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| REINSPECTION OF SEAL COATED AND FINISH COATED STEEL SUBSTRATES FOR WHICH DOCUMENTATION IS MISSING OR DISCREPANT | PREPARED BY: <u>Conrad Williams</u> | DATE: <u>7/13/83</u> | APPROVED BY: <u>W. E. [Signature]</u> <u>7/13/83</u> DATE: <u>7/14/83</u> | |

1.0 REFERENCES

- 1-A Nonconformance Report Numbers C-81-01370 through C-81-01373 and C-81-01567
- 1-B CP-QP-18.0, "Inspection Reports"
- 1-C CCP-30, "Coating Steel Substrates Inside Reactor Buildings and Radiation Areas"
- 1-D CCP-30A, "Coating Steel Substrates Inside Reactor Buildings and Radiation Areas"
- 1-E QI-QP-11.4-1, "Inspection of Steel Substrate Surface Preparation and Primer Application"
- 1-F QI-QP-11.4-5, "Inspection of Steel Substrate Primer Repair and Seal and Finish Coat Application and Repair"
- 1-G CP-QP-15.0, "Tagging System"

2.0 GENERAL

2.1 PURPOSE AND SCOPE

This instruction shall describe methods utilized by Quality Control in the measurement of the dry film thickness (DFT) and adhesion to steel substrates of existing seal or finish coat applications described in Reference 1-A using the Mark II Tooke Gage and the Elcometer 106 Adhesion Tester respectively. The above tests are destructive in nature which will necessitate a repair of the coating system at each spot test location.

3.0 INSTRUCTION

For each seal or finish coated steel item or component for which documentation is missing or discrepant, the tests discussed in Paragraphs 3.1 and 3.2 shall be performed at the frequencies indicated therein.

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3.1 TOOKE TEST (SCRATCH TEST)

The scratch test shall be performed by using a Mark II Tooke Inspection Gage using a 2X tip.

A daily confidence check shall be performed to insure accuracy of the Tooke Gage. The gage shall be inspected for damage, tip ware and a scratch shall be made with the Tooke Gage and compared to a reading obtained using a calibrated Elcometer Inspection DFT Gage or equivalent. The reading obtained with the 2X tip of the Tooke Gage shall not vary by more than ± 0.5 mils from that obtained with the Elcometer Inspection DFT Gage.

Five separate Tooke readings spaced evenly over each seal or finish coated item (See Note 1) shall be taken. Dry film thickness shall be as follows:

| | <u>Any Single Reading</u> | <u>Average of Five</u> |
|----------------------|---------------------------|----------------------------|
| CZ 11 Primer | 1.5 - 5.5 | 2.0 - 5.5 |
| D 6 | 1.5 - 5.5 | 2.0 - 5.5 |
| Total Coating System | 7.0 - 11.5 | 7.0 - 11.0 |

In the event that any reading(s) is found to be outside of the acceptable primer thickness range, additional readings shall be taken to determine the extent of the unacceptable area. Dimensions and locations of unacceptable areas and results of additional testing shall be documented on Attachment 1.

In the event that the average of the area is unacceptable due to unacceptable spot readings, the unacceptable spots shall be isolated as described above. Additional spot readings shall be taken equal to the number of unacceptable spot readings and the average recalculated. Results of these additional readings shall be documented in the "Remarks" area of the IR. If the recalculated average is acceptable, the IR shall be so marked with an explanation in "Remarks" stating that "average recalculated - now acceptable", or wording to that effect. If the recalculated average is unacceptable, the unacceptable spots shall be isolated (as described above) and the above re-averaging process repeated.

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NOTE 1: For small areas of seal or finish coated surfaces, five separate readings shall be taken. For items with less than 5 square feet of exposed coating, a minimum of three separate readings shall be taken. For larger seal or finish coated areas such as containment liner plate, five separate readings randomly spaced shall be taken for each 100 square feet of coating.

NOTE 2: Seal or finish coated surfaces meeting the following descriptions shall not be subject to testing with the Tooke gage:

- a. Areas or items which are inaccessible due to installation of permanent items or equipment.
- b. Items that due to their size or configuration will not accomodate testing with a Tooke gage.
- c. Areas or items which have acceptable Primer Records shall be tested with a Elcometer Inspection DFT Gage or equivalent for total system.

3.2 ADHESION (PATCH) TEST

The QC inspector shall perform an Adhesion (Patch) Test on each seal or finish coated item (See Note 1). A calibrated Elcometer 106 Adhesion Tester shall be used to verify that the minimum acceptable tensile strength of adhesion of the coating system to the steel substrate has been attained. Each test shall consist of three individual dollies tested to failure. (See Note 2 and 3 below.)

NOTE 1: For larger seal or finish coated areas such as containment building liner plate, the Inspector shall perform one test for every 500 square feet of coating.

NOTE 2: For items with total exposed surface area of 10 square feet or less, each adhesion test shall consist of only one dolly tested to failure.

NOTE 3: Seal or finish coated surfaces meeting the following descriptions shall not be subject to adhesion testing:

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- a. Areas or items which are inaccessible due to installation of permanent items or equipment.
- b. Items that due to their size or configuration will not accomodate testing with an Elcometer 106 Adhesion Tester.

Acceptance Criteria:

The minimum acceptable strength per dolly shall be 200 psi.

If a dolly should fail the minimum strength criteria, the following additional adhesion testing shall be performed:

- 1) On large surface areas such as liner plate, four additional dollies shall be adhesion tested at approximately one foot from the failing dolly and spaced radially at approximately 90 degree intervals.
- 2) On components with smaller surface area such as miscellaneous steel or supports (conduit, cable tray, or pipe), two additional dollies shall be adhesion tested at one foot or less from the failing dolly with one located on each side of it.

If any of the additional dollies should fail the minimum strength criteria, additional dollies shall be placed and tested in accordance with 3.2 or as applicable until area of loss of adhesion is isolated. This area(s) of coating shall be removed to the substrate, and new coatings applied in accordance with Reference 1-C or 1-D.

3.3 STATUS INDICATORS

During backfit activities when items are unsatisfactory and could be inadvertently recoated with the unsatisfactory condition remaining, a reject tag shall be used in accordance with Reference 1-G. A reject tag shall be placed on the item or area referencing the unsatisfactory Inspection Report number and applicable NCR.

3.4 DOCUMENTATION

Results of inspections per Paragraphs 3.1 through 3.2 shall be documented on Inspection Report, Attachment 1, in accordance with Reference 1-B. The completed IR shall be forwarded to the PPRV for retention. For inspections of coated containment liner surfaces, the Inspector may document one IR for each 500 square feet of surface area.

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3.5 REPAIRS

Repairs of each coating area either scratch-tested or adhesion tested shall be performed in accordance with Reference 1-C or 1-D and reinspection of repaired coatings shall be in accordance with Reference 1-F.

3.6 MAPPING OF LARGE AREAS

For large areas (such as reactor containment liner plate) each IR No. and the inspection area to which the IR corresponds shall be indicated on the map drawing.

The map drawing shall be maintained by the QC Supervisor, or his designee, until the entire surface has been inspected as required. Completed map drawings shall be transmitted to the Permanent Plant Records Vault.

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Attachment 1

COMANCHE PEAK STEAM ELECTRIC STATION

INSPECTION REPORT

| | | | | | |
|--|---|---|---|--|--------------|
| ITEM DESCRIPTION PROTECTIVE COATINGS | | IDENTIFICATION NO. | | SYSTEM / STRUCTURE DESIGNATION | |
| SPEC. NO. AS-31 | REV. | REF. Q.C. DOC. & REV. & CHANGE NO. QI-QP-11.4-23, Rev. | | MEASURE OR TEST EQUIP. IDENT. NO. | |
| <input type="checkbox"/> IN PROCESS INSPECTION | <input type="checkbox"/> PRE-INSTALLATION VERIFICATION | <input type="checkbox"/> INSTALLATION INSPECTION | <input type="checkbox"/> FINAL INSPECTION | <input type="checkbox"/> PRE-TEST INSPECTION | |
| UNSP. RESULTS | | | | | |
| <input type="checkbox"/> INSPECTION COMPLETED, ALL APPLICABLE ITEMS SATISFACTORY | | | | | |
| <input type="checkbox"/> INSPECTION COMPLETED, UNSATISFACTORY ITEMS LISTED BELOW | | | | | |
| ITEM NO. | INSPECTION ATTRIBUTES | | | | QC INSPECTOR |
| | DATE | SAT | UNSAT | DATE | SIGNATURE |
| SEAL OR FINISH COAT | | | | | |
| 1. | Perform Tooke test per para. 3.1 to determine thickness in mils of primer and total system (document one set of readings for each 100 sq. ft. when testing Containment liner) | | | | |
| RECORD: | | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| | Min. Soot Primer: | | | | |
| | Max. Soot Primer: | | | | |
| | Avg. Soot Primer: | | | | |
| | Min. Soot Tot. System: | | | | |
| | Max. Soot Tot. System: | | | | |
| | Avg. Soot Tot. System: | | | | |
| 2. | Perform Adhesion test per para. 3.2. | | | | |
| RECORD: Adhesion Test Strength in psi: | | | | | |
| | Dolly #1: | Dolly #2: | Dolly #3: | | |
| REMARKS (DNBS, SPECS, ETC.) | | | | | |
| RELATED NCR NO. | | | | | |
| L.R. CLOSED <input type="checkbox"/> | | | | | |
| DATE | | | | | |
| SIGNATURE | | | | | |
| QC INSPECTOR | | | | | |