

检验协议

Inspection Agreement

船舶 Vessel: 53000DWT Bulk Carrier
船号 Hull No.: CX4231
挂旗国/注册港 Flag/Port: 中国/上海 China/Shanghai
船级社 Class: CCS

海水专用压载舱的表面处理和涂装过程的检验已由船东、船厂和油漆商达成一致，并且符合 IMO 海安会决议 MSC.215(82)的相关要求。更多的细节，参见本协议的具体规定。

The inspection of surface preparation and coating processes for dedicated seawater ballast tanks have agreed upon between the Ship Owner, the Shipyard(Builder) and the Coating Manufacture and shall be accordance with IMO Resolution MSC.215(82). For further details, please refer to the subsequent pages of this document.

签署 Signatures:

For the Ship Owner:

船东

Shanghai Time Shippings Co. Ltd.

For the Builder:

船厂

Chengxi Shipyard Co. Ltd.

For the Coating Manufacture:

油漆商

PPG Coatings (Kunshan) Co. Ltd.

Date of this agreement: _____

本协议的副本将提交 CCS 船级社审查，本协议将包括在涂层技术文件（CTF）中。

A copy of this agreement, signed by all parties, shall be presented to the CCS for review, and the inspection agreement shall be included to the Coating Technical File(CTF).

中船澄西船舶修造有限公司（以下简称“船厂”）将为上海时代航运有限公司（以下简称“船东”）建造 53000DWT 散货船(船厂编号为 CX4231)，其专用海水压载舱将采用庞贝捷涂料（昆山）有限公司（以下简称“油漆商”）的产品。为保证船舶建造满足 IMO 海安会 MSC.215（82）决议通过的“所有类型船舶专用海水压载舱和散货船双舷侧处所保护涂层性能标准（以下简称 PSPC）”的要求，船东、船厂和油漆商通过友好协商，达成以下一致协议。

Chengxi Shipyard Co. Ltd. (hereinafter called Builder) shall be built the 53000DWT bulk carrier (Hull No. is CX4231) for Shanghai Time Shippings Co. Ltd. (hereinafter called Ship Owner), and the dedicated seawater ballast tanks of the vessel shall use the paint products which provided by PPG Coatings (Kunshan) CO. Ltd. (hereinafter called Coating Manufacturer). In order to comply with the requirements of IMO resolution MSC.215(82) "Performance Standard for Protective Coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers" (hereinafter referred to as PSPC), the Ship Owner, the Builder and the Coating Manufacturer has been agreed the following agreement after friendly consulted.

1. 总则

General

1.1. 本协议是用中文和英文书写的，若有矛盾，以中文为准。

The agreement is written in Chinese and in English. Both language versions are equally authentic. In the event of any discrepancy between the two aforementioned versions, the Chinese version shall prevail.

1.2. 本协议是在满足 PSPC 技术要求的前提下，遵循国际造船涂装的惯例，参照了下述标准和文件的相关规定来制定的。对于下述标准和文件之外新的的规范和/或规则要求，船东和船厂将按照造船合同的相关章节进行协商。

The agreement is considered for the purpose of PSPC requirement, according to International coating standards and refer to requirements of documents as following. In case of any further requirements arised by new rule and/or regulation, the Ship Owner and the Builder shall further discussed and settle this matter refer to the building contract.

a) IACS PR34 “关于在 IACS 散货船和油船结构共同规范中实施 MSC.215（82）决议通过的 IMO 保护涂层性能标准（PSPC）的 IACS 程序要求”；

IACS PR34: IACS Procedural Requirement on Application of the IMO Performance Standard for Protective Coatings (PSPC), Resolution MSC.215(82), under IACS Common Structural Rules for Bulk Carriers and Oil Tankers;

b) IACS UI SC223 “实施 MSC.215(82)决议通过的保护涂层性能标准（PSPC）的统一解释”；

IACS UI SC223: 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);

c) 相关的 ISO 标准；

Relational Standards of ISO;

1.3. 签署本协议的目的是保证船舶涂层的质量满足 PSPC 的要求，避免在标准执行过程中产生不必要的争议。

The objective of the agreement is to ensure that the purpose of PSPC requirement is adequately applied, avoiding any discrepancy unnecessary produced in the implement process of PSPC.

1.4. 本协议经船东、船厂和油漆商三方的主管人员签字确认后，将由船厂提交 CCS 船级社审查备案。
After signed by Ship Owner, Builder and Coating Manufacturer, the agreement shall be submitted by the Builder to CCS for review.

2. 涂层检查员 Coating Inspector

2.1. 为确保符合 PSPC 要求，涂装检查工作将由船厂派出的检查团队负责：
To ensure compliance with PSPC standard, the coating inspections shall be carried out by the Builder's coating inspection team consisting of:

2.1.1. 资质检查员：XXX 先生，具有 FROSIO 检查员 III 级证书，证书编号为 XXXX；他将担任涂装检查主管并将负责签署检查结果；他已经通过培训掌握了 PSPC 的相关内容。
Qualified Inspector: Mr. XXXX, certified to FROSIO Inspector Level III (Certificate No. XXXX), which shall be in charge of the coating inspections and shall be the one to confirm the results from inspections. He has been trained to have knowledge of the PSPC.

2.1.2. 助理检查员：将在资质检查员的监督和指导完成涂层检查工作，并获得资质检查员的满意；他们已经通过培训掌握了 PSPC 的相关内容。
Assistant Inspector: The Assistant Inspectors shall be carried out the inspection under the Qualified Inspector's supervision and guidance, and shall be gained the Qualified Inspector's satisfaction. They have also been trained to have knowledge of the PSPC.

2.1.3. 助理检查员的名单和分工如下表：
The name list of Assistant Inspectors as follows:

| 序号 No. | 名称 Name | 负责位置 Position |
|--------|----------|--|
| 1 | Mr. XXXX | 预处理阶段 Primary Surface Preparation Stage |
| 2 | Mr. XXXX | 分段涂装阶段 Block Coating Stage |
| 3 | Mr. XXXX | 船台/码头涂装阶段 Slipway/Quay Coating Stage |

2.2. 资质检查员和助理检查员的选择应由船厂决定最终决定。
The choice of the Qualified Inspector and Assistant Inspector shall be finally decided by the Builder.

2.3. 如果检查员要求增加本协议要求以外的试验、测定和检验，检查员要有明确的理由方可进行。
The coating inspectors may not require any additional test, measurement and inspection beyond the requirement of this section unless they have reasonable reasons.

2.4. 任何在检查协议中的一方都有权要求更换在船舶建造进程中被认为不适合或不理想的检查员，如果

协议中的两方认为这样的要求是合理的，涉及的不适合检查员应在两周内更换。

Any of the parties involved in the inspection agreement have the right to request for replacement of the Inspector who is deemed unsuitable or unsatisfactory. If any two of the three parties to this agreement consider that such a request is justified, the mentioned unsuitable Inspector shall be replaced within two weeks.

2.5. 油漆商的现场服务代表将协助船厂检查员进行工作，并进行提供技术支撑；船东代表对检查员的工作有监督的权力，可随时对检查结果进行抽查核实。

The site technical service representative of Coating Manufacture shall be assisted the Inspectors to carry out the inspection and supply technical support. The Ship owner's representative shall be supervised the inspection working of Inspectors, and may spot check the inspection results at any moment.

3. 涂装检查 Inspection

3.1. 钢材预处理阶段 Primary Surface Preparation (PSP) Stage

3.1.1. 环境条件：一般来说相对湿度需在 85%以下，钢板表面温度需高于露点温度 3℃ 以上，具体将根据油漆商的推荐；每月定期检查一次。

Environment condition: General the atmosphere relative humidity must not exceed 85% and the temperature of steel surface temperature must be at least 3℃ higher than the dew point, detailed information shall be accorded to the Coating Manufacture's recommendation., and shall be carried out one periodic check per month.

3.1.2. 除锈等级：钢板需抛丸除锈至 ISO8501-1 标准规定中的 Sa2 1/2 级，每月选择 1 张钢板定期检查一次。

De-rusting grade: all steel plates shall be shot blasted to the Sa2 1/2 according with ISO8501-1, and shall be carried out one periodic check per month (select one steel plate) .

3.1.3. 表面粗糙度：钢板除锈后，表面粗糙度需达到规定的 30-75 微米按照 ISO8503-1/2 标准），每月选择 1 张钢板定期检查一次。

Surface Profile: after blasting, the surface profile should be between 30-75 microns according with ISO 8503-1/2, and shall be carried out one periodic check per month (select one steel plate) .

3.1.4. 水溶性盐检测 Water soluble salts test

3.1.4.1 预处理后钢材表面水溶性盐的检测应使用 ISO8502-9 标准规定的方式。

After the surface preparation, the soluble salt test shall be used the method which specific in the ISO8502-9 standard.

3.1.4.2 预处理时盐分测量应每月抽样检测 1 次，选三张抛丸处理后的钢板测量，每张钢板随机测量 1 点：

Random checking by Inspector will be once a month. Three pieces steel plates will be selected after blasting and one spot on each plate will be selected for soluble salt test.

a) 若 3 个测量点都小于或等于 50 毫克/平方米, 则视为本周所有钢板预处理都是合格的。

If all the three measured values of salt contents on three pieces steel plates are below 50mg/m², the salt contents on all the steel plates at primary surface preparation stage at this week are acceptable.

b) 若 2 个及所有 3 个测量点都在 50 毫克/平方米以上, 则视为该周钢板处理不合格。

If two or all of these three measured values are above 50 mg/m², salt contents on steel plates at primary surface preparation stage at this week are not acceptable.

c) 当一个测量点在 50 毫克/平方米以上时, 将另选 2 张钢板进行测量, 该 2 点都小于或等于 50 毫克/平方米可视为该周钢板处理合格, 其中一点在 50 毫克/平方米以上, 即判为该周钢板处理不合格。

If only one of the three measured values is above 50 mg/m², then another two pieces of dealt steel plates shall be selected randomly and re-measured as stated above. If this two re-measured values are below 50 mg/m², then the salt contents on all the steel plates at primary surface preparation stage at this week are acceptable. Otherwise, salt contents on steel plates at primary surface preparation stage at this week are not acceptable.

3.1.4.3 对于预处理不合格的钢材应采取措施直至合格。

The corrective actions shall be implement to satisfy the requirement for the not acceptable steel plates.

3.1.4.4 车间底漆干膜厚度: 干膜厚度需满足涂料产品技术数据表的要求, 每月定期检查一次。

Dry film thickness of shop primer: the DFT shall be complied with the requirement of the Technical Data Sheet, and shall be carried out one periodic check per month.

3.2. 结构处理

Structure Treatment

3.2.1. 钢板表面涂装前进行结构性处理, 应去除毛边、焊接飞溅物和其它任何的表面污染物。

The steel surface before coating shall be removed sharp edges, weld spatters and any other surface contaminant.

3.2.2. 涂装前钢材自由边缘应处理成半径至少为 2mm 的圆角, 或经过三次打磨, 或至少经过等效的处理。

Edges to be treated to a rounded radius of minimum 2mm or subjected to three pass grinding or at least equivalent process before painting.

3.2.3. 结构处理参见表 1 “结构处理图例” 圆角, 表中未明确部位按照 ISO8501-3 标准中 P2 级进行处理。

Structure treatment please see Table 1 “Structure Treatment Illustration”, other locations shall be treated to P2 grade of ISO8501-3 standard.

3.3. 分段阶段

The Block Stage

3.3.1. 二次表面处理

Secondary Surface Preparation (SSP)

3.3.1.1 车间底漆损坏区域和焊缝处将喷砂处理到 Sa2 1/2 级, 除锈后表面粗糙度控制达到 30-75 μm (按照 ISO8503-1/2 标准)。

The damaged of shop primer and weld seams shall be blasted to Sa2 1/2 . After blasting the surface profile should be between 30-75 μm according with ISO 8503-1/2 standard.

3.3.1.2 因 TH-2 硅酸锌车间底漆已和主涂层组成的整体涂层系统已通过涂层合格试验, 所以完整的车间底漆可以保留; 保留的车间底漆应采用扫掠式喷砂进行清理。

The TH-2 silicate zinc shop primer has passed test with main coating system, the intact shop primer can be retained, the retained shop primer shall be cleaned by sweep blasting.

3.3.1.3 表面粗糙度: 除锈后表面粗糙度应达到 30-75 微米, 每只分段抽查一个点。

Surface Profile: after blasting, the surface profile should be between 30-75 microns , and one spot check per block.

3.3.1.4 水溶性盐检测: 分段冲砂后, 随机抽取一点(该随机测量点必须是三方都无争议的点)进行盐分测量, 测量结果小于或等于 50mg/m² 即认为合格; 如果超过 50mg/m² 可再选择两点测量 (但该超标区域要用淡水或等效方法处理), 如果两点都合格即认为合格, 其中有一点不合格即判定为不合格。对于不合格的分段应进行冲水清洗或等效方法处理。

Water soluble salts content measurement: after secondary surface preparation at block stage, one spot point(the spot point shall be no disputed by three parties) on this block will be selected for the measurement of salt content. If the measured value of salt contents is below 50mg/m², salt contents on surface of this block are acceptable at secondary surface preparation stage. Otherwise, another two spot points of this block will be selected for the measurement of salt content(but the failed area should be cleaned with fresh water or equivalent). If this two measured values are below 50 mg/m², the salt contents on this block are acceptable. Otherwise, salt contents of this block are not accepted and this block should be washed by fresh water or equivalent at secondary surface preparation stage.

3.3.1.5 灰尘: 表面灰尘颗粒大小为“3”、“4”或“5”的灰尘分布量应达到 1 级, 在不用放大镜的条件下, 待涂表面可见的更小颗粒的灰尘应去除。本船采用目视测量来评判灰尘, 即肉眼看不见明显的灰尘时即为合格, 当有争议时采用 ISO8502-3:1993 中规定的贴胶纸方式每只分段抽查一个点。

Dust: Dust quantity rating “1” for dust size class “3”, “4” or “5”, lower dust size classes shall be removed if visible on the surface to be coated without magnification. This vessel shall be checking dust quantity rating by naked eye, i.e. dusts accumulation which is invisible by naked eye is acceptable. When dispute happens, the tape test shall be carried out according to ISO8502-3:1993 and one spot check per block.

3.3.1.6 表面清洁度: 涂装前表面的油、油脂和其它杂质等需根据油漆商的推荐进行处理。

Surface cleanliness: the oil, grease and other contaminations shall be cleaned accorded to the Coating Manufacture's recommendation before coating application.

3.3.2. 油漆施工

Coating application

3.3.2.1 除锈向船厂 QC、油漆技术服务和船东交验后，按照油漆配套进行第一度油漆的统喷。

After the inspection of blasting has been conducted by Builder's QC, Coating Manufacturer's surveyor and Ship Owner's supervisor, the first full coat shall be applied according to coating specification.

3.3.2.2 然后用刷子或辊筒然后进行第一度油漆的预涂，并对第一度漆膜进行检测和修正。清洁后向船厂 QC、油漆技术服务进行交验。

Then the first stripe coat shall be applied by brush or roller, and repair and clean the first coat after the checking. The first coat shall be checked by Builder's QC and Coating Manufacturer's surveyor after cleaning.

3.3.2.3 第 1 度油漆向船厂 QC、油漆技术服务进行交验后，进行第二度油漆的统喷。

After the first coast is checked by Builder's QC and Coating Manufacturer's surveyor , the second full coat shall carried out.

3.3.2.4 然后用刷子或辊筒然后进行第二度油漆的预涂（仅在焊缝区能证明涂层可满足规定膜厚要求的，可减少第二度预涂），并对第二度漆膜进行检测和修正。清洁后向船厂 QC、油漆技术服务和船东进行分段油漆完工交验。

Then the second stripe coat shall be applied by brush or roller(only welded seams may be reduced the second stripe coat where it is proven that the DFT can be met by the coats applied), and repair and clean the second coat after the checking. The final coating of the block shall be checked by Builder's QC, Coating Manufacturer's surveyor and Ship Owner's supervisor after cleaning.

3.3.2.5 名义总干膜厚度：涂层需在 90/10 原则下达到 320 微米，总干膜厚度最大值依据油漆商的详细规定。

NDFT(Nominal total dry film thickness): NDFT is 320 micron with 90/10 rule, and the maximum total DFT shall be according to Paint Manufacture's detailed specification.

3.3.2.6 环境条件：涂漆时大气温度、钢板表面温度、相对湿度和露点等将根据油漆商的推荐。

Environment condition: The atmosphere temperature, steel temperature, relative humidity and Dew point etc. shall be accorded to the Coating Manufacture's recommendation when coating application.

3.3.2.7 在涂装施工、涂层干燥和固化过程中，应保证足够的通风。

Adequate ventilation is necessary during coating application, drying and curing.

3.4. 船台和码头阶段

The stage of slipway and quay

3.4.1. 二次表面处理

Secondary Surface Preparation (SSP)

1.1.1.1 “涂层破损”是指在船舶建造过程中，因焊接、火工、机械碰撞等原因引起的涂层损坏抵达钢材表面的现象。除锈是指对“涂层破损”区域的表面处理。

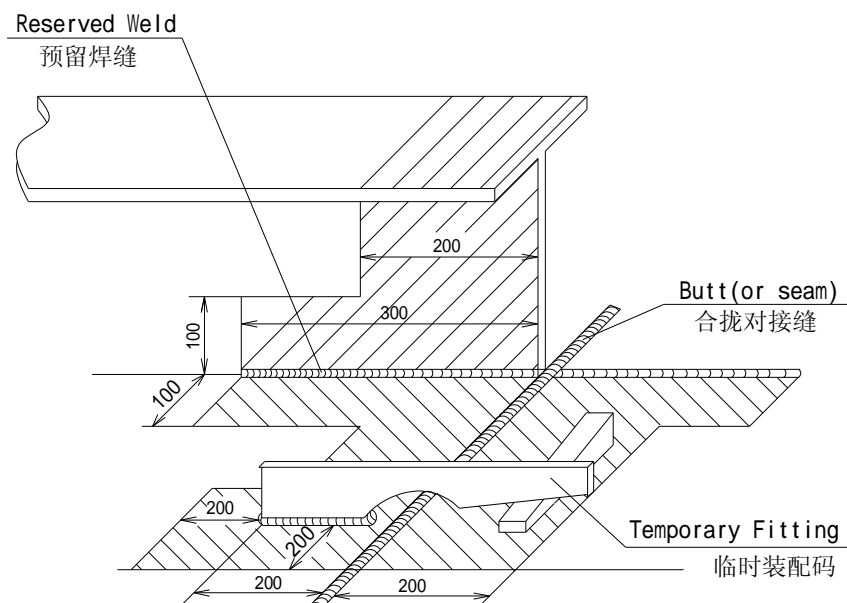
“Coating damages” means areas where the damages reached steel surface, due to welding, fire work and mechanical damage etc. De-rusting means the surface treatment of damaged area.

1.1.1.2 涂层破损包括大接缝涂层破损、密性角焊缝涂层破损和其它涂层破损三部分。

Coating damages includes three cases that is erection joint(butt) coating damages, fillet weld seams on tank boundary watertight bulkhead coating damages and other coating damages.

I 大接缝涂层破损是指因分段合拢形成的焊缝、涂层破损以及周围热影响区，详见下图阴影部分。

Erection joint coating damages means that welding seam areas, coating damages and heat affected areas caused by erection of blocks, see shade area of the follow figure.



I 密性角焊缝破损区域是指在分段阶段未做密性试验的角焊缝及焊缝两侧未涂装的裸露钢板部分。

The fillet weld seams on tank boundary watertight bulkhead coating damages means that the part at where tightness testing has not been carried out at the block stage and the bare steel surface beside the welding seams.

I 其它涂层破损是指除大接缝涂层破损和密性角焊缝涂层破损以外的涂层破损，包括涂层受火工破坏、机械损伤、起泡、剥落等。

Other coating damages means that including coating damages which are caused by fire, mechanical damage, bubble, flaking and so on, other than erection joint coating damages or fillet weld seams coating damages.

1.1.1.3 除锈等级

De-rusting grade

a) 大接缝涂层破损和密性焊缝涂层破损采用打磨方式处理至 St 3 级。

Erection joint coating damages and fillet weld seams on tank boundary watertight bulkhead coating damages shall be treated to St3 by grinding.

b) 其它涂层破损: 如果破损率在 2%范围内且连续破损不超过 25m², 采取打磨至 St3 级的除锈方式; 如果小面积破损率超过 2%或连续破损超过 25m², 采用局部冲砂至 Sa2 1/2 级。

Other coating damages: if small damages is not up to 2% of total area and contiguous damages is no more than 25m², coating damages shall be treated to St3 by grinding .Otherwise, the damaged areas should be sand blasting to Sa2 1/2.

c) 其它涂层破损情况将按照 ISO4628-3 标准进行评估。

Other coating damaged evaluating shall be carried out according to ISO4628-3.

1.1.1.4 灰尘: 表面灰尘颗粒大小为“3”、“4”或“5”的灰尘分布量应达到 1 级, 在不用放大镜的条件下, 待涂表面可见的更小颗粒的灰尘应去除。本船采用目视测量来评判灰尘, 即肉眼看不见明显的灰尘时即为合格, 当有争议时采用 ISO8502-3 中规定的贴胶纸方式。

Dust: Dust quantity rating “1” for dust size class “3”, “4” or “5”, lower dust size classes shall be removed if visible on the surface to be coated without magnification. This vessel shall be checking dust quantity rating by naked eye, i.e. dusts accumulation which is invisible by naked eye is acceptable. When dispute happens, the tape test shall be carried out according to ISO8502-3.

1.1.2 油漆施工

Coating application

1.1.2.1 除锈向船厂 QC、油漆技术服务和船东交验后, 按照油漆配套进行第一度油漆的统喷。

After the inspection of blasting has been conducted by Builder's QC, Coating Manufacturer's surveyor and Ship Owner's supervisor, the first full coat shall be applied according to coating specification.

1.1.2.2 然后用刷子或辊筒然后进行第一度油漆的预涂, 并对第一度漆膜进行检测和修正。清洁后向船厂 QC、油漆技术服务进行交验。

Then the first stripe coat shall be applied by brush or roller, and repair and clean the first coat after the checking. The first coat shall be checked by Builder's QC and Coating Manufacturer's surveyor after cleaning.

1.1.2.3 第 1 度油漆向船厂 QC、油漆技术服务进行交验后, 进行第二度油漆的统喷。

After the first coast is checked by Builder's QC and Coating Manufacturer's surveyor , the second full coat shall carried out.

1.1.2.4 然后用刷子或辊筒然后进行第二度油漆的预涂 (仅在焊缝区能证明涂层可满足规定膜厚要求的, 可减少第二度预涂), 并对第二度漆膜进行检测和修正。清洁后向船厂 QC、油漆技术服务和船东进行分段油漆完工交验。

Then the second stripe coat shall be applied by brush or roller(only welded seams may be reduced the second stripe coat where it is proven that the DFT can be met by the coats applied), and repair and clean the second coat after the checking. The final coating of the block shall be checked by Builder's QC, Coating Manufacturer's surveyor and Ship Owner's supervisor after cleaning.

1.1.2.5 名义总干膜厚度：涂层需在 90/10 原则下达到 320 微米，总干膜厚度最大值依据油漆商的详细规定。

NDFT(Nominal total dry film thickness): NDFT is 320 micron with 90/10 rule, and the maximum total DFT shall be according to Paint Manufacture's detailed specification.

1.1.2.6 环境条件：涂漆时大气温度、钢板表面温度、相对湿度和露点等将根据油漆商的推荐。

Environment condition: The atmosphere temperature, steel temperature, relative humidity and Dew point etc. shall be accorded to the Coating Manufacture's recommendation when coating application.

1.1.2.7 在涂装施工、涂层干燥和固化过程中，应保证足够的通风。

Adequate ventilation is necessary during coating application, drying and curing.

3.5. 船台和码头阶段涂装作业程序和检验流程

Procedure Of Coating Application And Inspection Flow

3.5.1. 涂装作业程序和检验流程表详见表 2。

Chart of procedure of coating application and inspection flow see Table 2.

3.5.2. 检查范围和要求详见表 3。

The inspection scope and requirements please see Table.3.

4 缺陷处理

Defects treatment

4.1 实际的涂装施工做到一点缺陷没有是不可能的，船厂应尽可能尽可能的按 PSPC 标准要求施工。

In practice it is almost impossible to obtain a perfect coating that has no small imperfections, even with the best execution of the PSPC standard.

4.2 在任何阶段，涂装报验时如果发现已经验收的结构、焊接和舾等项目尚存在缺陷和漏检，应允许现场修正，不能作为涂装退检的理由，而影响下一工序作业。

In any phase of construction, the approved inspection shall not be refused due to the facts of defects caused by structure, welding and outfitting, the next procedure shall not be affected.

4.3 在涂装报验过程中，如发现表面处理和涂层有少量缺陷，应允许施工人员立即进行修补，而不应拒绝修正作退检处理。

If a few defects are found during surface preparation and coating application, the amendments shall be allowed on site. Rejection of revision shall not be occurred.

4.4 当涂装报验过程中，发现表面处理和涂层出现大量或严重的缺陷时，三方应立即协商制定修复方案并记录在涂层技术文件（CTF）中。

If a mass of defects or series defects are found during surface preparation and coating application, the three parties shall co-operate to find a practical solution to rectify the defects and the repair process, and the results shall be recorded in the Coating Technical file(CTF).

5 争议处理 Arbitration

5.1 在涂装检查过程中，当船东、船厂和油漆商三方检验结果不一致时，三方将进行友好协商：如果其中两方达成一致，则视两方结果为最终检验结果，如果三方无法达成一致意见，将由船厂资质检查员作为最终裁决方来决定检查结果。整个过程和最后结果记录在涂层技术文件（CTF）中。

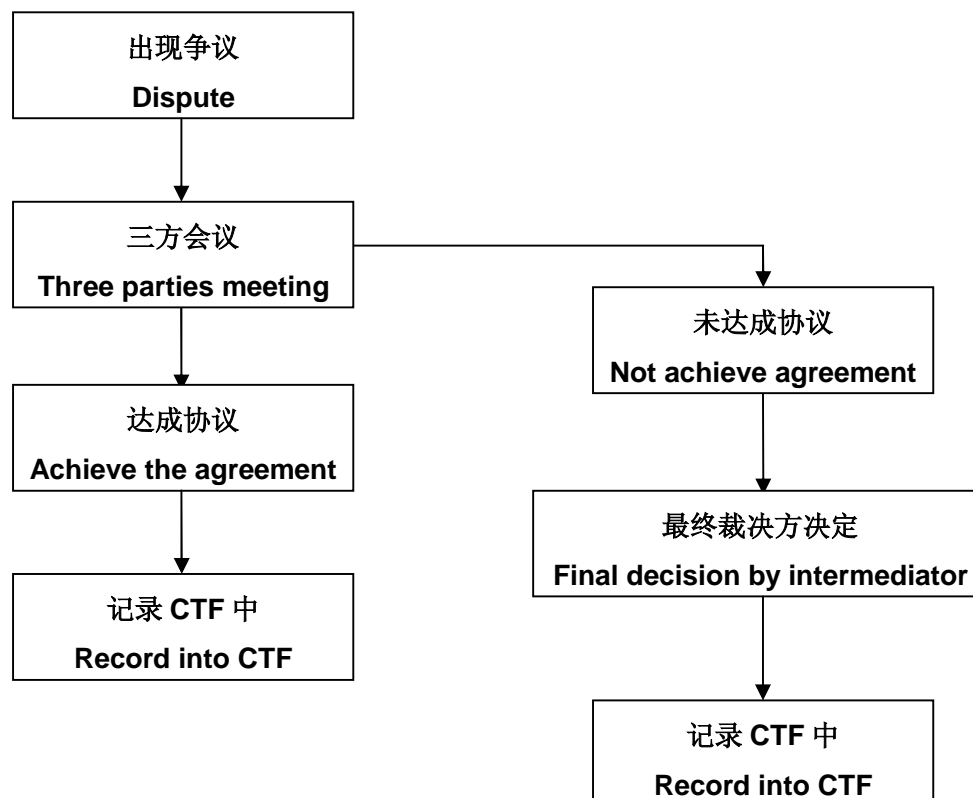
During Coating Inspection, if the Ship Owner, Builder and Coating Manufacturer can't get an agreement on the inspection results, then the three parties shall be negotiate together: if the results any two parties got in common shall be the final and binding upon the parties hereto, if still can't get an agreement then the final arbitration comes from the Qualified Inspector. The result shall be recorded in the Coating Technical File (CTF).

5.2 在处理现场争议问题时，船东、船厂和油漆商三方代表必须具有满足 NACE 检验员 2 级、FROSIO 检验员 III 级或 CCMCIC（中国船舶涂层检查员资格认证委员会）检查员 II 级资质。

All the representatives who resolves disputed issues during Coating application in presence of the Ship Owner, Builder and Coating Manufacturer must be the qualified coating inspectors certified to NACE Coating Inspector Level 2, FROSIO Inspector Level III or CCMCIC II.

5.3 争议处理流程

Procedures for dispute treatment



6 营运中维护、修补和局部重涂 In-service maintenance, repair, partial re-coating

涂层的保护寿命与船舶营运过程中正确的维护保养密切相关。因此，船东必须严格执行营运中涂层维护和修补程序，并且按照PSPC的要求记录在涂层技术文件（CTF）中。具体的营运中涂层维护和修补程序可参照MSC.1/Circ.1330通函中的指导方针进行制定。

Recognizing the coating life is linked to in-service maintenance as well, the Ship Owner must implement the coating maintenance according to the procedures for in-service maintenance and repair, and shall be recorded into the CTF according to PSPC's requirement. The detailed maintenance and repair procedures shall be referred to the guidelines of the MSC.1/Circ.1330.

7 涂层技术文件

Coating Technical File (CTF)

7.1 最终的涂层技术文件（CTF）可以用中文描述，但是必须有英文翻译。

The final Coating Technical File(CTF) may be written in Chinese but English translation is required.

7.2 涂层技术文件（CTF）将由船厂负责编制，并在交船前提交CCS船级社认可，油漆商应提供支持。

The Builder shall be compiled the coating Technical File(CTF) and submit the CTF to CCS for approval before vessel delivery, and the Coating Manufacturer shall be supplied support.

7.3 涂层技术文件具体包括内容见表4“涂层技术文件内容”。

The List if Coating Technical File please see Table.4.

8 本协议由船东、船厂和油漆商三方共同签署方可生效；本协议一式三份，三方各执一份。

The agreement shall be effective after Ship Owner, Builder and Coating Manufacturer signed. The agreement shall be executed in three originals, three parties shall each hold one original.

表1：结构处理图例

Table 1: Structure Treatment Illustration

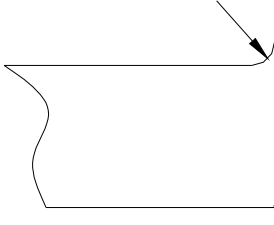
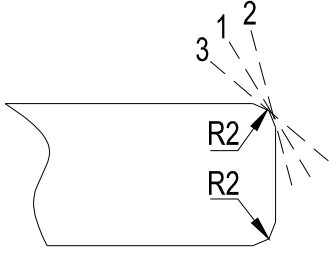
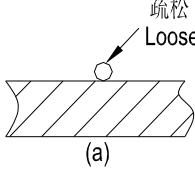
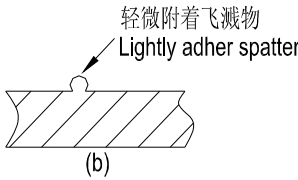
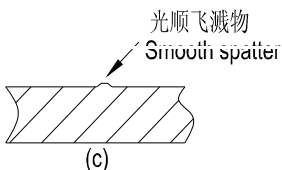
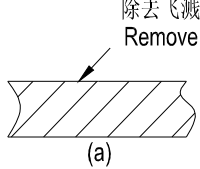
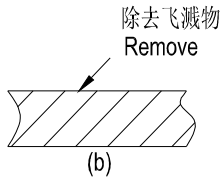
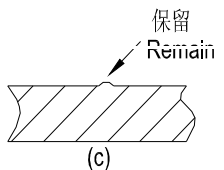
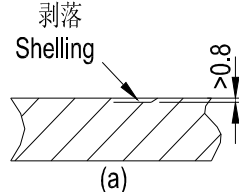
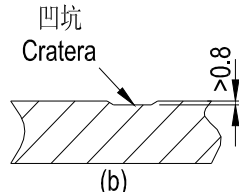
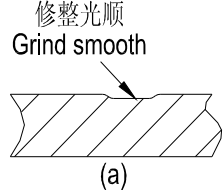
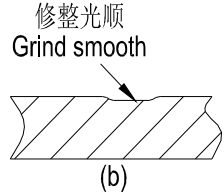
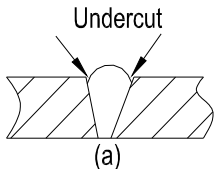
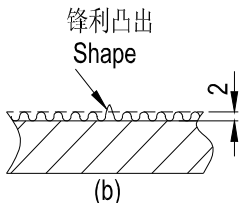
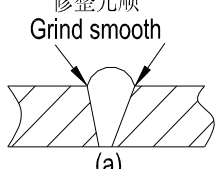
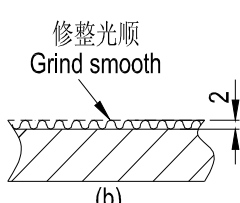
| 序号 No. | 缺陷 Defect | 处理要求 Solution | 图例 Illustration | |
|-----------|--------------------------|--|---|--|
| | | | 原来状态 Original | 处理后状态 After Done |
| 1 | 边缘 Edges | 动力工具处理到至少2mm圆角，或经过三次打磨，或经过等效处理 Grinding to a rounded radius of minimum 2mm or subjected three pass grinding at least equivalent process |  |  |
| 2 | 焊接飞溅 Weld spatter | 疏松的飞溅物和轻微附着的飞溅物（图(a)和(b)）需去除；光滑状的飞溅物（图(c)）可以保留 all loose spatter and lightly adhering welding spatter [see (a) and (b)] shall be removed, smooth spatter shown in (c) may remain. |    |    |
| 3 | 表面原始缺陷 Surface defect | 剥落（图(a)）、凹坑（图(b)）需用砂轮修整光滑；深度在0.8mm以上的剥落、凹坑需焊补后用砂轮修整光滑 Shelling[see (a)], cratera[see (b)] need grinding smooth, welding and grinding smooth when depth is over 0.8mm |   |   |
| 4 | 焊接 Weld | (1) 深度超过0.8mm的咬口（图(a)）需打磨光滑； Undercut shall be ground smooth when depth is over 0.8mm (2) 手工焊缝表面突出超过2mm（图(b)）需打磨光滑至小于2mm； Manual weld shall be ground smooth below when ripple/profile is over 2mm. (3) 自动焊缝原则上不处理 Automatic weld no treatment. |   |   |

表2：涂装作业程序和检验流程

Table2: Procedure of Coating Application and Inspection Flow

| 阶段 Stage | 程序 Process | 检查方 Inspection | 要求 Requirement |
|--------------------------------------|---|--|---|
| 钢材预处理 Primary Surface Preparation | <pre> graph TD A[未处理材料Raw material] --> B[抛丸除锈Shot blasting] B --> C[车间底漆 Shop Primer] B --> I[船厂和/或油漆商 Builder or Coating Manufacture] </pre> | 船厂和/或油漆商 Builder or Coating Manufacture | *记录数据在PSP中 Record data in PSP form **测试 Test: 1. 除锈等级和粗糙度测试 De-rusting grade and profile test 2. 水溶性盐测试 Water soluble salts test 3. 车间底漆膜厚测量 Shop Primer DFT Shop Primer DFT 4. 环境控制 Environment Control |
| 结构处理 Steel Treatment | <pre> graph TD A[下料 Fabrication] --> B[边缘处理 Edge Grinding] A --> I1[自查 Self control] B --> I2[船厂、油漆商 Builder or/and Coating Manufacture] </pre> | 自查 Self control 船厂、油漆商 Builder or/and Coating Manufacture | * 2R & 3次处理或等效处理 2R & three pass or equivalent level * 其它结构处理 Other defects treatment |
| 分段 Block | <pre> graph TD A[装配 Assembly] --> B[二次表面处理 Secondary Surface Preparation] B --> C[后续油漆 Subsequent Coating] C --> D[名义干膜厚度 NDFT] B --> I1[船厂、油漆商、船东 Builder, coating Manufacture, Owner] C --> I2[船厂、油漆商、船东 Builder, coating Manufacture, Owner] </pre> | 船厂、油漆商、船东 Builder, coating Manufacture, Owner 船厂、油漆商、船东 Builder, coating Manufacture, Owner | *记录数据在SSP中 Record data in PSP form **测试 Test: 1. 除锈等级和粗糙度测试 De-rusting grade and profile test 2. 水溶性盐测试 Water soluble salts test 3. 灰尘分布 Dust 4. 环境控制 Environment Control *记录数据在DFT中 Record data in DFT form **测量DFT Measure DFT |

表2：涂装作业程序和检验流程

Table 2: Procedure of Coating Application and Inspection Flow

| 阶段 Stage | 程序 Process | 检查方 Inspection | 要求 Requirment |
|---------------------|--------------------------------------|--|--|
| 船台/码头 Slway/Quay | 合拢 Erection | | |
| | ↓ | | |
| | 二次表面处理 Secondary Surface Preparation | 船厂、油漆商、船东 Builder, coating Manufacture, Owner | *记录数据在SSP中 Record data in PSP form **测试 Test: 1. 破坏面积评估 Damaged areas evaluating 2. 除锈等级和粗糙度测试 De-rusting grade and profile test 3. 灰尘分布 Dust 4. 环境控制 Environment Control |
| | ↓ | | |
| | 后续油漆 Subsequent Coating | 船厂、油漆商 Builder, coating Manufacture | |
| | ↓ | | |
| | 名义干膜厚度 NDFT | 船厂、油漆商、船东 Builder, coating Manufacture, Owner | *记录数据在DFT中 Record data in DFT form **测量DFT Measure DFT |
| | ↓ | | |
| | 完工交付 Delivery | | |

表3: 检验范围和要求

Table 3: Inspection scope and requirements

| 检验项目 Inspection items | | 参考标准 Reference standards | 检查时间 Inspection time | 检查部位 Inspection Area | 检查方 Inspection Parties | | |
|---|---|--|--|------------------------------------|------------------------|----------------------|--------------------|
| | | | | | 船厂检查员 Inspectors | 油漆商代表 Manufacture | 船东代表 Ship Owner |
| 钢材预处理 阶段 Primary Surface Preparation Stage | 除锈等级 De-rusting grade | ISO8501-1 | 每月定期 检查一次 one periodic check per month | 选择1张钢板 Select one steel plate | √ | | |
| | 表面粗糙度 Surface profile | ISO8503-1/2 | | 选择1张钢板 Select one steel plate | √ | | |
| | 水溶性盐 Water soluble salt | ISO8502-9 | | 选择3张钢板 Select three steel plate | √ | | |
| | 车间底漆干膜厚度 Dry film thickness of shop primer | 根据产品技术数据表 according to Technical Date Sheet | | 选择1张钢板 Select one steel plate | √ | | |
| | 环境控制 Environment condition | 根据油漆商推荐 Recommended by Coating Manufacture | 每月定期 检查一次 one periodic | / | √ | | |
| 分段阶段二次 表面处理及 涂装 Secondary Surface Preparation and Coating at block stage | 结构处理 structure treatment | ISO8501-3 | 油漆应用前 Before coating application | 压载水舱内 WBT area | √ | √ | √ |
| | 除锈等级 De-rusting grade | ISO8501-1 | | | √ | √ | √ |
| | 表面粗糙度 Surface profile | ISO8503-1/2 | | | √ | √ | |
| | 水溶性盐 Water soluble salt | ISO8502-9 | | | √ | √ | |
| | 灰尘 Dust | ISO8502-3 | | | √ | √ | |
| | 预涂 Stripe coat | 裸眼检查 Inspection by naked | 油漆应用后 After coating application | | √ | √ | |
| | 名义干膜厚度 NDFT | 90/10规则 90/10 rules | | | √ | √ | √ |
| | 环境条件 Environment condition | 根据油漆商推荐 Recommended by Coating Manufacture | 油漆应用时 During coating application | | √ | | |
| 船台/码头表 处理和涂装 Surface Preparation and Coating at slipway and quay | 破损率评估 Evaluating | ISO4628-3:2003 | 油漆应用前 Before coating application | 压载水舱内 WBT area | √ | √ | |
| | 除锈等级 De-rusting grade | ISO8501-1 | | | √ | √ | √ |
| | 表面粗糙度 Surface profile | ISO8503-1/2 | | | √ | √ | |
| | 灰尘 Dust | ISO8502-3 | | | √ | √ | |

表3: 检验范围和要求

Table 3: Inspection scope and requirements

| 检验项目 Inspection items | | 参考标准 Reference standards | 检查时间 Inspection time | 检查部位 Inspection Area | 检查方 Inspection Parties | | |
|---|-------------------------------|---|-------------------------------------|-------------------------|------------------------|----------------------|--------------------|
| | | | | | 船厂检查员 Inspectors | 油漆商代表 Manufacture | 船东代表 Ship Owner |
| 船台/码头表面处理 and 涂装 Surface Preparation and Coating at slipway and quay | 预涂 Stripe coat | 裸眼检查 Inspection by naked | 油漆应用后 After coating application | | √ | √ | |
| | 名义干膜厚度 NDFT | 90/10规则 90/10 rules | | | √ | √ | √ |
| | 环境条件 Environment condition | 根据油漆商推荐 Recommended by Coating Manufacture | 油漆应用时 During coating application | | √ | | |
| | 完工交付 Delivery | / | 油漆应用后 After coating application | | | | |

备注 Remark:

各项检查工作将由船厂资质检查员和助理检查员负责, 油漆商代表将协助检查员进行工作, 船东代表可有时进行抽查。

The inspection shall be carried out by Qualified Inspector and Assistant Inspector of Builder, the representative of Coating Manufacture shall be assisted the Inspector, and the Ship Owner can be made spot check.

表4：涂层技术文件内容

Table 4: Content of Coating Technical File

| 涂层技术文件内容 Contents of CTF | | 提供者 Supplier | | |
|-------------------------------------|--|----------------|------------------|----------------------------|
| | | 船厂 Shipyard | 船东 Ship Owner | 油漆商 Paint Manufactur |
| 新船建造阶段 New construction stage | 主涂层和车间底漆的符合证明或型式认可证书 Copy of Statement of Compliance or Type Approval Certificate for the main coating system and shop primer | | | √ |
| | 涂料技术数据表副本 Copy of Technical Data Sheet of Coatings | | | √ |
| | 三方涂装检查协议副本 Copy of Coating Inspection agreement between three parties | √ | | |
| | 涂装检查员的资质证书副本 Copy of Coating Inspector's Qualification Certificate | √ | √ | √ |
| | 涂装规格书 Coating specification for Dedicated Seawater Ballast Tanks Coating | √ | | |
| | 船厂的涂装作业工作记录 Shipyard working records of coating application | √ | | |
| | 船舶建造期间涂层系统的检查和修补程序 Procedures for inspection and repair of coating system during ship construction | √ | | √ |
| | 涂装检查员签署的涂装日志（见附件A） Coating Log issued by the coating inspector (see Annex A) | √ | | |
| | 船厂核实过的检查报告副本（见附件B） Shipyard's Verified Inspection Report (copy (see Annex B) | √ | | |
| | 争论记录 Records for Dealing Disputes | √ | | |
| 营运阶段 In-service stage | 涂料安全数据表副本 Copy of Safety Data Manual of Coatings | | | √ |
| | 营运中涂层系统的维护和保养程序 Procedures for in-service maintenance and repair of coating system | | | √ |
| | 维护、修补和局部重涂记录 Records for Maintenance, Local Repair and Recoating | | √ | |

资料性附件录A Annex A

A.1 涂装日志（一次表面处理） Coating log (Primary Surface Preparation)

表A.1 钢材预处理涂装检查表

编页号(Sheet No.):

| | | | | | |
|--|---|-------------------------|---|-----------------|-----------------|
| 船舶编号 Hull No. | | | | | |
| 钢板编号 Plate numbers | | | | | |
| 船厂/钢厂 Shipyard/Steel Manufacturer | | | | | |
| 检查日期 Inspection sate | | | | | |
| 环境条件 Environment | | | | | |
| | 涂装前 Before coating | 天气变化 Weather changes | | | 备注: Remarks: |
| 测量时间 Measured time | | | | | |
| 干球温度 Dry bulb Temp. (°C) | | | | | |
| 湿球温度 Wet bulb temp. (°C) | | | | | |
| 相对湿度 Relative Humidity (%) | | | | | |
| 露点 Dew point (°C) | | | | | |
| 表面温度 Surface Temp. (°C) | | | | | |
| 表面处理 Surface Preparation | | | | | |
| 水溶性盐含量 Water soluble salts (mg/m ²) | | | | 备注: Remarks: | |
| 表面粗糙度 Surface Profiles (µm) | | | | | |
| 钢表面清洁度 Cleanliness of steel surface | 灰尘 Dust | | | | |
| | 油、油脂 Oil, Grease | | | | |
| 车间底漆 Shop primer | | | | | |
| 生产商 Manufacturer | | | | 备注: Remarks: | |
| 产品名称 Product Name | | | | | |
| 产品标识及编号 Identification makr/number | | | | | |
| 推荐干膜厚度 Manufacturer's recommended D.F.T | | | | | |
| 干膜厚度测量结果 Measured D.F.T | | | | | |
| 船厂涂层检查员签字: Signature of Builder Inspector: | 油漆服务商签字: Signature of Coating Manufacture: | | 船东代表签字: Signature of Onwer's Supervisor: | | |

A.2 涂装日志（二次表面处理） Coating log (Secondary Surface Preparation)

表A.2 二次表面处理检查表

编页号(Sheet No.):

| | | |
|--|--|---|
| 船舶编号 Hull No. | | |
| 分段号/舱柜编号 Block No./Tank No. | | |
| 检查日期 Inspection Date | | |
| 建造阶段 Construction Stage | 分段阶段 Block Stage <input type="checkbox"/> | 合拢阶段 Erection Stage <input type="checkbox"/> |
| 结构处理 Steel condition | | |
| 锐边 Sharp edges | | 备注: Remarks: |
| 焊道 Welding beads | | |
| 焊接飞溅物 Weld spatter | | |
| 其它表面污染物 Other contamination | | |
| 表面处理 Surface Preparation | | |
| 方法/等级 Method/Grade | | 备注: Remarks: |
| 干球温度 Dry bulb Temp. (°C) | | |
| 湿球温度 Wet bulb temp. (°C) | | |
| 相对湿度 Relative Humidity (%) | | |
| 露点 Dew point (°C) | | |
| 表面温度 Surface Temp. (°C) | | |
| 水溶性盐含量 Water soluble salts (mg/m ²) | | |
| 表面粗糙度 Surface Profiles (µm) | | |
| 灰尘 Dust | | |
| 油污 Oil contamination | | |
| 船厂涂层检查员签字: Signature of Builder Inspector: | 油漆服务商签字: Signature of Coating Manufacture | 船东代表签字: Signature of Onwer's Supervisor: |

A.3 涂装日志（涂装） Coating log (Coating Application)

表A.3 涂装检查表

编页号(Sheet No.):

| | | | | |
|--|--|--------------------------|---|--------------------------|
| 船舶编号 Hull No. | | | | |
| 分段号/舱柜编号 Block No./Tank No. | | | | |
| 建造阶段 Construction Stage | 分段阶段 Block Stage | <input type="checkbox"/> | 合拢阶段 Erection Stage | <input type="checkbox"/> |
| | 第1道涂层 First coat | | 第2道涂层 Second coat | |
| | 施涂前 Before | 施涂后 After | 施涂前 Before | 施涂后 After |
| 检查日期 Inspection Date | | | | |
| 干球温度 Dry bulb Temp. (°C) | | | | |
| 湿球温度 Wet bulb temp. (°C) | | | | |
| 相对湿度 Relative Humidity (%) | | | | |
| 露点 Dew point (°C) | | | | |
| 表面温度 Surface Temp. (°C) | | | | |
| 水溶性盐含量 Water soluble salts (mg/m ²) | | / | | / |
| 灰尘 Dust | | / | | / |
| 油污 Oil contamination | | / | | / |
| 预涂 Stripe coat | | | | |
| 涂料生产厂 Manufacturer | | | | |
| 涂料产品名称 Product name of coating | | | | |
| 产品标识及编号 Product identification mark/number | | | | |
| 备注 Remarks | | | | |
| 船厂涂层检查员签字: Signature of Builder Inspector: | 油漆服务商签字: Signature of Coating Manufacturer: | | 船东代表签字: Signature of Owner's Supervisor: | |

A.4 涂装日志（干膜厚度测量） Coating log (Dry Film Thickness Measurement)

表A.4 干膜厚度测量

编页号(Sheet No.):

| | | | |
|---|---------------------|--|---|
| 船舶编号 Hull No. | | | |
| 分段号/舱柜编号 Block No./Tank No. | | | |
| 建造阶段 Construction Stage | 分段阶段 Block Stage | <input type="checkbox"/> | 合拢阶段 Erection Stage |
| | | <input type="checkbox"/> | |
| 涂层 Coating | | | |
| 涂料生产厂 Manufacturer | | | |
| 涂料产品名称 Product name of coating | | | |
| 产品标识及编号 Product identification mark/number | | | |
| 干膜厚度测量 Dry film thickness measurement | | | |
| 干膜厚度 Dry film thickness (DFT) | | 测量数量 Number of points | 百分比 Ratio |
| 第2道涂层后 After second coat | <90% NDFT | | |
| | 90% NDFT - NDFT | | |
| | ≥90% NDFT | | |
| | Total | | 100% |
| 最大膜厚 (μm) Maximum Thickness (μm) | | | |
| 最小膜厚 (μm) Minimum Thickness (μm) | | | |
| 平均膜厚 (μm) Average Thickness (μm) | | | |
| 备注 Remarks | | | |
| 船厂涂层检查员签字: Signature of Builder Inspector: | | 油漆服务商签字: Signature of Coating Manufacturer: | 船东代表签字: Signature of Owner's Supervisor: |

A.5 不合格报告 Non-Conformity Report

表A.5 检查发现应纠正问题的描述 编页号(Sheet No.):

| | | | | | |
|--|--|--------------------------------|----------------|-------------------------|--|
| 船舶编号 Hull No. | | 分段号/舱柜编号 Block No./Tank No. | | 检查日期 Inspection Date | |
| 结构部位 Part of structure | | | | | |
| 发现情况的描述: Description of findings: | | | | | |
| | | | | | |
| 参考文件（原始记录） Reference document (daily log) | | | | | |
| 发送: Distribution: | | | 签收: Receipt | | |
| 采取的措施: Action taken: | | | | | |
| | | | | | |
| 工作编号: Job No.: | | 日期: Date: | | 签名: Signature: | |

资料性附件录B Annex B

检验报告
Inspection Report

编页号(Sheet No.):

| | | | | |
|---------------------------------|---|---|---------------------------------|--|
| 船名/船舶编号 Vessel Name/Hull No. | | | | |
| 船厂 Name of Shipyard | | | | |
| 序号 No. | 结构部位 Part of Structure (Block/Tank No.) | 检验完成日期 Completion Date of Inspetion | 检验结果 Result of Inspection | 船厂检验员签字 Signature of Coating Manufacture: |
| | | | | 油漆服务商签字 Signature of Coating Manufacture: |
| | | | | 船东代表签字 Signature of Onwer's Supervisor |
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