also designated for the carriage of grey water or black water
- seawater ballast tanks in livestock carriers also designated for the carriage of the livestock dung.

2.2.2 Double side skin space

Double side skin space is a space for which boundaries are side and inner side, and, if any, bottom of topside tank and top of hopper side tank.

2.2.3 Totally enclosed space

Totally enclosed space is a space which has no means of access and no ventilation.

2.2.4 Void space

Void space is an enclosed space below the bulkhead deck, within and forward of the cargo area of oil tankers or the cargo length area of bulk carriers, excluding:

- dedicated seawater ballast tank
- space for the carriage of cargo
- space for the storage of any substance (e.g., oil fuel, fresh water, provisions)
- space for the installation of any machinery (e.g., cargo pump, ballast pump, bow thruster)
- any space in normal use by personnel
- double-side skin space of bulk carriers of 150 m in length and upwards complying with the PSPC WBT adopted by resolution MSC.215(82).

At least, the following void spaces are covered by this Rule Note:

a) In bulk carriers:
   - double bottom pipe passages/pipe tunnels
   - small void spaces located behind gusset or shedder plates at the bottom of corrugation bulkheads with the exception of totally enclosed spaces
   - other small voids spaces in cargo spaces, with the exception of totally enclosed spaces
   - lower transverse stool of transverse bulkheads, with the exception of totally enclosed spaces
   - upper transverse stool of transverse bulkheads, with the exception of totally enclosed spaces.

b) In oil tankers:
   - forward cofferdam/cofferdam separating cargo from forepeak
   - cofferdam in cargo area/cofferdam separating incompatible cargoes
   - aft cofferdam
   - duck keel/pipe tunnels
   - lower bulkhead stools
   - upper bulkhead stools.

c) The following void spaces in bulk carriers and oil tankers are not covered by this Rule Note:
   - totally enclosed spaces located behind gusset or shedder plates at the bottom corrugation bulkheads and other small totally enclosed spaces in cargo tanks
   - lower transverse stool of transverse bulkheads that are totally enclosed spaces
   - upper transverse stool of transverse bulkheads that are totally enclosed spaces
   - transducer voids.

2.2.5 Cargo oil tank of crude oil tanker

Crude oil tanker means an oil tanker engaged in the trade of carrying crude oil, according to Annex I of MARPOL 73/78.

2.3 Documents to be submitted to the Society

2.3.1 Inspection agreement

The inspection agreement is the document defining the inspection of surface preparation and coating processes.

The inspection agreement is to be agreed upon between the Shipowner, the Shipyard and the coating manufacturer.

This inspection agreement is making reference to or including:

- the coating specification and/or the technical data sheets
- the certification of the coating system, as applicable
- the assignment and the qualification of the coating inspector
- the assignment and the qualification of the assistant to the coating inspector, if relevant
- inspection procedures and plan.

The inspection agreement may also make reference to templates of inspection documents to be included in the coating technical file (CTF).

2.3.2 Coating specification

Coating specification means the specification of coating systems which includes the type of coating system, steel preparation, surface preparation, surface cleanliness, environmental conditions, application procedure, acceptance criteria and inspection.

2.3.3 Certification of the Coating system

The statement of compliance or the type approval certificate of the relevant coating system(s) is (are) to be made available by the Shipyard, as applicable.

2.3.4 Qualification of coating inspector(s)

The assigned coating inspector is to provide the evidence of his/her qualification level, in accordance with [2.4].

2.3.5 Qualification of assistant inspector(s)

The assistant inspector, if any, is to provide the evidence of his/her qualification level, in accordance with [2.5].

2.3.6 Inspection documents

Inspection documents showing that the inspectors are using the inspection equipment, techniques and reporting methods as described in the inspection agreement are to be submitted on a regular basis during the course of its inspection.

2.3.7 Coating Technical File

The coating technical file (CTF) is to be delivered by the Shipyard to the Society for review.

2.4 Coating inspector qualification

2.4.1 The coating inspector is to be qualified to AMPP Certified Coating Inspector, or FROSIO inspector Level III, or to equivalent qualification as defined below under [2.4.2].

In addition, the coating inspector is to have at least 2-years experience as a coating inspector, to be allowed to write and/or authorise procedures, or to decide upon corrective actions to overcome non-compliances.

2.4.2 Equivalent qualification

Individuals can obtain equivalent qualifications:

- either by passing theoretical and practical examination. This case applies to individuals with a minimum of 5-years practical work experience as a coating inspector of ballast tanks during new construction within the last 10 years
- or by attending a training course and by passing theoretical and practical examinations.

The course tutors are to be qualified with at least 2 years relevant experience and qualified to AMPP Certified Coating Inspector, or FROSIO Inspector Level III, or with an equivalent qualification.

The coating inspector training course is to be reviewed to make sure that it covers IMO PSPC topics. This course is to cover the following items:

- halth environment and safety
- corrosion
- materials and design
- international standards referenced in PSPC
- curing mechanisms
- role of inspector
- test instruments
- inspection Procedures
- coating specification
- application Procedures
- coating Failures
- pre-job conference
- MSDS and product data sheet review
- coating technical file
- surface preparation
- dehumidification
- waterjetting
- coating types and inspection criteria
- specialized Application Equipment
- use of inspection procedures for destructive testing and non destructive testing instruments
- iInspection instruments and test methods
- coating inspection techniques
- cathodic protection
- practical exercises, case studies.

Examples of courses may be internal courses run by the coating manufacturers or Shipyards.

Training course, theoretical and practical examinations are to be approved by the Society.

2.5 Assistant to coating Inspectors

2.5.1 If the coating inspectors require assistance from other persons to do the part of the inspections under the coating inspector's supervision, those persons are to be trained to the coating inspector's satisfaction.

2.5.2 Such training courses are to be recorded and endorsed either by the inspector, the yard's training organisation or inspection equipment manufacturer to confirm competence in using the measuring equipment and confirm knowledge of the measurements required by the PSPC.

Training records are to be available for verification if required.

Section 2 Coating Performance Standard CPS(WBT)

1 Procedure for CPS(WBT)

1.1 General

1.1.1 The additional service feature or additional class notation **CPS(WBT)** is granted after satisfactory assessment of the procedure described in [1.1.2].

1.1.2 The steps of the procedure for **CPS(WBT)** are the following:

- review of the inspection agreement
- verification of the IMO PSPC WBT implementation
- review of the coating technical file (CTF).

1.2 Review of the inspection agreement

1.2.1 The inspection agreement signed by the Shipyard, the Shipowner and the coating manufacturer is to be presented by the Shipyard to the Society to check its compliance with the IMO PSPC WBT, prior to commencement of any coating works, at any stage of a new building.

1.2.2 For the review of this agreement, the following documentation from the CTF, is to be available:

- coating system specification including selection of areas (spaces) to be coated, selection of coating system, surface preparation and coating process
- statement of compliance or type approval certificate of the coating system.

1.2.3 The inspection agreement is to cover:

- the assignment of coating inspector(s), and assistant inspector(s), if any
- areas of responsibilities of coating inspector(s), in case of more than one coating inspector is assigned (for example, multiple construction sites)
- qualification of coating inspector(s), and assistant inspector(s)
- inspection process, including scope of inspection, minimum inspection requirements, inspection methods
- language to be used for documentation.

The inspection agreement is to be included in the coating technical file.

1.2.4 Deviations in the procedure relative to the IMO PSPC WBT noted during this checking are raised with the Shipyard, which is responsible for identifying and implementing the corrective actions.

1.3 Verification of the PSPC WBT implementation

1.3.1 Prior to reviewing the coating technical file and during the performance of coating works, the Society is to carry out the following checking:

a) check that the relevant technical data sheet and statement of compliance or type approval certificate are made available

b) check, on a sampling basis, that the coating identification on representative containers is consistent with the coating identified in the technical data sheet and statement of compliance or type approval certificate

c) check the document which evidences the qualification of the coating inspector(s), who is(are) assigned in the inspection agreement

d) check, on a sampling basis, that the inspector's reports of surface preparation and the coating's application indicate compliance with the technical data sheet and statement of compliance or type approval certificate; and

e) check, on a sampling basis, that the inspectors are using the correct equipment, techniques and reporting methods as described in the inspection agreement.

Deviations found for items d) and e) are raised initially with the coating inspector, who is responsible for identifying and implementing of the corrective actions.

1.3.2 Any other deviations found under [1.3.1] are raised with the Shipyard, who is responsible for the implementation of the corrective actions.

1.4 Review of the Coating Technical File (CTF)

1.4.1 The Shipyard is responsible for compiling the Coating Technical File either in paper or electronic format, or in a combination of the two.

1.4.2 The Coating Technical File is to be reviewed, at random, to ascertain it contains the information required in [1.4.3].

1.4.3 The Coating Technical File is to contain at least the following information:

- Copy of Statement of Compliance or Type Approval Certificate
- Copy of Technical Data Sheet, including:
  - product name and identification mark and/or number
  - materials, components and composition of the coating system, colours
  - minimum and maximum dry film thickness
  - application methods, tools and/or machines
  - condition of surface to be coated (de-rusting grade, cleanliness, profile)
  - environmental limitations (temperature and humidity)
- Shipyard work records of coating application, including:
  - applied actual space and area of each compartment
  - applied coating system
  - time of coating, thickness, number of layers
  - ambient condition during coating
  - method of surface preparation
- Procedures for inspection and repair of coating system during ship construction
- Coating log issued by the coating inspector, stating that the coating was applied in accordance with the specifications to the satisfaction of the coating supplier representative and specifying deviations from the specifications
- Shipyard's verified inspection report, including:
  - completion date of inspection
  - result of inspection
  - remarks
  - coating inspector's signature
- Procedures for in-service maintenance and repair of coating system.

1.4.4 Deviations found under [1.4.3] are raised with the Shipyard, who is responsible for identifying and implementing the corrective actions.

Section 3 Coating Performance Standard CPS(VSP)

1 Procedure for CPS(VSP)

1.1 General

1.1.1 The additional class notation **CPS(VSP)** is granted after satisfactory assessment of the procedure described in [1.1.2].

1.1.2 The steps of the procedure for **CPS(VSP)** are the following:

- review of the inspection agreement
- verification of the IMO PSPC VSP implementation
- review of the coating technical file (CTF).

1.2 Review of the inspection agreement

1.2.1 The inspection agreement signed by the Shipyard, the Shipowner and the coating manufacturer is to be presented by the Shipyard to the Society to check its compliance with the IMO PSPC VSP, prior to commencement of any coating works, at any stage of a new building.

1.2.2 For the review of this agreement, the following documentation from the CTF, is to be available:

- coating system specification including selection of areas (spaces) to be coated, selection of coating system, surface preparation and coating process
- statement of compliance or type approval certificate of the coating system.

1.2.3 The inspection agreement is to cover:

- the assignment of coating inspector(s), and assistant inspector(s), if any.
- areas of responsibilities of coating inspector(s), in case of more than one coating inspector is assigned (for example, multiple construction sites)
- qualification of coating inspector(s), and assistant inspector(s)
- inspection process, including scope of inspection, minimum inspection requirements, inspection methods
- language to be used for documentation.

The inspection agreement is to be included in the coating technical file.

1.2.4 Deviations in the procedure relative to the IMO PSPC VSP noted during this checking are raised with the Shipyard, which is responsible for identifying and implementing the corrective actions.

1.3 Verification of the PSPC VSP implementation

1.3.1 Prior to reviewing the coating technical file and during the performance of coating works, the Society is to carry out the following checking:

a) check that the relevant technical data sheet and statement of compliance or type approval certificate are made available

b) check, on a sampling basis, that the coating identification on representative containers is consistent with the coating identified in the technical data sheet and statement of compliance or type approval certificate

c) check the document which evidences the qualification of the coating inspector(s), who is(are) assigned in the inspection agreement

d) check, on a sampling basis, that the inspector's reports of surface preparation and the coating's application indicate compliance with the technical data sheet and statement of compliance or type approval certificate; and

e) check, on a sampling basis, that the inspectors are using the correct equipment, techniques and reporting methods as described in the inspection agreement.

Deviations found for items d) and e) are raised initially with the coating inspector, who is responsible for identifying and implementing of the corrective actions.

1.3.2 Any other deviations found under [1.3.1] are raised with the Shipyard, who is responsible for the implementation of the corrective actions.

1.4 Review of the Coating Technical File (CTF)

1.4.1 The Shipyard is responsible for compiling the Coating Technical File either in paper or electronic format, or in a combination of the two.

1.4.2 The Coating Technical File is to be reviewed, at random, to ascertain it contains the information required in [1.4.3].

1.4.3 The Coating Technical File is to contain at least the following information:

- Copy of Statement of Compliance or Type Approval Certificate
- Copy of Technical Data Sheet, including:
  - product name and identification mark and/or number
  - materials, components and composition of the coating system, colours
  - minimum and maximum dry film thickness
  - application methods, tools and/or machines
  - condition of surface to be coated (de-rusting grade, cleanliness, profile)
  - environmental limitations (temperature and humidity)
- Shipyard work records of coating application, including:
  - applied actual space and area of each compartment
  - applied coating system
  - time of coating, thickness, number of layers
  - ambient condition during coating
  - method of surface preparation
- Procedures for inspection and repair of coating system during ship construction
- Coating log issued by the coating inspector, stating that the coating was applied in accordance with the specifications to the satisfaction of the coating supplier representative and specifying deviations from the specifications.
- Shipyard's verified inspection report, including:
  - completion date of inspection
  - result of inspection
  - remarks
  - coating inspector's signature
- Procedures for in-service maintenance and repair of coating system.

1.4.4 Deviations found under [1.4.3] are raised with the Shipyard, who is responsible for identifying and implementing the corrective actions.

Section 4 Coating Performance Standard CPS(COT)

1 Procedure for CPS(COT)

1.1 General

1.1.1 The additional class notation **CPS(COT)** is granted after satisfactory assessment of the procedure described in [1.1.2].

1.1.2 The steps of the procedure for **CPS(COT)** are the following:

- review of the inspection agreement
- verification of the IMO PSPC COT implementation
- review of the coating technical file (CTF).

1.2 Areas of application

1.2.1 At least, the following areas shall be protected according to the IMO PSPC COT:

- Deckhead with complete internal structure, including brackets connecting to longitudinal and transverse bulkheads. In tanks with ring frame girder construction the underdeck transverse framing to be coated down to level of the first tripping bracket below the upper faceplate.
- Longitudinal and transverse bulkheads are to be coated to the uppermost means of access level. The uppermost means of access and its supporting brackets to be fully coated.
- On cargo tank bulkhead is without an uppermost means of access the coating to extend to 10% of the tanks height at centreline but need not extend more than 3 m down from the deck.

1.3 Review of the inspection agreement

1.3.1 The inspection agreement signed by the Shipyard, the Shipowner and the coating manufacturer is to be presented by the Shipyard to the Society to check its compliance with the IMO PSPC COT, prior to commencement of any coating works, at any stage of a new building.

1.3.2 For the review of this agreement, the following documentation from the CTF, is to be available:

- coating system specification including selection of areas (spaces) to be coated, selection of coating system, surface preparation and coating process.
- statement of compliance or type approval certificate of the coating system.

1.3.3 The inspection agreement is to cover:

- the assignment of coating inspector(s), and assistant inspector(s), if any
- areas of responsibilities of coating inspector(s), in case of more than one coating inspector is assigned (for example, multiple construction sites)
- qualification of coating inspector(s), and assistant inspector(s)
- inspection process, including scope of inspection, minimum inspection requirements, inspection methods
- language to be used for documentation.

The inspection agreement is to be included in the coating technical file.

1.3.4 Deviations in the procedure relative to the IMO PSPC COT noted during this checking are raised with the Shipyard, which is responsible for identifying and implementing the corrective actions.

1.4 Verification of the PSPC COT implementation

1.4.1 Prior to reviewing the coating technical file and during the performance of coating works, the Society is to carry out the following checking:

a) check that the relevant technical data sheet and statement of compliance or type approval certificate are made available

b) check, on a sampling basis, that the coating identification on representative containers is consistent with the coating identified in the technical data sheet and statement of compliance or type approval certificate

c) check the document which evidences the qualification of the coating inspector(s), who is(are) assigned in the inspection agreement

d) check, on a sampling basis, that the inspector's reports of surface preparation and the coating's application indicate compliance with the technical data sheet and statement of compliance or type approval certificate; and

e) check, on a sampling basis, that the inspectors are using the correct equipment, techniques and reporting methods as described in the inspection agreement.

Deviations found for items d) and e) are raised initially with the coating inspector, who is responsible for identifying and implementing of the corrective actions.

1.4.2 Any other deviations found under [1.4.1] are raised with the Shipyard, who is responsible for the implementation of the corrective actions.

1.5 Review of the Coating Technical File (CTF)

1.5.1 The Shipyard is responsible for compiling the Coating Technical File either in paper or electronic format, or in a combination of the two.

1.5.2 The Coating Technical File is to be reviewed, at random, to ascertain it contains the information required in [1.5.3].

1.5.3 The Coating Technical File is to contain at least the following information:

- Copy of Statement of Compliance or Type Approval Certificate.
- Copy of Technical Data Sheet, including:
  - product name and identification mark and/or number
  - materials, components and composition of the coating system, colours
  - minimum and maximum dry film thickness
  - application methods, tools and/or machines
  - condition of surface to be coated (de-rusting grade, cleanliness, profile)
  - environmental limitations (temperature and humidity).
- Shipyard work records of coating application, including:
  - applied actual space and area of each compartment
  - applied coating system
  - time of coating, thickness, number of layers
  - ambient condition during coating
  - method of surface preparation.
- Procedures for inspection and repair of coating system during ship construction.
- Coating log issued by the coating inspector, stating that the coating was applied in accordance with the specifications to the satisfaction of the coating supplier representative and specifying deviations from the specifications.
- Shipyard's verified inspection report, including:
  - completion date of inspection
  - result of inspection
  - remarks
  - coating inspector's signature.
- Procedures for in-service maintenance and repair of coating system.

1.5.4 Deviations found under [1.5.3] are raised with the Shipyard, who is responsible for identifying and implementing the corrective actions.

Section 5 Coating Performance Standard CPS(MFT)

1 Procedure for CPS(MFT)

1.1 General

1.1.1 The additional class notation **CPS(MFT)** is granted after satisfactory assessment of the procedure described in [1.1.2].

1.1.2 The steps of the procedure for **CPS(MFT)** are the following:

- review of the inspection agreement
- verification of the coating specification implementation
- review of the coating technical file (CTF).

1.1.3 The selection of the coating system is the responsibility of the Shipyard and the Shipowner based on the recommendations of the coating manufacturer.

1.2 Review of the inspection agreement

1.2.1 The inspection agreement signed by the Shipyard, the Shipowner and the coating manufacturer is to be presented by the Shipyard to the Society to check its compliance with the coating specification, prior to commencement of any coating works, at any stage of a new building.

1.2.2 For the review of this agreement, the following documentation from the CTF, is to be available:

- Technical Data Sheet of the selected coating system based on coating manufacturer's recommendation
- coating system specification including selection of areas (spaces) to be coated, surface preparation and coating process.

1.2.3 The inspection agreement is to cover:

- the assignment of coating inspector(s), and assistant inspector(s), if any
- areas of responsibilities of coating inspector(s), in case of more than one coating inspector is assigned (for example, multiple construction sites)
- qualification of coating inspector(s), and assistant inspector(s)
- inspection process, including scope of inspection, minimum inspection requirements, inspection methods
- language to be used for documentation.

The inspection agreement is to be included in the coating technical file.

1.2.4 Deviations in this procedure noted during this checking are raised with the Shipyard, which is responsible for identifying and implementing the corrective actions.

1.3 Verification of the coating system specification implementation

1.3.1 Prior to reviewing the coating technical file and during the performance of coating works, the Society is to carry out the following checking:

a) check that the relevant technical data sheet of selected coating system is made available

b) check, on a sampling basis, that the coating identification on representative containers is consistent with the coating identified in the technical data sheet

c) check the document which evidences the qualification of the coating inspector(s), who is(are) assigned in the inspection agreement

d) check, on a sampling basis, that the inspector's reports of surface preparation and the coating's application indicate compliance with the technical data sheet; and

e) check, on a sampling basis, that the inspectors are using the correct equipment, techniques and reporting methods as described in the inspection agreement.

Deviations found for items d) and e) are raised initially with the coating inspector, who is responsible for identifying and implementing of the corrective actions.

1.3.2 Any other deviations found under [1.3.1] are raised with the Shipyard, who is responsible for the implementation of the corrective actions.

1.4 Review of the Coating Technical File (CTF)

1.4.1 The Shipyard is responsible for compiling the Coating Technical File either in paper or electronic format, or in a combination of the two.

1.4.2 The Coating Technical File is to be reviewed, at random, to ascertain it contains the information required in [1.4.3].

1.4.3 The Coating Technical File is to contain at least the following information:

- Copy of Technical Data Sheet, including:
  - product name and identification mark and/or number
  - materials, components and composition of the coating system, colours
  - minimum and maximum dry film thickness
  - application methods, tools and/or machines
  - condition of surface to be coated (de-rusting grade, cleanliness, profile)
  - environmental limitations (temperature and humidity)
- Coating specification.
- Shipyard work records of coating application, including:
  - applied actual space and area of each compartment
  - applied coating system
  - time of coating, thickness, number of layers
  - ambient condition during coating
  - method of surface preparation
- Procedures for inspection and repair of coating system during ship construction
- Coating log issued by the coating inspector, stating that the coating was applied in accordance with the specifications to the satisfaction of the coating supplier representative and specifying deviations from the specifications
- Shipyard's verified inspection report, including:
  - completion date of inspection
  - result of inspection
  - remarks
  - coating inspector's signature
- Procedures for in-service maintenance and repair of coating system.

1.4.4 Deviations found under [1.4.3] are raised with the Shipyard, who is responsible for identifying and implementing the corrective actions.

Section 6 Coating System Approval

1 General

1.1 Scope

1.1.1 This Section provides requirements for coating system type approval by the Society in compliance with IMO PSPC WBT, IMO PSPC VSP and IMO PSPC COT. When several performance standards are considered, reference is made to IMO PSPC.

1.1.2 The type approval of the coating system used for methanol fuel tanks is not required.

1.2 Definitions

1.2.1 Coating system

Coating system means the coating product (CP1), which could be an epoxy-based system or an alternative system, and/or the associated shop primer(s) (SP1).

1.2.2 Alternative system

Alternative system can be coating systems which are:

- Epoxy-based systems, but not applied according to table 1 of IMO PSPC
- Non epoxy-based systems applied according to table 1 of IMO PSPC, or
- Non epoxy-based systems, but not applied according to table 1 of IMO PSPC.

1.2.3 Shop primer

Shop primer is the prefabrication primer coating applied to steel plates, often in automatic plants.

Shop primer is intended to provide a temporary corrosion protection. It is in general to be associated to a coating product.

1.2.4 Alternative shop primer

Shop primers not containing zinc or not silicate based are considered to be “alternative systems” and therefore equivalency is to be established in accordance with Section 8 of the IMO PSPC WBT with test acceptance criteria for “alternative systems” given in section 3.1 (right columns) of Appendixes 1 and 2 to ANNEX 1 of MSC.215(82).

1.2.5 DFT and NDFT

DFT is the dry film thickness.

NDFT is the nominal dry film thickness.

1.2.6 TDS

TDS is the technical data sheet provided by the coating manufacturer, which contains detailed technical instructions and information relevant to the coating and its application.

1.2.7 MSDS

MSDS is the material safety data sheet provided by the Coating Manufacturer, which contains chemical information and safety instructions relevant to the coating.

2 Recognition of testing laboratory

2.1 General

2.1.1 This section gives the procedure for recognition by the Society of laboratory engaged in testing coating system according to IMO PSPC.

2.1.2 First-time application for recognition of testing laboratory is to be made using the appropriate form made available by the Society.

The application for recognition of testing laboratory is to be made by the laboratory to the Bureau Veritas Local Office.

2.2 Documentation

2.2.1 The following documents are to be submitted by the laboratory to the Society:

- outline of laboratory, e.g. organisation and management structure
- experience of the laboratory in the specific testing activities
- list of operators, technicians, inspectors documenting training and experience within the relevant testing activities, and qualifications according to recognised national, international or industry standards, as relevant
- a detailed list of the laboratory test equipment for the IMO PSPC coating approval
- a guide for operators of such equipment
- check list and format of testing records
- quality manual and/or documented testing procedures covering the requirements in [2.3.4]
- accreditation certificate by national accreditation body, when available
- evidence of approval/acceptance by other bodies, if any
- information on the other activities which may present a conflict of interest
- record of customer claims and of corrective actions requested by certification bodies
- a detailed list of reference documents comprising as minimum those referred to IMO PSPC.

The Society may request additional documentation while the recognition process is under progress.

2.3 Audit general requirements

2.3.1 The laboratory shall demonstrate, as required by items a) - h), that it has the competence and control needed to perform the testing activities for which the certification is sought:

a) Training of personnel - The laboratory is responsible for the qualification and training of its personnel to a recognised national, international or industry standard as applicable. Where such standards do not exist, the laboratory is to define standards for the training and qualification of its personnel relevant to the functions each is authorised to perform. The personnel shall also have an adequate experience and be familiar with the operation of any necessary equipment. Operators/technicians/inspectors shall have had a minimum of one (1) year tutored on the job training. Where it is not possible to perform internal training, a program of external training may be considered as acceptable.

b) Supervision - The laboratory shall provide supervision for all testing activities provided. The responsible supervisor shall have had minimum two (2) years experience as an operator/technician/inspector within the testing activities for which the laboratory is certified.

c) Personnel records - The laboratory shall keep records of the approved operators/technicians/inspectors. The record shall contain information on age, formal education, training and experience for the testing activities for which they are certified.

d) Equipment and facilities - The laboratory shall have the necessary equipment and facilities for the testing activities to be supplied. A record of the equipment used shall be kept. The record shall contain information on maintenance and calibration.

e) Procedures - The laboratory shall have documented work procedures covering all testing activities supplied.

f) Subcontractors - The laboratory shall give information of agreements and arrangements if any parts of the testing activities provided are subcontracted. Particular emphasis shall be given to quality management by the laboratory in following-up of such subcontracts. Subcontractors providing anything other than subcontacted personnel or equipment shall also meet the requirements of sections [2.3.1] and [2.3.4].

g) Verification - The laboratory shall verify that the testing activities provided are carried out in accordance with approved procedures.

h) Reporting - The report shall be prepared in a form acceptable to the Society. The report shall include a copy of the Certificate of Approval.

The Society's requirements for attendance of the Surveyor to the tests and examinations for coating systems to be certified by the Society are given in the recognition certificate.

2.3.2 Auditing of the laboratory

Upon reviewing the submitted documents with satisfactory result, the laboratory's arrangements are audited in order to ascertain that the laboratory is dully organised and managed in accordance with the submitted documents, and that it is considered capable of conducting the testing activities for which certification is sought.

2.3.3 Certification is conditional on a partical demonstration of the specific testing activities performance as well as satisfactory reporting being carried out.

2.3.4 Quality system

The laboratory shall have a documented system covering at least the following:

- code of conduct for the relevant activity
- maintenance and calibration of equipment
- training programmes for operators/technicians/inspectors
- supervision and verification to ensure compliance with operational procedures
- recording and reporting of information
- quality management of subsidiaries and agents
- job preparation
- periodic review of work process procedures, complaints, corrective actions, and issuance, maintenance and control documents.

A documented Quality system complying with the most current version of ISO 9000 series and including the above items, would be considered acceptable.

2.4 Recognition certificate

2.4.1 Initial certification

Upon satisfactory completion of the recognition process, a recognition certificate is issued by the Society to the laboratory.

The recognition certificate contains the scope of testing activities considered for the recognition process and the requirements for the attendance by a Surveyor.

Normally the recognition certificate will be given a time validity of 4 years.

The laboratory is to apply for periodical assessment during the validity of the recognition certificate, as agreed with the Society.

2.4.2 Application for modification of the recognition certificate

When necessary, the laboratory may apply for a modification of an existing recognition certificate, using the appropriate form made available by the Society.

Details of the requested modification are to be submitted to the Society. Upon satisfactory completion of the recognition process, the modified certificate is issued by the Society to the laboratory.

Normally the term of validity is not changed.

2.4.3 Application for renewal of the recognition certificate

As necessary, the laboratory is to apply for renewal of an existing recognition certificate, using the appropriate form made available by the Society.

In case of modification, details of the requested modification are to be submitted to the Society.

Upon satisfactory completion of the recognition process, the renewed recognition certificate is issued by the Society to the laboratory.

Normally the renewed recognition certificate will be given a time validity of 4 years.

2.4.4 Reconsideration and cancellation of the recognition certificate

During the period of validity, the recognition certificate may be cancelled by the Society when an irregular situation brought to the knowledge of the Society has not been corrected by the laboratory to the satisfaction of the Society, and, in the particular following cases:

- where the service was improperly carried out or the results were improperly reported
- where a Surveyor finds deficiencies in the approved service operating system of the laboratory and appropriate corrective action is not taken
- where the testing laboratory fails to inform of any alteration to its certified service operating system to the Society
- where intermediate audit, if prescribed, has not been carried out
- where wilful acts or omissions or grossly negligent act or omission are ascertained.

The Society reserves the right to cancel the recognition certificate and to inform the International Association of Classification Societies (IACS) Members accordingly.

A laboratory whose recognition has been cancelled may apply for re-approval after a period of 6 months provided he has corrected the non-conformities which resulted in cancellation, and the Society is able to confirm he has effectively implemented the corrective action. This possibility is not open if the cancellation is based on a grave fault such as violation of ethics.

3 Type approval coating system procedure

3.1 General

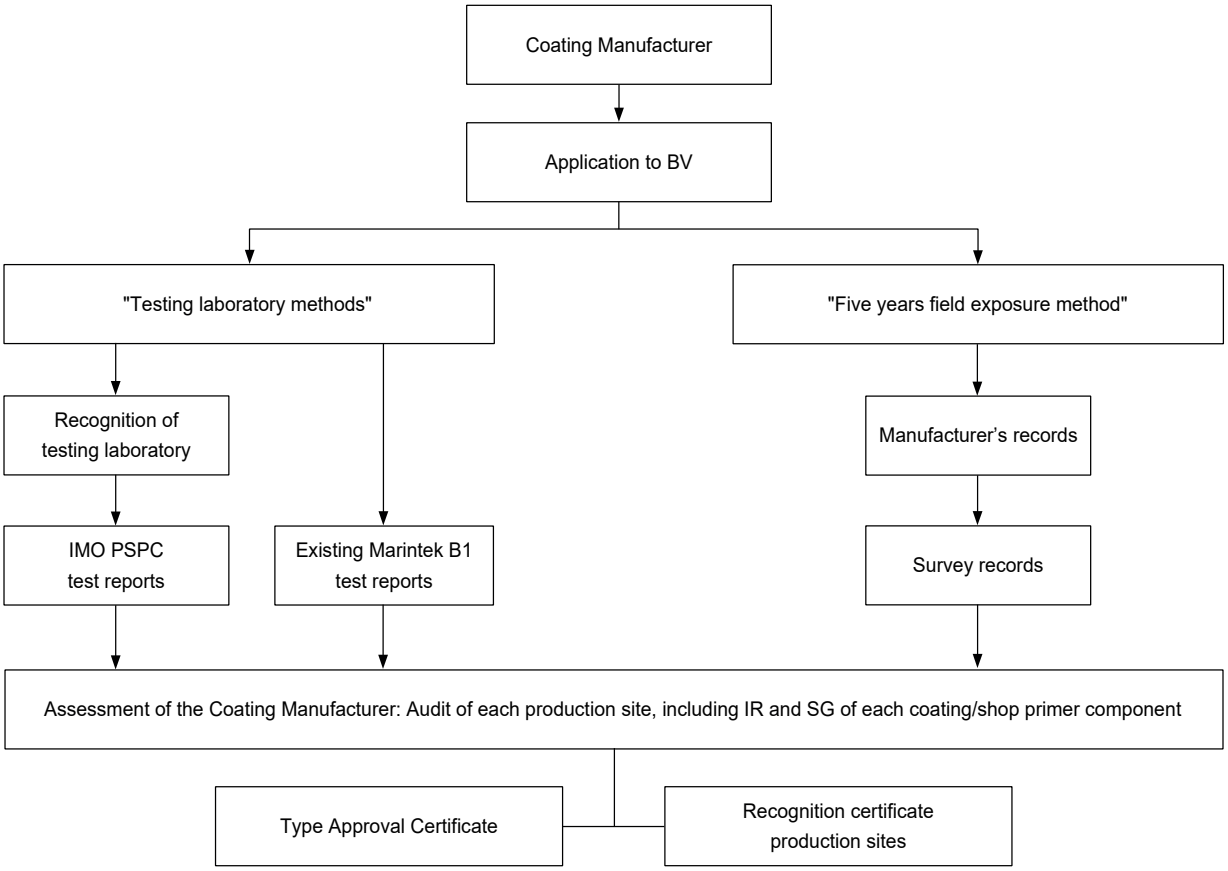
3.1.1 Application for type approval of coating system and/or shop primer is to be made using the appropriate form made available by the Society.

The application for type approval of coating system and/or shop primer is to be made by the coating manufacturer to the Bureau Veritas Local Office.

The type approval coating system procedure consists of the verification of type approval documentation listed in [3.2], and, the assessment of coating manufacturers and their individual works described in [3.5].

The schematic description of the type approval procedure is presented in Fig 1.

Figure 1 : Type approval procedure



3.2 Type approval documentation

3.2.1 The type approval documentation to be submitted consists in:

- Technical Data Sheet (TDS) for each coating product and each shop primer showing all the information required by IMO PSPC § 3.4.2.2.
- Material Safety Data Sheet (MSDS) for each coating product and each shop primer.
- Infrared (IR) and specific gravity (SG) identification of winter and summer type coating, to demonstrate they are the same.
- Infrared (IR) and specific gravity (SG) identification of the coating product for each manufacturing site.
- Type testing documentation listed in [3.3].

3.3 Coating system type testing methods

3.3.1 Type testing of coating system consist of one following methods:

- Testing laboratory carried out either within IMO PSPC tests procedures as per [3.3.2], or, "Marintek B1" laboratory test as per [3.3.3], or
- Five years field exposure as per [3.3.4].

3.3.2 IMO PSPC laboratory tests

The testing laboratory is to be recognised as per procedure described in Article [2].

For each coating system (coating product (CP1) plus its associated shop primer (SP1), if any):

- Seawater ballast tanks: tests reports edited for "the simulated ballast tank conditions" and for "the condensation chamber test" in accordance with requirements indicated in IMO PSPC WBT Annex1 have to be submitted.

- Void spaces: tests reports edited for “the condensation chamber test” in accordance with requirements indicated in IMO PSPC VSP Annex1 have to be submitted.
- Crude oil tankers: tests reports edited for “gas-tight cabinet test” and for “the immersion test” in accordance with requirements indicated in IMO PSPC COT Annex1 have to be submitted.

For model test reports reference is made to IACS Recommendation 101 “Model Report for IMO Resolution MSC.215 (82) Annex 1 Test Procedures for Coating Qualification” for IMO PSPC WBT approval.

3.3.3 “Marintek B1” laboratory test

This method only applies to test reports for IMO PSPC WBT epoxy-based system, issued before 8 December 2006.

For each coating system (coating product (CP1) plus its associated shop primer (SP1), if any):

Marintek test reports, at a minimum level B1, including relevant IR identification and SG, have to be submitted.

If original SG and IR documentation cannot be provided, then a statement is to be provided by the coating manufacturer confirming that the readings for the current product are the same as those of the original.

3.3.4 Five years field exposure

For each coating system (coating product (CP1) plus its associated shop primer (SP1), if any) manufacturer's records and class survey records detailed thereafter have to be submitted.

Manufacturer’s Records consist of:

- original application records
- original coating specification
- original technical data sheet
- current formulation’s unique identification (Code or number)
- if the mixing ratio of base and curing agent has changed, a statement from the manufacturer confirming that the composition mixed product is the same as the original composition. This is to be accompanied by an explanation of the modifications made
- current technical data sheet for the current production site
- SG and IR identification of original product
- SG and IR identification of the current product
- if original SG and IR cannot be provided then a statement from the manufacturer confirming the readings for the current product are the same as those of the original.

Either class survey records from the Society or a joint (coating manufacturer / Society) survey is to be carried out:

- For all seawater ballast tanks of a selected ship. The selected ship is to have ballast tanks in regular use, of which:
  - at least one tank is approximately 2000m3 or more in capacity
  - at least one tank shall be adjacent to a heated tank
  - at least one tank contains an underdeck exposed to the sun.
- For void spaces of a selected ship in accordance with the requirements of IMO PSPC VSP.
- For cargo tanks of a selected ship. The selected ship is to have cargo tanks in regular use, of which:
  - at least one tank is exposed to minimum temperature of 60°C plus or minus 3°C
  - for field exposure the ship should be trading in varied trade routes and carrying substantial varieties of crude oils including highest temperature and lowest pH limits to ensure a realistic sample: for example, three ships on three different trade areas with different varieties of crude cargoes.

In the case that the selected ship does not meet the requirements listed above, then the limitations will be stated on the type approval certificate. For cargo tanks of crude oil, the limitations on lowest pH and highest temperature of crude oils carried will be stated.

The shop primer shall be removed prior to the application of the approved coating system, unless it can be confirmed that the shop primer applied during construction, is identical in formulation to that applied in the selected ship used as a basis of the approval.

All ballasts are to be in “GOOD” condition exlcuding mechanical damages, without touch up or repair in the period of 5 years.

“GOOD” is defined as: Condition with spot rusting on less than 3% of the area under consideration without visible failure of the coating. For cargo tank the threshold limit of 5% is considered. Rusting at edges or welds, must be on less than 20% of edges or welds in the area of consideration.

Examples of coating condition evaluation report with respect to areas under consideration should be those given in IACS Recommendation 87.

If the applied NDFT is greater that required by IMO PSPC, the applied NDFT will be the minimum to be applied during construction. This will be reported on the type approval certificate.

3.4 Cross-over tested shop primers

3.4.1 A shop primer (SPi) that has been type approved with a coating product (CP1), according to [3.3.2], [3.3.3] or [3.3.4], may also be certified with another type approved coating product (CPi) if it passes cross-over tests, as described below:

- For seawater ballast tanks and void spaces: cross over test in accordance with the requirements stated in IMO PSPC WBT Appendix 1 § 1.7, without wave movement. For model crossover test report, reference is made to the IACS Rec102.
- For crude oil tankers: cross over test in accordance with the requirements stated in IMO PSPC COT Appendix 2.

3.5 Assessment of the Coating Manufacturer

3.5.1 General

Coating manufacturers and their individual works are to be recognised by the Society through recognition scheme (known as BV Mode II) described in Rule Note NR320.

This section gives the requirements for assessment of each individual work to be stated in the type approval certificate.

3.5.2 Documentation

The following documentation is to be submitted by each coating and/or shop primer manufacturer to the Society:

- outline of company, e.g. organisation and management structure, including subsidiaries to be included in the approval/ certification
- names and location of raw material suppliers
- a detailed list of the test standards, equipment, quality manual, quality control and test procedures and records
- quality system certification to ISO 9001 or equivalent
- details of any sub-contracting agreements
- where relevant, list and documentation of licenses granted by manufacturer.

3.5.3 Audit

The audit of the manufacturer’s arrangements for production and testing aims at verifying that the following items are documented and operated by the coating and/or shop primer manufacturer to the satisfaction of the Society:

- management of type approval with the Society
- training and qualification of personnel
- purchasing of components subject to certification requirements
- traceability of product
- management of equipment including maintenance and calibration
- testing standards and procedures
- management of non-conform products
- management of complaints.

The audit of the manufacturer’s arrangements is to be based on the requirements of IMO PSPC, by taking into consideration the following items:

- With the exception of early 'scale up' from laboratory to full production, adjustment outside the limitations listed in the quality control instruction referred to below is not acceptable, unless justified by trials during the coating system's development programme, or subsequent testing. Any such adjustments must be agreed by the formulating technical centre;
- If formulation adjustment is envisaged during the production process the maximum allowable limits is to be approved by the formulating technical centre and clearly stated in the quality control working procedures;
- The manufacturer's quality control system ensures that all current production is the same formulation as that supplied for the type approval certificate. Formulation change is not permissible without testing in accordance with the IMO PSPC test procedures.
- Whenever possible, raw material supply and lot details for each coating batch are to be traceable. Exceptions may be where bulk supply such as solvents and pre-dissolved solid epoxies are stored in tanks, in which case it may only be possible to record the supplier's blend.
- Batch records including all quality control test results such as viscosity, specific gravity and airless spray characteristics are to be accurately recorded. Details of any additions are also to be included.
- Dates, batch numbers and quantities supplied to each coating contract are to be clearly recorded.
- All raw material supply must be accompanied the supplier's certificate of conformance. The certificate includes all requirements listed in the coating manufacturer's quality control system.
- In the absence of a raw material supplier's certificate of conformance, the coating manufacturer must verify conformance to all requirements listed in the coating manufacturer's quality control system.
- Drums must be clearly marked with the details as described on the type approval certificate.
- The quality control system ensures that the technical data sheets referenced in the type approval certificate(s) are current.
- Quality control procedures of the originating technical centre ensure that all production units comply with the above stipulations and that all raw material supply is approved by the technical centre.

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