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NATO INTERNATIONAL STAFF • DEFENCE INVESTMENT DIVISION

APPLICATION PROCESS FOR OPTIMUM PAINT AND COATINGS SYSTEMS' PERFORMANCE

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NORTH ATLANTIC TREATY ORGANISATION

NATO STANDARDIZATION AGENCY (NSA)

NATO LETTER OF PROMULGATION

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1. AEP-59 (Edition 2) – APPLICATION PROCESS FOR OPTIMUM PAINT AND COATINGS SYSTEMS' PERFORMANCE is a non classified publication. The agreement of interested Nations to use this publication is recorded in STANAG 4698 when promulgated.

2. AEP-59 (Edition 2) is effective upon receipt. It supersedes AEP-59(Edition 1), which shall be destroyed in accordance with the local procedure for the destruction of documents.

Juan A. MORENO
Vice Admiral, ESP(N)
Director, NATO Standardization Agency

NATION	SPECIFICATION RESERVATIONS

RECORD OF CHANGES

Change Date	Date Entered	Effective Date	By Whom Entered

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FORWARD

Through contacts with various navies it appears that there are shared objectives, in particular :

- increasing the length of time between dry-dockings (up to 10 years),

- reduction of maintenance, including reducing crew labour.

Higher durability coatings provide the corrosion protection and durability required to meet these goals; however, proper application of the coatings is critical to achieve the maximum life expectancy of these coating products.

The aim of this publication is to register national acceptance of paint and coating application processes and quality control procedures that have been demonstrated to optimize product/system performance. This document establishes baseline requirements of best industrial practices for paints and coatings.

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CHAPTER 1 - INTRODUCTION

This publication describes the lowest risk approach for the application of high performance paints and coatings. It represents the best industrial practices necessary to ensure optimal service life of marine coatings and achieve the most cost effective corrosion control. Member nations should alter or reduce the steps defined within this publication through a rigorous business case and risk analysis methodology. It is well understood that a reduction in quality assurance and process oversight represents increased risk and may require efforts to mitigate the long term effects.

CHAPTER 2 - SCOPE

This Allied Publication is considered as the basis for the cleaning, surface preparation, and application of paint and coating systems to military resources used in marine environments for New Build, and during Life Cycle maintenance and permanent repair. Each nation shall specify critical areas for application of these guidelines which will be followed on national and multinational joint projects.

CHAPTER 3 - NORMATIVE REFERENCES

ISO 2178 Measurement of Coating Thickness — Magnetic Method (Magnetic Substrates).

ISO 2360 Measurement of Coating Thickness — Eddy Current Method (Non-Magnetic Substrates).

ISO 8501 Preparation of Steel Substrates Before Application of Paints and Related Products — Visual assessment of Surface Cleanliness

- Part 1 Rust Grades And Preparation Grades Of Uncoated Steel Substrates And Of Steel Substrates After Overall Removal Of Previous Coatings.
- Part 2 Preparation Grades of Previously Coated Steel Substrates after Localized Removal of Previous Coatings.
- Part 3 Preparation grades of welds, cut edges and other areas with surface imperfections.

ISO 8502 Preparation of Steel Substrates Before Application of Paints and Related Products — Tests for the Assessment Of Surface Cleanliness

- Part 3 Assessment of Dust on Steel Surfaces Prepared for Painting (Pressure-Sensitive Tape Method).
- Part 4 Guidance on the Estimation of the Probability of Condensation Prior to Paint Application
- Part 6 Extraction Of Soluble Contaminants For Analysis — The Bresle Method.
- Part 9 Field method for the Conductometric determination of Water-Soluble Salts.

ISO 8503 Preparation of Steel Substrates Before Application of Paints and Related Products. Surface Roughness Characteristics of Blast-Cleaned Steel Substrates.

- Part 1 Specifications and Definitions for ISO Surface Profile Comparators for the Assessment of Abrasive Blast-Cleaned Surfaces.
- Part 2 Method for the Grading of Surface Profile of Abrasive Blast-Cleaned Steel. Comparator Procedure.
- Part 3 Method for the Calibration of ISO Surface Profile Comparators and for the Determination of Surface Profile. Focusing Microscope Procedure.
- Part 4 Method for the Calibration of ISO Surface Profile Comparators and for the Determination of Surface Profile. Stylus Instrument Procedure.
- Part 5 Replica Tape Method for the Determination of the Surface Profile

ISO 8504 Preparation of Steel Substrates Before Application of Paints and Related Products — Surface Preparation Methods.

- Part 1 General Principles
- Part 2 Abrasive Blast Cleaning
- Part 3 Hand and Power-Tool Cleaning

ISO 9000:2000 Quality Management Systems — Fundamentals and Vocabulary.

ISO 11124 Metallic Blast-Cleaning Abrasives.

ISO 11125 Test Methods for Metallic Blast-Cleaning Abrasives.

ISO 11126 Non-Metallic Blast-Cleaning Abrasives.

ISO 11127 Test Methods for Non-Metallic Blast-Cleaning Abrasives.

ISO 12944 Paint and Varnishes — Corrosion Protection of Steel Structures by Protective Paint System

- Part 7 Execution and supervision of paint work
- Part 8 Development of Specifications for New Work and Maintenance.

ISO 15184 Paints and Varnishes — Determination of Film Hardness by Pencil Test

ISO 19840 Paints and Varnishes – Corrosion Protection of Steel Structures by Protective Paint Systems – Measurement of , and Acceptance Criteria for, the Thickness of Dry Film on Rough Surfaces

Manufacturer’s Paints and Coating Product and Procedure Data Sheet.

Material Safety Data Sheets (MSDSs) for Coating Products

SSPC-SP 12/Nace Nº 5 Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating

CHAPTER 4 - DEFINITIONS

For the purposes of this agreement, the following terms and definitions apply.

4.1 TECHNICAL AUTHORITY (TA)
Organization deciding method, process and material to achieve requirement of performance.

4.2 DESIGNATED GOVERNMENT REPRESENTATIVE (DGR)
Entity with delegated technical authority to establish minimum requirements, process inspections, approve coatings selection and process changes. Specifically designated by the formal assignment of authority to represent the government on matters of application process.

4.3 CONTRACTOR (CTR)
Surface preparation and coating application service provider. CTR is responsible for all coating processes specified in the Allied Publication.

4.4 QUALITY CONTROL PLAN (QCP)
Document developed by CTR and used by inspectors in-process to ensure that the requirements of each checkpoint are successfully met.

4.5 PROCESS CONTROL PROCEDURE (PCP)
A detailed written description of the production process used by the CTR to perform surface preparation and coating application.

4.6 PERSONNEL QUALIFICATION/CERTIFICATION
Defined by each member nation.

4.7 COATING INSPECTOR
A dedicated and competent individual with the necessary combination of training, expertise and experience as defined by each member nation.

CHAPTER 5 - SAFETY

Accomplish the safety precautions as specified in local safety, health, and environmental governing specifications / regulations, and the Job Order during surface preparation and the application of marine coatings.

CHAPTER 6 - PERSONNEL REQUIREMENTS

6.1 BLASTERS' AND PAINTERS' QUALIFICATIONS AND RESPONSIBILITIES

The contractor shall maintain a program for blasters and painters working on the project. The program shall include minimum training requirements and provide for adequate records verifying the completion and currency of training for each blaster or painter involved in surface preparation and application of the coatings. Documentation shall be maintained verifying that only qualified blasters and painters are used for preservation work. Training shall include all blasting and paint application techniques and procedures appropriate to the surface preparation and coating materials used.

6.2 COATING INSPECTOR QUALIFICATIONS

Documentation shall be maintained verifying that only qualified paint inspectors are used for inspecting preservation work. Training shall include all techniques and procedures appropriate to inspecting the surface preparation and coating application being used. These techniques and procedures include determining the acceptability of surface preparation prior to commencement of paint application; determining the degree of compliance with painting procedures appropriate to the surface preparation and coating materials being used; and determining the acceptability of finished products in accordance with established standardized acceptance criteria.

6.3 COATING INSPECTOR RESPONSIBILITIES

Coating inspectors are responsible for providing reasonable confidence that material storage, surface preparation, paint system application and curing are accomplished in accordance with the manufacturer's requirements. These responsibilities require the coating inspector to: inspect material storage facilities; ensure all inspection equipment requiring calibration certification is qualified under organization metrology calibration programs; perform in-process inspections of surface preparation, painting and verify successful completion of checkpoints in the application process; and inspect and accept or reject final paint systems.

6.3.1 Verify Checkpoints and Sign Annexes

DGR shall verify checkpoints and sign all applicable Annexes. Verification may be review of data, witnessing of tests or actual performance of tests by the DGR.

6.3.2 Performance of In-Process Inspections

Contractor (CTR) shall perform all in-process inspections and checkpoints.

6.3.3 Notify DGR of In-Process Inspections

The DGR shall be notified and verify in-process inspections / checkpoints.

6.3.4 Participate in Safety Brief

This situation occurs in case of a maintenance project. Contractor shall participate in a joint Ship's Force and Authority personnel safety brief, when directed by the DGR, prior to the start of recommended Process Control Procedure (PCP).

6.4 IN-PROCESS INSPECTIONS

DGR shall be given prior notice and shall be enabled to perform an inspection. The yard's or paint manufacturer's inspector shall perform an inspection of each coated area when the following checkpoints are reached:

i. QCP,
ii. Pre-Surface Preparation & Cleaning,
iii. Contamination, Containment, and Masking,
iv. Surface Preparation,
v. Paint Storage Area,
vi. Paint Mixing,
vii. Prime Coat, Between Each Successive Coat of Paint,
viii. Topcoat of Paint Applied, and
ix. Area Ready for Final Inspection.

The inspector (DGR) has the right to examine all data maintained by the CTR concerning environmental conditions, surface cleanliness, surface profile, and paint thickness. Data shall be verified, depending on the checkpoint in question, including surface cleanliness, steel dressing of edges, surface profile, dry film thickness and workmanship. Environmental data, such as temperatures, relative humidity and dew point need only be verified if the inspector is doubtful of the recorded values. Deficiencies in personnel training, qualification, record maintenance, equipment maintenance or any matter that is not in accordance with good painting practice shall be recorded. The coating inspector shall verify the successful completion of each checkpoint and sign and date the applicable spaces on Annex 5.

6.5 DEVIATIONS

All surface preparation and coating applications shall be in accordance with delineated guidance herein. Any deviation will require DGR sign-off.

6.6 OVERSIGHT

A DGR authorized representative will provide QA oversight of this process. CTR shall provide the Government QA inspector a minimum of four (4) hour notification of all checkpoints prior to accomplishing the checkpoint.

6.7 CHECKPOINT DEVELOP AND SUBMIT QCP

Develop Quality Control Plan (QCP) in accordance with ISO 12944-8 and submit to DGR for review and comment five (7) days prior to commencement of the coating process.

CHAPTER 7 – REFERENCE AREAS

Reference areas are defined in ISO 12944-7 and -8 as suitable areas on the structure used to :

establish a minimum acceptable standard for the work,
check that data provided by manufacturer or contractor is correct and
enable the performance of the coating to be assessed at any time after completion.

Thus reference areas become the standard against which subsequent surface preparation and paint work is judged. They are also a means of deciding whether the performance of the specified protective paint system is as expected.

Reference areas should preferably be prepared on each important constituent element of the structure. This is achieved by the painting contractor preparing the surface and applying each of the specified coats of paint under supervision by an inspector approved by the specifier, the paint manufacturer and/or the owner, or as otherwise specified. Each step in the preparation and painting shall be approved as complying with the specification before the next step is undertaken.

Different environments are likely to exist at different locations on the structure once the steel structure is operational. The reference areas shall therefore be placed so as to take this into account, e.g. by sitting them in both the potentially most severe and the mildest environments. Reference areas should normally include welds and other joints, edges, corners and any other areas of the structure which are considered to present a high risk of corrosion.

Reference areas shall be clearly and permanently marked by the contractor/applicator. Detailed records of the reference areas shall be kept and steps taken to ensure they are not destroyed, e.g. by overcoating. The size and number of reference areas shall be in reasonable proportion, both practically and economically, to the area of the complete structure and agreed between contracting parties.

All surface preparation and paint application work on reference areas shall be carried out in the presence of representatives of all parties concerned, who shall give their agreement in writing when the reference areas are in accordance with the specification. All reference areas shall be accurately documented and may also be permanently marked on the structure itself.

Reference areas are normally not used for guarantee purposes but may be used for this purpose if agreed between the contracting parties

CHAPTER 8 - RECORD KEEPING

8.1 RECORD KEEPING DURING SURFACE PREPARATION AND PAINT APPLICATION

A permanent record of environmental conditions, surface preparation and paint application operations shall be maintained. Data as indicated on Annexes shall be recorded in agreed format. Environmental information on Annex 1 shall be updated every 4 hours, posted at the job site and an updated copy provided to the coating inspector at each checkpoint for review. The record shall include dates and times of surface preparations and painting operations, air temperatures, surface temperature, relative humidity and dew point. Enter on Annex 3 the abrasive blast media, manufacturer, type and size of abrasive used (when used), and, if ISO 8503-5 is used, the tapes used to measure surface profile.

8.2 UPDATED PCP
Submit updated or changed PCP to the DGR at least three working days prior to implementation for review, clarification and approval.

8.3 COMPLETION OF PROCESS
CTR shall ensure process control documentation provides a record of the data required to control and determine satisfactory completion of the process.

8.4 REVIEW OF RECORDS FOR FINAL COATING EVALUATION
A qualified coating inspector authorized to represent the DGR shall review paint records and Annexes of each area to ensure the CTR has maintained adequate quality control of the painting process. Records reviewed shall include all the test and inspection data required within the Annexes. Failure to produce such records, or records which indicate that surface preparation and painting was not done per governing specifications/instructions, will be grounds for rejection.

CHAPTER 9 - TEMPORARY SERVICES

9.1 TEMPORARY SERVICES
The project will require temporary services such as, but not limited to, lighting, clean compressed air, ventilation, fresh water, electrical services, and crane service. Ensure all equipment is in accordance with safety requirements delineated in this instruction.

9.2 RESTORE LABELS AND MARKINGS
Record and restore existing painted labels, compartment designations, hull markings, and other painted information which will be removed or covered during cleaning and painting operations.

CHAPTER 10 - DATA COLLECTION AND RETENTION

10.1 FORWARDING ANNEXES AND RETENTION OF RECORDS
After the project is completed, forward two copies of the completed Annex forms to the Responsible DGR. Records shall be maintained by the DGR for a minimum period of 3 years.

10.2 LOG OF EQUIPMENT AND MATERIAL USED
Record equipment information and material used in Annex 6. Compare materials used, to paint materials and abrasive blast media (when used), specified in work order or contract.

CHAPTER 11 - LOCALIZED ENVIRONMENTAL CONDITIONS

11.1 MAINTAIN LOCALIZED ENVIRONMENTAL CONDITIONS
Maintain localized environmental conditions in accordance with Manufacturer’s Paints and Coating Product and Procedure Data Sheet. Record measurements in Annex 1.

11.1.1 Maximum Relative Humidity

Do not exceed the Maximum Relative Humidity levels after satisfactory soluble salt conductivity level has been attained and satisfactory visual substrate surface condition has been achieved for specific areas as follows; tanks, voids, and vent plenums - 50%; all other areas - 85%.

11.1.2 Unclear Requirements

If environmental conditions are not provided or are unclear, contact DGR for resolution.

11.2 TEMPERATURES TO BE MAINTAINED FOR PAINT COATING SYSTEMS

Ensure temperatures are within acceptable limits as specified per Manufacturer's Paints and Coating Product and Procedure Data Sheet. If temperatures are not provided or are unclear, contact Responsible DGR for resolution.

CHAPTER 12 - CONTAMINATION CONTAINMENT AND MASKING

12.1 CONTAMINATION CONTAINMENT AND MASKING

The following requirements shall be observed as applicable during surface preparation and painting operations, in addition to the specific requirements of the Job Order, for maintaining cleanliness of the ship, ship's equipment, components, and spaces for the duration of the availability.

12.1.1 Requirements to Prevent Contamination

Prevent contamination and surface damage of the ship's equipment, components, and spaces during contamination-producing operations.

12.1.1.1 Plug, blank, wrap, cover, seal, and mask equipment, components, cables, wire ways, boats, and openings using fire retardant/ water repellent materials, and prevent entry of contaminants to machinery, winches, rigging, machinery surfaces, weapons systems, electrical equipment, electronic equipment, valves, vents not in use, and other openings.

12.1.1.2 Install protective deck covering material conforming to local fire retardant standards.

12.1.1.3 Install fire retardant industrial filter material on the intake of supply and exhaust end of ventilation systems, which will be in use.

12.1.1.4 Remove existing and install new filter or clean the filter material when airflow is restricted.

12.1.1.5 All protective measures are to be in place prior to start of any contamination-producing operations and shall remain in place until the contamination-producing operations are complete.

12.1.1.6 Install double curtain baffles at the entrances of each access where airborne contamination could occur during contamination-producing operations. Install a dirt-collecting mat on the deck directly inside each access. The DGR will select a maximum of four doors. Tag out doors not designated for access.

12.1.1.7 Temporary coverings shall not be removed during contamination-producing operations without permission of the DGR.

12.2 INSPECT PROTECTIVE COATINGS

Inspect the integrity of the protective covering at the beginning of each shift in which contamination-producing operations will be accomplished. Ensure that equipment and machinery have not been infiltrated by contaminants. Notify the DGR immediately by verbal means, followed on the next workday in writing, if contamination or surface damage has occurred. Reseal to prevent further entry of contaminants or surface damage.

12.3 MAINTAIN CLEANLINESS

Maintain cleanliness of the work site free from accumulation of industrial debris caused by contractor and/or subcontractor employees on a continuous basis throughout the availability. Workspaces include those areas immediately under and adjacent, and those areas where service lines are run.

12.3.1 Schedule Cleaning

Area cleaning shall be accomplished no later than at the end of each shift, on a daily basis and prior to any checkpoints.

12.3.2 Remove Debris

Remove and dispose of industrial debris from the ship on a daily basis.

12.4 INITIAL CLEANLINESS WALK-THROUGH

Accomplish an initial walk-through of all locations aboard ship where contractor responsible work will take place, to observe cleanliness conditions. The inspection shall be made jointly with the DGR and the ship's Commanding Officer's representative, and shall take place prior to the commencement of any work by the contractor.

12.4.1 Document Initial Cleanliness Inspection

Submit as required legible copies of a written report of any unclean sites/spaces to the DGR and Commanding Officer of the ship within 72 hours after completion of the inspection.

12.5 IN-PROCESS CLEANLINESS INSPECTION

Accomplish a cleanliness inspection on a daily basis whenever work is in progress. The inspection shall be made jointly with the DGR and the designated representative of the ship's Commanding Officer. During inspection the responsible party shall be assigned. A written report of any unclean work sites/spaces shall be prepared by the contractor and copies distributed to the DGR and Commanding Officer of the ship within four hours after completion of the inspection. The inspection report shall list the responsible activity (contractor, ship, etc.) for each unclean site/area. Unclean sites/areas determined as contractor responsible shall be immediately cleaned.

12.5.1 Accomplish Inspections Daily
Inspections and reporting shall be accomplished during the daily fire prevention and housekeeping inspections.

12.6 COVERING REMOVAL
Remove protective covering upon completion of contamination-producing operations and inspect for presence of contamination or surface damage. Notify the DGR immediately by verbal means, followed on the next workday in writing, if contamination or surface damage has occurred, prior to removal of the contamination and repair of damage.

12.7 REMOVE DEBRIS
Remove from the ship and dispose of debris and foreign matter generated as a result of work being accomplished on this ship and from work being accomplished on other naval and private ships. Comply with the requirements of local laws, codes, regulations, and ordinances or as specified by the DGR

CHAPTER 13 - ISOLATION, BLANKING AND TAGGING REQUIREMENTS

13.1 ISOLATION, BLANKING AND TAGGING REQUIREMENTS
Notify the Commanding Officer's representative in writing of equipment, systems, circuits, components, piping, and valves that require isolation to accomplish specified work before any work is started so that tag-outs can be accomplished as required by ship's instructions.

13.1.1 Verify Sufficient Tags
After Ship's Staff installs tags; verify use of sufficient tags to prevent operation of equipment, systems, circuits, components, piping, or valves from all stations that could exercise control.

13.1.2 Document Tag Verification
A contractor's representative shall print name, badge number, identify company, and sign on a ship's tag-out record sheet and tags after installation, indicating repair activity satisfaction with the completeness of the tag-out and alerting personnel removing tags that contractor concurrence is required.

13.2 SAFETY TAGGING
Post warning signs and barriers and install temporary positive means to prevent closure or movement of components that create a safety hazard.

13.3 ISOLATION AND BLANKING
Do not disturb, modify, remove, energize, or operate any switch, fitting, valve, or other equipment affixed with a ship's isolation or DANGER tag.

13.3.1 DANGER Tags
Do not remove or relocate ship's isolation or DANGER tags.

13.3.2 Notify When Work Complete
Notify the Commanding Officer's representative immediately when the contractor's work is complete and the system, piping, or circuit is ready for activation to accomplish removal of tags.

13.3.3 Concur on Tag Removal
The contractor's representative shall sign the ship's tag-out log sheet to show concurrence in tag removal and clearance before removal.

13.3.4 Verify Tags Removed
Verify removal and clearance of all isolation or DANGER tags in accordance with ship's instruction before the equipment is operationally tested or operated.

CHAPTER 14 - PRE-SURFACE PREPARATION

14.1 PRE-WORK SURVEY
Prior to commencement of work, the DGR will provide an authorized representative to conduct a structural inspection for the entire area to be prepared. Heavily rusted or corroded area, damaged metal and holes in the structure or piping shall be documented and provided to Ship's Staff and Responsible Contracting DGR to determine if further structural evaluation or Non-Destructive Testing (NDT) is warranted and for possible repair before surface preparation.

14.2 SURFACE CONDITION
Before surface preparation the DGR shall verify that all welds, protrusions, projections and spikes meet the requirements of ISO 8501-3 level 1, 2 or 3 as required.

14.3 DEGREASE AND FRESH WATER WASH DOWN
Prior to surface preparation, remove all surface contaminants such as sea salts, grease and oil (hydrocarbons), loose rust, mud and marine growth with 20 MPa minimum fresh water wash down. Use vacuum to remove standing water followed by an adequate period of time to allow the surface to dry prior to surface preparation.

14.4 CHECKPOINT PRE-SURFACE PREPARATION INSPECTION

14.4.1 Check for Oil Contamination
Inspect surfaces to be coated for visible contamination with oil or grease.

14.4.1.1 Remove large grease deposits by first scraping then wipe or scrub the surface with solvent wetted brushes or rags. Detergent or alkaline cleaners may also be used, ensure all detrimental residues of cleaners are removed after degreasing is complete.

14.4.2 Structural and Pre-Surface Conditioning
Verify all surfaces within the scope of the project comply to conditions specified in 14.1 and 14.2.

14.4.3 Contamination Containment and Masking
Verify all surfaces within the scope of the project are in accordance with 12.1 through 12.7.

CHAPTER 15 - SURFACE PREPARATION

15.1 MONITOR ENVIRONMENTAL CONDITIONS
Monitor environmental conditions throughout surface preparation operations to ensure they meet requirements as specified in 11.1 through 11.2. Record measurements in Annex 1.

15.2 METHOD 1, ABRASIVE BLASTING
Accomplish the overhaul surface preparation requirements of ISO 8501-1, for the location/area being prepared. Minimum requirement is Sa 2 ½. The blast media must meet the requirements specified in local instructions, or have written authorization for use from DGR. Accomplish a surface profile as specified by coating manufacturer's data sheet. Blast media shall comply with ISO 11124, ISO 11125, ISO 11126, or ISO 11127 as specified by local instructions.

15.3 METHOD 2, ULTRA-HIGH PRESSURE WATER JETTING
Accomplish overhaul surface preparation requirements of SSPC-SP 12/Nace Nº 5 WJ-2L for the location/area being prepared Ensure environmental conditions meet the requirements of 11.1 through 11.2.

15.3.1 Verify Conductivity
The conductivity level of the water used for UHP water jetting can affect the final surface conductivity. If high surface conductivity levels are encountered, verify that the conductivity level of the process water is not the cause of surface contamination. In practice, process water conductivity levels of 200µS/cm (microsiemens/cm) have been effective in reducing or preventing elevated substrate conductivity measurements.

15.3.2 Blow Down
For UHP water jetted area a blow down is required; using dry, oil free compressed air, blow down all horizontal and vertical surfaces, starting at the top working downward.

15.3.3 Restore Profile
For areas prepared to UHP WJ, surfaces will retain the surface profile prior to surface treatment. In areas where the substrate is below the profile, use a profile producing power tool or abrasive blasting to achieve the required profile.

15.4 POWER TOOL CLEANING ON SURFACES WHERE METHODS 1 OR 2 ARE NOT APPLICABLE

15.4.1 Accomplish Very Thorough Hand and Power Tool Cleaning
Accomplish the requirements of ISO 85011 and -2, St-3, (Very Thorough Hand and Power Tool Cleaning). In additionally to the ISO 8501-1 and -2 requirements, remove all of the following: mill scale, rust, coatings, and foreign matter. If substrate is pitted, slight residues

of paint and rust may be left in the lower portion of the pits. Ensure environmental conditions meet the requirements of 11.1 through 11.2. Preparation accomplished using devices such as needle guns, sanding disk, or power wire brushes that burnish, polish or smooth the surface are not authorized. Accomplish a surface profile of 25 microns (µm) minimum (ISO 8503-5).

15.4.2 Feather Adherent Paint

Feather edges of adherent paint in adjacent areas remaining after cleaning.

15.5 CHECKPOINT SURFACE PREPARATION

The records shall show the extent of the inspection and detailed results. The degree of surface cleanliness shall be in accordance with the ISO surface preparation standard specified; environmental conditions, surface profile, soluble salt measurements, and adequacy of cleanup operations shall be recorded. The inspections shall be conducted to standardized acceptance criteria. Visual aids, such as ISO 8501, may be used to ensure quality standards are met. Enter data on all applicable Annexes.

NOTE: Flash rusting shall not exceed the flash rust level of “Light”. If flash rusting occurs, the extent of the flash rust will determine the correct method of managing the flash rust. Methods to reduce the flash rust to acceptable levels include UHP Water Jetting to UHP WA 2.5, solvent wiping, or HAND wire brushing the surface to the satisfaction of the DGR.

15.5.1 Surface Profile Measurements

Accomplish in accordance with ISO 8503. Record two measurements for every 100 m2 of prepared area. Abrasive manufacturer, type and mesh size used shall be documented in Annex 3 in addition to test report data required by the specific part of 8503 used to measure surface profile.

15.5.2 Soluble Salt Measurements Concentration Testing

CTR shall use a method of soluble salt extraction (e.g. ISO 8502-6) and conductometric technique (e.g. ISO 8502-9) approved by the DGR. For immersed applications, concentration due to soluble salts (total ionic) shall not exceed 5ug/cm2. For non-immersed applications, concentration due to soluble salts (total ionic) shall not exceed 10ug/cm2

15.5.2.1 If conductivity measurements for surfaces prepared to an ISO-8501-1, Sa 2 ½ exceed the respective values, water wash using a minimum of 21 MPa fresh water. Soluble salt conductivity limit of the process water should not exceed 200µS/cm (microsiemens/cm) . To ensure effective low-pressure water washing, the operator shall maintain the wand within a maximum distance of 50 mm to the substrate. The angle of the wand relative to the substrate shall be maintained between 45º - 90º. Remove all standing water, dry the area, and retest. If flash rusting has occurred, or/and soluble salt conductivity still exceed limits rewash, dry the area and retest. If the soluble salt conductivity limit is not reached after two washes, then perform water wash to the affected areas. Repeat water wash and retest until satisfactory levels are obtained. If flash rusting exceeds condition “L”, re-UHP the area and retest.

15.5.2.2 If conductivity measurements for surfaces prepared to an UHP Water-Jetting, exceed the respective values, repeat UHP Water Jetting to the affected areas. Remove all

standing water, dry the area, and retest. If flash rusting has occurred, re-UHP Water-Jet the area and retest. Repeat UHP Water-Jetting until satisfactory levels are obtained. If flash rusting exceeds condition “L”, repeat UHP Water-Jetting to the area and retest.

15.5.2.3 If conductivity measurements for surfaces prepared to an ISO 8501-2, St-3, in an isolated area exceed the respective values, circle area and perform requirements of ISO 8504-3 followed by retest. For ISO 8501-2, St. 3 prepared surfaces not practical for the spot cleaning method, water wash with copious amounts of fresh water using hand scrub brush. Soluble salt conductivity limit of the fresh water should not exceed 200µS/cm (microsiemens/cm). Remove all standing water and dry the affected area. Disk sand to remove all rust. Perform a solvent wipe on all sanded areas and retest. If the soluble salt conductivity limit is not reached after two (2) washes, then perform water wash to the affected areas using water of sufficiently low conductivity to achieve desired surface cleanliness. Repeat necessary steps until satisfactory levels are obtained.

15.5.3 Localized Environmental Conditions
Verify environmental conditions were monitored and maintained in accordance with 11.1 through 11.2.

15.5.4 Contamination Containment and Masking
Verify all surfaces within the scope of the project are in accordance with 12.1 through 12.7 prior to the application of paint. Surfaces must be clean and free of debris and dust quantity rating “2” or better and size class “2” or better when evaluated in accordance with ISO 8502-3.

15.5.5 Rescheduling Checkpoints
All tests and inspections noting unsatisfactory conditions shall result in the termination and rescheduling of the checkpoint. At rescheduled checkpoint, the DGR’s QA Inspector will document satisfactory corrective actions taken to correct discrepancy.

15.5.6 Update Annexes
In order to pass the checkpoint, Annexes 1-3 and 5 shall be up to date and submitted to the DGR’s QA Inspector. DGR’s QA Inspector will update Annex 5.

CHAPTER 16 - PAINTING REQUIREMENTS

16.1 WET FILM MEASUREMENTS
During application, spray applicators shall monitor wet film thickness using wet film gauges. Random wet film thickness (WFT) measurements shall be taken during the application process to ensure the specified dry film thickness (DFT) is achieved.

16.2 DRY FILM THICKNESS MEASUREMENTS
Accomplish Dry Film Thickness (DFT) measurements in accordance with ISO 2808 Method 6A, 6B, or 7 depending on coating being applied and substrate material. Document measurements in Appendix 4. Sampling rate methodology and acceptance criteria for DFT measurements shall be in accordance with ISO 19840.

16.3 RECOAT PERIODS

Applicator shall make every effort to conform to manufacturer's minimum and maximum recoat periods in accordance with Manufacturer's Paints and Coating Product and Procedure Data Sheet. If the recoat window is exceeded, follow steps specified in 16.8. If the minimum recoat window is not observed the coating must be removed and reapplied.

16.4 DRY PAINT FOR CHECKPOINTS

Paint shall be dry prior to all paint related checkpoints. Dry film shall be defined as pencil hardness measured in accordance with ISO 15184).

16.5 OUT OF SPECIFICATION DRY FILM THICKNESS

Failure to meet minimum DFT requirements will be corrected by application of an additional coat or coats of paint in deficient areas as necessary to meet DFT requirements. Excessive film thickness (defined as twice the nominal DFT requirement) will be reported immediately to DGR for resolution.

16.5.1 DFT of High Solids, Edge Retentive Coatings

For high solids, edge retentive coating system, widespread DFT greater than twice nominal is considered to be excessive. DFT up to three times nominal on scattered 10% of the surface area of complex geometric areas is acceptable.

16.6 CHECKPOINT PAINT STORAGE

Accomplish a visual inspection of paint storage facilities 24 hours prior to paint mixing to verify that the storage temperature complies within the minimum and maximum range allowed in accordance with Manufacturer's Paints and Coating Product and Procedure Data Sheet. The paint storage temperature shall be monitored and recorded in Annex 1 once per shift for 24 hours prior to the paint being used.

16.7 PAINT APPLICATION

The use of single or plural component spray equipment is acceptable for application of paint coats specified below.

16.7.1 Contrasting Colours

When applying prime, stripe, intermediate and topcoat, each must be of a contrasting colour.

16.7.2 Mixing

Mix all paint material thoroughly in their individual container to disperse pigments and assure homogeneity. Combine and thoroughly mix multi-components prior to use in accordance with Manufacturer's Paints and Coating Product and Procedure Data Sheet.

16.7.3 CHECKPOINT Mixing

Accomplish a visual inspection of paint material to verify proper mixing.

16.7.3.1 Verify shelf life of material has not expired. Record expiration date in Annex 6.

16.7.3.2 Verify material is within the mixing temperature as specified in accordance with Manufacturer's Paints and Coating Product and Procedure Data Sheet. Document temperatures in Annex 1.

16.7.3.3 Verify material is mixed thoroughly prior to use in accordance with Manufacturer's Paints and Coating Product and Procedure Data Sheet. Record satisfactory completion in Annexes 5 and 6.

16.7.4 Environmental Conditions

Monitor environmental conditions throughout painting operations to ensure they meet requirements as specified in 11.1 through 11.2. Record measurements in Annex 1.

16.8 REPAIRS

16.8.1 Repairs Made To Paint Within Manufacturer's Recoating Time Period

16.8.1.1 Surfaces in which holidays and mechanical damage extends into the substrate shall be prepared to ISO-8501, minimum solvent wipe and visual cleanliness inspection, St-3. In addition to the ISO-8501 requirements, remove all of the following; mill scale, rust, paint coating, and foreign matter. If substrate is pitted, slight residues of paint and rust may be left in the lower portion of the pits. Ensure requirements of 11.1 through 11.2 are met during coating repair. Surface preparation devices such as needle guns, worn sanding disk, or power wire brushes that burnish, polish or smooth the surface are not permitted. The power tool prepared surface shall be feathered into the surrounding intact paint, creating a smooth transition.

16.8.1.2 Surfaces in which the mechanical damage does not extend into the substrate shall be solvent wiped to clean.

16.8.1.3 Hand brush, or, in larger areas, airless spray the coating system in accordance with Manufacturer's Paints and Coating Product and Procedure Data Sheet.

16.8.2 Repairs Made To Paint Beyond the Manufacturer's Recoating Time Period

16.8.2.1 Surfaces in which mechanical damage extends into the substrate shall be prepared ISO 8501-2, St-3. In addition to the ISO 8501-2 requirements, remove all of the following; mill scale, rust, paint coating, and foreign matter. If substrate is pitted, slight residues of paint and rust may be left in the lower portion of the pits. Ensure requirements of 11.1 through 11.2 are met during coating repair. Surface preparation devices such as needle guns, worn sanding disk, or power wire brushes that burnish, polish or smooth the surface are not permitted. The power tool prepared surface shall be feathered into the surrounding intact paint, creating a smooth transition.

16.8.2.2 The painted surfaces surrounding the Power Tool Cleaned surface that have exceeded the recoating time period must be roughened to provide a surface profile.

16.8.2.3 Painted surfaces in which the mechanical damage does not extend into the substrate must have the surrounding painted surface roughened to provide a surface profile.

NOTE: NO PAINT SHALL BE APPLIED TO A PAINTED SURFACE THAT HAS EXCEEDED THE RECOAT PERIOD WITHOUT THE PROPER REACTIVATING PROCEDURES BEING FOLLOWED.

NOTE: PAINT ONLY REACTIVATED PAINT SURFACES.

16.8.2.4 Hand brush, or, in larger areas, airless spray the coating system in accordance with Manufacturer's Paints and Coating Product and Procedure Data Sheet.

16.8.2.5 Allow for proper drying time as per the manufacturer's instructions after the application of each coat (including damaged touch-up areas).

CHAPTER 17 - PRIMER COAT APPLICATION

17.1 CHECKPOINT SURFACE CLEANLINESS
Verify surface cleanliness and flash rust condition meets applicable standard.

17.2 APPLY PRIME COAT
Apply prime coat in accordance with Manufacturer's Paints and Coating Product and Procedure Data Sheet. During application, immediately brush out any runs, drips, sags or puddles.

17.3 CHECKPOINT PRIME COAT
Verify prime coat is applied in accordance with Manufacturer's Paints and Coating Product and Procedure Data Sheet.

17.3.1 Holiday Inspection
Accomplish a visual holiday inspection of prime coat.

17.3.2 Dry Film Thickness
Accomplish dry film thickness measurements in accordance with ISO 2178, ISO 2360 or ISO 19840 depending on substrate material.

17.3.3 Out of Specification Conditions
All tests and inspections noting unsatisfactory conditions shall result in the termination and rescheduling of the checkpoint. At rescheduled checkpoint, the DGR's QA Inspector will document satisfactory corrective actions taken to correct discrepancy.

17.3.4 Successful Checkpoint Completion
In order to pass the checkpoint, Annexes 1, 4, 5 and 7 shall be up to date and submitted to the DGR's QA Inspector. DGR's QA Inspector will update Annex 5.

CHAPTER 18 - STRIPE COAT APPLICATION (WHEN REQUIRED BY DGR):

18.1 STRIPE COAT DEFINITION
A coating system may consist of two or three full coats of anticorrosive and one or two stripe coats. Stripe coats are applied to edges of structure, welds, drain holes and other areas where paint coverage is difficult or non-uniform.

18.2 AMINE BLOOM CHECK
Check for evidence of amine bloom such as discoloration of paint coating or clear, oily film. If evidence of amine bloom is present, perform low-pressure water wash or wipe surfaces clean using 30% ethanol and 70% water mixture.

18.3 APPLY STRIPE COAT
Apply specified stripe coat with typical paint equipment in accordance with Manufacturer's Paints and Coating Product and Procedure Data Sheet. Stripe coat by brush in areas not accessible by paint spray equipment. During application, immediately brush out any runs, drips, sags or puddles.

18.4 CHECKPOINT STRIPE COAT
Verify stripe coat is applied in accordance Manufacturer's Paints and Coating Product and Procedure Data Sheet.

18.4.1 Holiday Inspection
Accomplish a visual holiday inspection of stripe coat. Stripe coat shall have no through-thickness holidays.

18.4.2 Out of Specification Conditions
All tests and inspections noting unsatisfactory conditions shall result in the termination and rescheduling of the checkpoint. At rescheduled checkpoint, the QA Inspector will document satisfactory corrective actions taken to correct discrepancy.

18.4.3 Successful Checkpoint Completion
In order to pass the checkpoint, Annexes 1, 4, 5 and 7 shall be up to date and submitted to the DGR's QA Inspector. DGR's QA Inspector will update Annex 5.

CHAPTER 19 - INTERMEDIATE COAT APPLICATION (WHEN APPLICABLE)

19.1 AMINE BLOOM CHECK
Check for evidence of amine bloom such as discoloration of paint coating or clear, oily film. If evidence of amine bloom is present, perform low-pressure water wash or wipe surfaces clean using a 30% ethanol and 70% water mixture.

19.2 APPLY INTERMEDIATE COAT
Apply intermediate coat in accordance Manufacturer's Paints and Coating Product and Procedure Data Sheet. During application, immediately brush out any runs, drips, sags or puddles.

19.3 CHECKPOINT INTERMEDIATE COAT
Verify intermediate coat is applied in accordance with Manufacturer's Paints and Coating Product and Procedure Data Sheet.

19.3.1 Holiday Inspection
Accomplish a visual holiday inspection of intermediate coat.

19.3.2 Dry Film Thickness
Accomplish dry film thickness measurements in accordance with ISO 2178, ISO 2360 or ISO 19840depending on substrate material.

19.3.3 Out of Specification Conditions
All tests and inspections noting unsatisfactory conditions shall result in the termination and rescheduling of the checkpoint. At rescheduled checkpoint, the DGR's QA Inspector will document satisfactory corrective actions taken to correct discrepancy.

19.3.4 Successful Checkpoint Completion
In order to pass the checkpoint, Annexes 1, 4, 5 and 7 shall be up to date and submitted to the DGR's QA Inspector. DGR's QA Inspector will update Annex 5.

CHAPTER 20 - SECOND STRIPE COAT APPLICATION (WHEN REQUIRED BY DGR)

20.1 AMINE BLOOM CHECK
Check for evidence of amine bloom such as discoloration of paint coating or clear, oily film. If evidence of amine bloom is present, perform low-pressure water wash or wipe surfaces clean using a 30% ethanol and 70% water mixture.

20.2 APPLY SECOND STRIPE COAT
Apply specified stripe coat with typical paint equipment IAW Ref. 1.c. Stripe coat by brush in areas not accessible by paint spray equipment. During application, immediately brush out any runs, drips, sags or puddles.

20.3 CHECKPOINT SECOND STRIPE COAT
Verify stripe coat is applied in accordance with Manufacturer's Paints and Coating Product and Procedure Data Sheet.

20.3.1 Holiday Inspection
Accomplish a visual holiday inspection of stripe coat. Stripe coat shall have no through-thickness holidays.

20.3.2 Out of Specification Conditions
All tests and inspections noting unsatisfactory conditions shall result in the termination and rescheduling of the checkpoint. At rescheduled checkpoint, the QA Inspector will document satisfactory corrective actions taken to correct discrepancy.

20.3.3 Successful Checkpoint Completion
In order to pass the checkpoint, Annexes 1, 4, 5 and 7 shall be up to date and submitted to the DGR's QA Inspector. DGR's QA Inspector will update Annex 5.

CHAPTER 21 - TOPCOAT APPLICATION

NOTE: Removable ship components and equipment topcoated with epoxy paints should not be stored in locations subject to direct UV exposure. Failure to prevent such exposure could result in significant colour change.

21.1 AMINE BLOOM CHECK
Check for evidence of amine bloom such as discoloration of paint coating or clear, oily film. If evidence of amine bloom is present, perform low-pressure water wash or wipe surfaces clean using 30% ethanol and 70% water mixture.

21.2 APPLY TOPCOAT
Apply topcoat in accordance with Manufacturer's Paints and Coating Product and Procedure Data Sheet. During application, immediately brush out any runs, drips, sags or puddles.

21.3 CHECKPOINT TOPCOAT
Verify top-coat is applied in accordance with Manufacturer's Paints and Coating Product and Procedure Data Sheet.

21.3.1 Holiday Inspection
Accomplish a visual holiday inspection of topcoat.

21.3.2 Dry Film Thickness
Accomplish dry film thickness measurements in accordance with ISO 2178, ISO 2360 or ISO 19840 depending on substrate material.

21.3.3 Out of Specification Conditions
All tests and inspections noting unsatisfactory conditions shall result in the termination and rescheduling of the checkpoint. At rescheduled checkpoint, the DGR's QA Inspector will document satisfactory corrective actions taken to correct discrepancy.

21.3.4 Successful Checkpoint Completion
In order to pass the checkpoint, Annexes 1, 4, 5 and 7 shall be up to date and submitted to the DGR's QA Inspector. DGR's QA Inspector will update Annex 5.

CHAPTER 22 – FINAL INSPECTION

22.1 CHECKPOINT FINISHED PAINTED SURFACES

22.1.1 Dry Film Thickness

Accomplish final dry film thickness measurements in accordance with ISO 2178, ISO 2360 or ISO 19840 depending on substrate material.

22.1.2 Coating Imperfections

Coating imperfections found, which may cause premature coating failure, shall be corrected before the paint system is accepted using appropriate touch-up procedures specified in paragraph 16.8. Slight imperfections in the coating system, as defined by the DGR, are allowable, as long as they are not below minimum Dry Film Thickness requirements.

22.1.3 Successful Checkpoint Completion

In order to pass the checkpoint, any Annexes required by the qualified coating inspector shall be up-to-date or completed and submitted to the DGR's QA Inspector. The DGR's QA Inspector shall update Annex 5. All test inspections noting unsatisfactory conditions shall be corrected.

22.2 REMOVE MASKING

Remove masking and protective coverings that were installed prior to surface preparation and painting operations.

ANNEX 1 - INSPECTION FORM - ENVIRONMENTAL READINGS IN ACCORDANCE WITH ISO 8502-4

MAINTAIN SEPARATE LOG FOR EACH AREA/LOCATION, PREPARED OR PAINTED SURFACE, WHEN AN AREA IS DIVIDED INTO SEPARATE SECTIONS MAINTAIN A SEPARATE LOG FOR EACH SECTION				
SHIP:				
INSTALLATION LOCATION:				
COATING BEING APPLIED:				
REQUIREMENTS:	SURFACE TEMPERATURE		RELATIVE HUMIDITY	
EACH ENTRY SHALL BE SIGNED BY TRADE MONITOR, FORMAN, OR QUALIFIED PAINT INSPECTOR				

Date	Time	Process Activity (Surface Preparation, Prime Coat, etc.)	Measurement Location	Highest and Lowest Surface Temperature (°C)	Wet Bulb (°C)	Dry Bulb (°C)	% RH	Dew Point (°C)
ABOVE READINGS TAKEN BY:	PRINT NAME							
	SIGNATURE							
ABOVE READINGS TAKEN BY:	PRINT NAME							
	SIGNATURE							
ABOVE READINGS TAKEN BY:	PRINT NAME							
	SIGNATURE							
ABOVE READINGS TAKEN BY:	PRINT NAME							
	SIGNATURE							
ABOVE READINGS TAKEN BY:	PRINT NAME							
	SIGNATURE							
ABOVE READINGS TAKEN BY:	PRINT NAME							
	SIGNATURE							
ABOVE READINGS TAKEN BY:	PRINT NAME							
	SIGNATURE							
UTILIZE ADDITIONAL COPIES OF THIS FORM AS NECESSARY TO DOCUMENT ALL ENVIRONMENTAL CONDITIONS								

ANNEX 2 - INSPECTION FORM - SURFACE SOLUBLE SALT CONDUCTIVITY READINGS IN ACCORDANCE WITH ISO 8502, PARTS 6 AND 9

MAINTAIN SEPARATE LOG FOR EACH AREA/LOCATION, PREPARED OR PAINTED SURFACE, WHEN AN AREA IS DIVIDED INTO SEPARATE SECTIONS MAINTAIN A SEPARATE LOG FOR EACH SECTION		
SHIP:		
INSTALLATION LOCATION:		
COATING BEING APPLIED:		
REQUIREMENTS:	Immersed Applications: ≤5 µg/cm2	Non-Immersed Applications: ≤10 µg/cm2
PATCH SIZE USED:		

DISTILLED OR DEIONIZED WATER SHALL BE USED AS SOLVENT FOR EXTRACTION OF SOLUBLE CONTAMINENTS

Date	Location	Volume H2O Used (mL)	Temperature (°C)	Conductivity (µS/cm)	Salt Density (µg/cm2)

ABOVE READINGS TAKEN BY:	PRINT NAME	
	SIGNATURE	
DGR ACCEPTANCE OF DATA:	PRINT NAME	
	SIGNATURE	

ANNEX 3 - INSPECTION FORM - SURFACE PROFILE MEASUREMENTS IN ACCORDANCE WITH ISO 8503

MAINTAIN SEPARATE LOG FOR EACH AREA/LOCATION, PREPARED OR PAINTED SURFACE, WHEN AN AREA IS DIVIDED INTO SEPARATE SECTIONS MAINTAIN A SEPARATE LOG FOR EACH SECTION					
SHIP:				DATE:	
INSTALLATION LOCATION:					
COATING BEING APPLIED:					
REQUIREMENTS:	SURFACE PROFILE REQUIRED BY MANUFACTURER'S DATA SHEET (µm):				
SPECIFICATION USED:	ISO 8503 Part:		ISO Revision Date:		
ABRASIVE INFORMATION					
MANUFACTURER:		TYPE:		MESH:	
DOCUMENT TEST REPORT INFORMATION REQUIRED BY THE SPECIFIC PART OF ISO 8503 THAT IS USED FOR SURFACE PROFILE DETERMINATION					
AVERAGE SURFACE PROFILE (µm) OF THIS AREA:					
ABOVE READINGS TAKEN BY:	PRINT NAME				
	SIGNATURE				
DGR ACCEPTANCE OF DATA:	PRINT NAME				
	SIGNATURE				
UTILIZE ADDITIONAL COPIES OF THIS FORM AS NECESSARY TO DOCUMENT ALL SURFACE PROFILE MEASUREMENTS					

ANNEX 4 - INSPECTION FORM - DRY FILM THICKNESS MEASUREMENTS IN ACCORDANCE WITH ISO 2178, 2360, OR 19840

MAINTAIN SEPARATE LOG FOR EACH AREA/LOCATION, PREPARED OR PAINTED SURFACE, WHEN AN AREA IS DIVIDED INTO SEPARATE SECTIONS MAINTAIN A SEPARATE LOG FOR EACH SECTION					
SHIP:			DATE:		
INSTALLATION LOCATION:					
COATING BEING APPLIED:					
REQUIREMENTS:	Nominal Dry Film Thickness Range (µm):				
(circle one) ISO 2808 Method:	6A		6B		7
DFT GAGE INFORMATION:	Manufacturer:		Serial Number:		
	Calibration Date:		Calibration Due Date:		
(circle one) COAT BEING APPLIED:	Prime Coat		Stripe Coat after Prime Coat		
	Intermediate Coat		Stripe Coat after Intermediate Coat		
	Top Coat		Other (identify):		

Sample Surface In Accordance With ISO 19840					
Individual Reading	Correction Value (if necessary)	Individual Dry Film Thickness	Individual Reading	Correction Value (if necessary)	Individual Dry Film Thickness
Nominal Dry Film Thickness				Mean Dry Film Thickness:	

ABOVE READINGS TAKEN BY:	PRINT NAME	
	SIGNATURE	
DGR ACCEPTANCE OF DATA:	PRINT NAME	
	SIGNATURE	

ANNEX 5 - INSPECTION LOG - CHECKPOINT ACCEPTANCE SIGN-OFF

MAINTAIN SEPARATE LOG FOR EACH AREA/LOCATION, PREPARED OR PAINTED SURFACE, WHEN AN AREA IS DIVIDED INTO SEPARATE SECTIONS MAINTAIN A SEPARATE LOG FOR EACH SECTION			
SHIP:			
INSTALLATION LOCATION:			
COATING BEING APPLIED:			
ALL CHECKPOINTS MUST BE SIGNED BY CERTIFIED COATINGS INSPECTOR AND DGR TO PASS CHECKPOINTS			
Quality Control Plan Demonstrated and Accepted		Date:	Time:
CTR CERTIFIED INSPECTOR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME		
	SIGNATURE		
DGR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME		
	SIGNATURE		
Pre-Surface Preparation Inspected and Accepted		Date:	Time:
CTR CERTIFIED INSPECTOR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME		
	SIGNATURE		
DGR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME		
	SIGNATURE		
Surface Preparation Inspected and Accepted		Date:	Time:
CTR CERTIFIED INSPECTOR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME		
	SIGNATURE		
DGR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME		
	SIGNATURE		
Paint Storage Area Inspected and Accepted		Date:	Time:
CTR CERTIFIED INSPECTOR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME		
	SIGNATURE		
DGR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME		
	SIGNATURE		
Paint Mixing Inspected and Accepted		Date:	Time:
CTR CERTIFIED INSPECTOR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME		
	SIGNATURE		
DGR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME		
	SIGNATURE		

FORM CONTINUES ON NEXT PAGE

FORM CONTINUED FROM PREVIOUS PAGE				
SHIP:				
INSTALLATION LOCATION:				
COATING BEING APPLIED:				
ALL CHECKPOINTS MUST BE SIGNED BY CERTIFIED COATINGS INSPECTOR AND DGR TO PASS CHECKPOINTS				
Prime Coat Inspected and Accepted			Date:	Time:
CTR CERTIFIED INSPECTOR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME			
	SIGNATURE			
DGR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME			
	SIGNATURE			
Stripe Coat after Prime Coat Inspected and Accepted (if applicable)			Date:	Time:
CTR CERTIFIED INSPECTOR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME			
	SIGNATURE			
DGR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME			
	SIGNATURE			
Intermediate Coat Inspected and Accepted (if applicable)			Date:	Time:
CTR CERTIFIED INSPECTOR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME			
	SIGNATURE			
DGR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME			
	SIGNATURE			
Stripe Coat After Intermediate Coat Inspected and Accepted (if applicable)			Date:	Time:
CTR CERTIFIED INSPECTOR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME			
	SIGNATURE			
DGR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME			
	SIGNATURE			
Top Coat Inspected and Accepted			Date:	Time:
CTR CERTIFIED INSPECTOR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME			
	SIGNATURE			
DGR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME			
	SIGNATURE			
Finished Painted Surface Inspected and Accepted			Date:	Time:
CTR CERTIFIED INSPECTOR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME			
	SIGNATURE			
DGR ACCEPTANCE OF CHECKPOINT AS SATISFACTORY:	PRINT NAME			
	SIGNATURE			

ANNEX 6 - INSPECTION LOG - PAINT APPLICATION EQUIPMENT AND PAINT CONSUMPTION

MAINTAIN SEPARATE LOG FOR EACH AREA/LOCATION, PREPARED OR PAINTED SURFACE, WHEN AN AREA IS DIVIDED INTO SEPARATE SECTIONS MAINTAIN A SEPARATE LOG FOR EACH SECTION					
SHIP:					
INSTALLATION LOCATION:					
COATING BEING APPLIED:					
IF INFORMATION REQUESTED BELOW IS NOT APPLICABLE INDICATE IN SPACE PROVIDED					
	Prime Coat	Stripe Coat	Intermediate Coat	Stripe Coat	Top Coat
Airless Paint Hose Size					
Airless Paint Hose Length					
Airless Tip Orifice Diameter/Fan Width					
Airless Pump Used and Model – Plural Airless					
Airless Pump Used and Model – Conventional Airless					
Airless Pump Ratio					
Plural Component Pump Ratio (indicate if fixed or variable)					
Inline Heater Temperatures – Temperature (°C) Setting					
Inline Heater Temperatures – Temperature (°C) at Spray Tip					
Coating Applied					
Coating Manufacturer					
Expiration Date					
Colour Applied					
Coating VOC					
Base Portion Batch Number (Part A)					
Hardener Portion Batch Number (Part B)					
Litres Used per Coat					
Square Meters Painted					