TENNESSEE VALLEY AUTHORITY

NUCLEAR SAFETY REVIEW STAFF

NSRS INVESTIGATION REPORT NO. I-85-817-WBN

EMPLOYEE CONCERN: IN-86-273-001

Milestone 2 - Prior to Criticality

SUBJECT: CONTAINMENT COATING REPAIR

DATES OF INVESTIGATION: NOVEMBER 26-DECEMBER 24, 1985

INVESTIGATOR: L. E. Brock — L. E. BROCK — 3/3/86 DATE

REVIEWED BY: John C. Catlin Sr. — J. C. CATLIN — 3/4/86 DATE

APPROVED BY: W D Stevens — W. D. STEVENS — 3/11/86 DATE

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I. BACKGROUND

A Nuclear Safety Review Staff (NSRS) investigation was conducted to determine the validity of an expressed employee concern as received by the Quality Technology Company (QTC)/Employee Response Team (ERT). The concern of record, as summarized on the Employee Concern Assignment Request Form from QTC and identified as IN-86-273-001, stated:

> Containment coatings (#295 & #305) are not properly done and maintained. The integrity of the coatings is being eroded and questionable. CI is concerned that the paint will curl and pop-up and clog the drains in case of a (LOCA) accident when the temperature and pressure builds up in the reactor. Paint specifications and standards are not followed, especially in recoating of #305. Construction Dept. concern. CI has no further information.

During the investigation of concern XX-85-087-001 (Ref. 1), which was specific to the Sequoyah Nuclear Plant, applicability of the concern to the Watts Bar Nuclear Plant was investigated. It was then determined that a similar concern, IN-86-273-001, existed for Watts Bar. The ERT follow-up group was able to confirm that the same concerned individual (CI) initiated both concerns.

During the investigation of the Sequoyah concern XX-85-087-001, additional information had been obtained from the ERT follow-up group regarding the nature of the deficiencies, their location, and the group(s) performing the work. QTC relayed that the CI indicated the deficient work was related to coatings repair, as opposed to initial installation or modification work. The CI also indicated that the improper work at Sequoyah was done on coatings repair of the containment main floor concrete at elevation 734 near the crane rails and involved inadequate cleaning between the surfacer coat and the epoxy top coat.

During the early stages of the Sequoyah investigation, another concern related to containment coatings was identified regarding the initial application of inorganic zinc primer coat on the containment liner. The concern is that improper application and excessive thickness of the primer is resulting in delamination of the phenoline top coat. This concern was relayed to NSRS management and the investigators were instructed to include this concern within the scope of the investigation of Sequoyah concern XX-85-087-001. This additional information which had been obtained for the Sequoyah investigation was then applied where possible to the scope of this investigation of IN-86-273-001.

II. SCOPE

A. The scope of the investigation of the concrete coatings maintenance and repair is defined by the concern of record. This required a determination of the adequacy of coatings repairs to concrete performed by the plant organization, evaluation of the safety significance of any deficiencies found, and determination of the adequacy of the program for coatings system maintenance. To investigate the concrete coatings maintenance and repair concerns, the following actions were taken:

1. TVA commitments, TVA procedures, and standards pertaining to concrete coatings were reviewed.

2. A document search of the maintenance request (MR) files was performed for work on system No. 271 (coatings system). MRs for coatings work were retrieved and reviewed to determine any major coatings repair to concrete which was performed inside unit 1 containment.

3. General inspections of the containment concrete coatings for both units were performed by an Office of Construction (OC) QC inspector, a plant mechanical maintenance engineer, and TVA coatings representatives including a mechanical engineer from Nuclear Services in Chattanooga and a certified coatings specialist from the Office of Engineering (OE) in Knoxville. The investigator also participated in these inspections. Inspection results were discussed with those performing the inspections. The areas inspected included the main floor on elevation 757 near the crane rails and the liner near the equipment hatch. The first area was identified at SQN by the CI, and the second area was identified as deficient in the SQN inspection.

4. Periodic maintenance plans were investigated and discussed with the plant mechanical maintenance engineer.

5. The plant and OC qualification programs were reviewed for both painters and coatings inspectors.

6. Training and qualification activities for coatings applicators (painters) and coatings inspectors were discussed with OC painters and inspectors to verify they are aware of requirements.

7. Coatings activities were discussed with several OC painters and inspectors who had performed coatings work in containment to determine if they were aware of any additional coatings problems.

B. The scope of the investigation of the initial application of inorganic zinc primer to the containment liners included research and investigation of reports of construction deficiencies, evaluation of evidence of action taken to correct the deficiencies, and determination and evaluation of the present condition of the liner coatings for both units.

To investigate the concern regarding the initial application of inorganic zinc primer to the containment liner, the following actions were taken:

1. TVA's commitments, TVA procedures, and standards pertaining to containment liner coatings were reviewed.

2. General inspections of the containment liner coatings for unit 1 and unit 2 were performed by the same individuals identified in II.A.3. Inspection results were discussed with those performing the inspections.

3. A document search of the construction NCR files was performed. NCRs related to coatings work were retrieved and reviewed.

4. Disposition of Watts Bar construction NCR 6144 for unit 2 was discussed with QC and QE personnel, and construction inspection records of the subsequent repair of the liner coatings were reviewed. The nonconforming area was located above the ice condenser top deck doors.

5. Plant inspections and repair records of the unit 1 liner coatings above the ice condenser top deck doors, elevations 819 to 830, were reviewed and discussed with plant and QE personnel.

C. Additional actions taken involving research of QE documentation, industry experience, and recent developments in the protective coatings field are as follows:

1. The QE analysis for control of unqualified coatings inside containment (Ref. 2) was reviewed and discussed with QE personnel.

2. The QE analysis for hydrogen control inside containment following a LOCA (Ref. 3) was reviewed and discussed with QE personnel.

3. The Quality Assurance (QA or Q) List was compared to the NQAM and plant document requirements for protective coatings.

4. Coatings specialists at the following plants were interviewed regarding their experience with protective coatings: Turkey Point, Crystal River, and St. Lucie.

5. The declassification of protective coatings by the Comanche Peak plant was investigated. The analysis supporting declassification performed by Gibbs and Hill, Inc. (Ref. 4), and the subsequent issue of NUREG-0797 Supplement No. 9 (Ref. 5) were reviewed. A coatings consultant familiar with the plant was also interviewed.

III. SUMMARY OF FINDINGS

A. Requirements and Commitments

1. Watts Bar Final Safety Analysis Report, subsection 3.8.2.2.2 (Ref. 6), and Design Criteria WB-DC-10-1, paragraph 3.3.2 (Ref. 7), require the coatings inside containment to be able to withstand a design basis accident (DBA) without failure in the form of delamination, peeling, flaking, or other removal of coatings materials from the substrate.

2. Construction specifications applicable to the initial coatings system installation (Refs. 8, 9, 10, and 11) specify technical and quality requirements for coatings work. These include:

   a. Carbozinc 11 primer dry film thickness 2.5 to 5.0 mils (Ref. 8).

   b. Phenoline 305 second coat, and third coat when required, dry film thickness 4.0 to 6.0 mils for both concrete and steel (Ref. 8).

   c. Adhesion tests distributed at 5 dollies per 1000 ft^2 (Ref. 10).

   d. Wet film gauge in-process measurement of coatings other than inorganic zinc to help assure that the dry film thickness will be satisfactory, dry film measurement with a "Tooke" gauge for nonferrous substrates, and magnetic gauges for ferrous substrates (Ref. 10).

3. Watts Bar FSAR subsection 6.1.4 (Ref. 6) indicates that TVA agrees with Regulatory Guide 1.54 (Ref. 12) except the endorsement of ANSI N101.4 (Ref. 13) in paragraph C.1 and states that the coatings material is controlled by extending requirements on the manufacturing process and qualification of coatings systems through the use of applicable portions of ANSI standards N101.2 and N512 (Refs. 14 and 15).

   It is further stated that, "TVA's protective coatings application program within the containment is in conformance with Appendix B to 10CFR50 and ANSI N45.2. In addition, applicable provisions found in ANSI N101.4 have been incorporated into TVA surface preparation, coating application/inspection specifications, and coating QA procedures." The conformance status of the Topical Report (Ref. 28) agrees with the FSAR exception to Regulatory Guide 1.54.

4. Regulatory Guide 1.33, Revision 2 (Ref. 16), endorses ANSI N18.7-1976 as an acceptable standard for meeting the quality assurance requirements of 10CFR50, Appendix B, during operations.

5. The TVA Quality Assurance Topical Report, TVA-TR75-1A, commits TVA to meet Regulatory Guide 1.33, Revision 2. As a result, ANSI N18.7-1976 (Ref. 17) is the principal standard TVA must meet in establishing administrative controls and quality assurance requirements for operations.

6. ANSI N18.7-1976, Section 5.2.7, requires that plant maintenance and modifications be conducted in a manner which ensures "quality at least equivalent to that specified in original design bases and requirements, materials specifications and inspection requirements."

7. Design Criteria WB-DC-10-1 (Ref. 7), Section 4.4, states that, "It is not expected that coatings systems and their component materials will be sufficiently durable as to require no maintenance during the life of the plant." Visual inspections during refueling or other outage periods and repair of localized damage or deterioration is required.

B. Findings

1. A search of maintenance request (MR) files and discussions with the mechanical maintenance engineer responsible for coatings identified only three repairs which have been performed on concrete in containment on unit 1. The repairs are elevation 702 floor (MR A-530192), the crane wall above the steam generator enclosures (MR A-538225), and elevation 702 raceway (MR A-538210).

2. No significant cracks in the coatings near the unit 1 crane rails at elevation 757 were found.

3. The general inspection of unit 1 containment indicated that the coatings on concrete were adhering well, and no significant areas of damage were observed. In the professional judgment of the coatings specialists, failure to follow specifications and procedures when recoating Phenoline 305 would be expected to result in delamination between coats of 305. This type of failure was not observed, except in some small areas around the periphery of a repaired area, where repair coatings may have been applied slightly beyond the limits of the area prepared by abrading or wiping with solvent.

4. Review of the three MRs referenced in III.B.1. and discussion with personnel indicated that during application the wet film thicknesses of concrete coatings are not being measured and that dry film thicknesses are not always being measured. Additionally, the MRs reviewed did not indicate that adhesion tests were performed. Personnel indicated that the repairs were not large enough to require adhesion tests, but this could not be determined from the MRs. The plant instruction (Ref. 27) for coatings application and inspection contains insufficient detail regarding these inspections, but a new revision is being developed.

5. No formal program for periodic maintenance of coatings had been initiated by the plant maintenance organization when this concern was investigated; however, a commitment to maintenance was evidenced by the repairs performed to date and by the condition of the coatings.

6. Unit 2, which is in the construction phase, has sustained extensive damage to the concrete surfaces, especially on the floors.

7. Review of the nonconformance report (NCR) 6144 (Ref. 18) written for the containment liner in unit 2 determined that the original, first coat of carbozinc 11 was too thin and that the second coat was improperly applied and cured and was too thick. Inspection records indicate that subsequent recoating of the area was acceptable. Surface preparation, dry film thickness, and adhesion tests were accepted. However, four adhesion tests specimen (dollies) pulled at less than the acceptable minimum of 200 psi, and these failures were not explained. The failures could have been caused by adhesive failure, and QCP-2.12 (Ref. 19) does permit one of five dollies to pull at less than 200 psi.

8. General inspections of the containment liner for both units indicated the following:

   a. No evidence was found of delamination of the Phenoline 305 top coat on either unit; however, random measurements of the total (i.e., primer and top coat) film thickness of the liner coatings at various locations indicated some areas where the total film thickness requirements are exceeded.

   b. The two areas having the greatest Phenoline 305 delamination problems at Sequoyah were above the ice condenser top deck doors and around the equipment hatch; therefore, these areas were closely inspected at Watts Bar. The area above the ice condenser top deck doors at elevation 820 on unit 2 was repaired by NCR 6144 as discussed in III.B.7 above. The coatings in this area appeared to be acceptable. The same area on unit 1 was inspected by MR A-530193; however, only a few small areas of delamination were identified on unit 1. One area requiring repair which was identified on MR A-530193 will be repaired on MR A-538476. The scope of the work on unit 1 in this area is defined by E. C. McDonald's memorandum to Architectural Branch Files dated September 17, 1985 (B61 850917 003). The area around the equipment hatch on elevation 757 was not coated with Phenoline 305; only the carbozinc 11 primer was applied and, therefore, no top coat delamination could occur.

9. Several plant painters are in the process of being initially certified and several others were certified in January 1985. The qualification program is not controlled by any approved plant instructions, but AI-10.6, "Training, Qualification, and Certification of Protective Coatings Applicators," has been drafted to control the process and is currently being reviewed.

10. The plant inspector qualification program is procedurally controlled by the NQAM (Ref. 20) which is implemented directly through the overall inspection program Administrative Instruction AI-7.1 (Ref. 21).

11. Construction painters are certified in accordance with the requirements of QCI-2.13 (Ref. 22) with recertification every year. Application instructions are given by QCI-2.12 (Ref. 23). Painters interviewed demonstrated knowledge and understanding of these procedures. They did not have information of coating problem areas inside containment not already identified in this investigation. Some of the painters did express an opinion that an essential prerequisite for quality coating work is an adequate work force of qualified coatings inspectors.

12. Construction inspectors are certified by successfully completing a one-week course with a final exam at Singleton Materials Laboratory. Knowledge of requirements in QCI-2.12 (Ref. 23) is required to pass the exam. This certification process is controlled by the QC Quality Training Program Manual (Ref. 30) and QCI-1.11-2 (Ref. 31).

13. The OE analysis for control of unqualified coatings inside containment (Ref. 2) limits the use of unqualified coatings to the following:

    a. Lower compartment:

        (1) 2500 ft^2 outside the trashracks

        (2) 20 ft^2 (2.5 ft x 8 ft) within 15 ft of trashracks

        (3) None inside the trashracks

    b. Upper compartment

        (1) 1000 ft^2

        (2) None inside refueling canal

    c. Outside crane wall

        10,000 ft^2

An Uncontrolled Coatings Log is maintained by the Architectural Branch of OE. This log was previously controlled by EN DES EP 3.46 which has been superseded. Steps are being taken to have a similar procedure incorporated in the project manuals for each plant, and WBN has included WBEP-EP 43.25 to procedurally control this activity for uncontrolled coatings identified by OC or OE. There is now no apparent mechanism to include uncontrolled coatings identified by NUC PR, and the Mechanical Maintenance Section was not aware of previously identified uncontrolled coatings before this investigation. This is a 10CFR50 Appendix B Criterion III (Ref. 29) violation.

The Uncontrolled Coatings Log described above identifies the location of each entry and a cumulative total square footage for each containment but does not have a separate total for the areas identified in reference B. These separate totals are maintained informally by OE-NEB as a working supplement to reference B.

14. The OE analysis for hydrogen control inside containment following a LOCA (Ref. 3) includes the hydrogen source of zinc contained in protective coatings. The quantity of zinc used to coat the containment vessel was provided by Construction effective August 1980 and verified correct in February 1984 (WBP 840131 181 and WBP 840307 037).

15. Watts Bar AI-7.6 (Ref. 24) requires all plant personnel involved in the performance of quality-related activities to use the Q List. Protective coatings inside the containment are "Q" materials per the Q List. The NQAM (Ref. 25) includes the primary containment protective coatings in the CSSC list.

16. Discussions with coatings specialists at Turkey Point, Crystal River, and St. Lucie indicate that maintenance of coatings is expected to be required and that a routine and periodic maintenance program is necessary.

17. St. Lucie unit 1 experienced delamination problems which were believed to be at least partially the result of rapid depressurization of containment following a leak rate test. The sustained pressure of the leak rate test was believed to have caused penetration of the pressure through damaged or delaminated topcoat which would have had a weak bond with the concrete surfacer behind it. The rapid depressurization following the leak rate testing was believed to have contributed to the forming of bubbles behind the topcoat and then to the rupturing of the topcoat. The same type of problem could conceivably occur at Watts Bar if the coatings were allowed to deteriorate. Also, a negative pressure spike could have a similar effect, but none have been postulated. (A negative pressure spike would be less of a problem at Sequoyah since that plant has vacuum relief valves located in the dome

which ensure that the differential pressure across the containment liner does not exceed 0.5 psig, with the higher pressure outside containment. Watts Bar does not have the vacuum relief valves because it has a stronger containment designed for 2 psig differential pressure.)

18. The declassification of protective coatings inside containment does not appear to be a near-term, viable option for Watts Bar in the opinion of TVA coatings representatives in OE and Nuclear Services. The description of the Gibbs and Hill, Inc., analysis for Comanche Peak which was recently published in Power Engineering (Ref. 4) specifically applies to the Comanche Peak plant only. Also, discussions with a nuclear coatings consultant familiar with the Comanche Peak plant and review of NUREG-0797 Supplement No. 9 (Ref. 5) requirements indicate that the utility must also perform certain surveillance and testing activities which include:

    a. Complete visual inspection of coatings before operation and at each refueling outage.

    b. In-situ DBA temperature and pressure testing with separate evaluation and consideration of the effects of radiation exposure and concurrent adhesion testing in directly adjacent areas. These tests are to be performed before operation and at every third refueling outage.

19. WCAP-7825 (Ref. 26), which is referenced by FSAR subsection 6.1.4 (Ref. 6), was reviewed for safety considerations of failed coatings. The two areas of safety concern given in WCAP-7825 are as follows:

    a. Delaminated paint clogging containment spray nozzle orifices.

    b. Delaminated paint being recirculated into the reactor core and obstructing coolant flow to the fuel rod surfaces.

    The Gibbs and Hill analysis report (Ref. 4) indicates that these two safety system failure modes were considered.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

1. The concern that concrete coatings repairs inside containment have not been performed in accordance with required standards resulting in degradation of the coatings could not be substantiated for unit 1. The same concern for unit 2 is partially substantiated in that the coatings have not been maintained and are extensively damaged from construction activities. The TVA coatings representatives from OE and Nuclear Services agree that the damaged areas will require repair before unit 2 operation.

2. The concern that the coatings inside containment are not being properly maintained and could result in safety consequences was not substantiated, assuming unit 2 will be repaired before operation as discussed in IV.A.1. The need for maintenance was recognized by the responsible plant maintenance personnel as evidenced by the recent repairs to unit 1 and by the condition of the coatings in unit 1; however, a formal preventive maintenance program has not been developed.

3. The concern that the initial application of inorganic zinc primer to the containment liners was not properly applied and was excessively thick, resulting in delamination of the phenoline top coat, was in part substantiated. OC records show that extensive rework above the ice condenser top deck doors was performed on unit 2 to correct the delamination deficiencies identified by NCR 6144. However, no other evidence of significant delamination was found. Adhesion tests performed on MR A-530193 above the ice condenser top deck doors on unit 1 did not identify any significant delamination of the top coat. General inspection performed by the coatings representatives from OE and Nuclear Services indicated that some areas have excessive primer and top coat total film thickness, but no additional significant delamination was found.

4. Wet film thickness in process checks, dry film thickness measurements, and possibly adhesion tests of large area coatings repairs are not being performed on concrete by plant QC inspectors as required by standards and specifications. A lack of detail in MI 270.10 (Ref. 27) appears to be contributing to this condition. A revision to MI 270.10 was being drafted to correct such deficiencies when this investigation was performed.

5. Qualification programs are in place for plant painters and QC inspectors; however, the plant painter and OC QC inspector programs are not procedurally controlled by either plant instructions or upper-tier procedures, but a plant procedure is in draft form which would be used to control the plant painter qualification program.

6. No program exists by which NUC PR can identify uncontrolled coatings to OE for inclusion into the Architectural Branch Uncontrolled Coatings Log. Also, no procedure currently exists to require that NEB evaluate each additional area identified to the acceptance criteria of Reference B. This deficiency is a violation of 10CFR50 Appendix B, Criterion III.

B. Recommendations

1. I-85-817-WBN-01, Containment Concrete Coatings Inspection and Repair

A complete visual inspection of the concrete coatings should be performed and documented by coatings representatives from OE and Nuclear Services prior to unit 1 startup. Dry film thickness measurements and adhesion tests should be performed as deemed necessary by the coatings specialists. Any areas which exhibit any form of damage or failure should be restored to an acceptable condition and reinspected. Before unit 2 startup, concrete coatings should be restored to an acceptable condition and a complete, documented inspection as described for unit 1 should be performed.

The inspections should be scheduled sufficiently in advance to permit repairs to be completed before scheduled startup.

2. I-85-817-WBN-02, Containment Carbon Steel Coatings Inspection and Repair

Before operation, complete visual inspection and dry film thickness measurements of the carbon steel surface coatings in the containment of both units should be performed and documented by coatings representatives from OE and Nuclear Services. Other physical tests, including adhesion tests, should be performed in locations deemed necessary by the coatings specialists. Any areas which exhibit any form of damage or failure should be restored to an acceptable condition and reinspected. The inspections should be scheduled as discussed in recommendation I-85-817-WBN-01.

3. I-85-817-WBN-03, Preventive Maintenance Program

The plant maintenance staff should develop a formalized preventive maintenance program for level I coatings systems and the program should be given sufficient priority to assure it is in place before the first scheduled major outage of each unit following startup.

4. I-85-187-WBN-04, Revision of MI-270.10

MI 270.10 (Ref. 27) should be revised to:

a. Require wet film thickness measurements of all coatings inside containment except carbozinc 11 as an in-process check.

b. Provide details of how and when dry film thickness measurements will be performed on nonferrous substrates consistent with reference 10.

c. Require adhesion tests for all repairs at a rate consistent with reference 10.

d. Provide guidelines for masking adjacent areas to prevent overspray when large area repairs are being performed.

e. Provide guidelines for remeasurement of carbozinc primer film thickness and film integrity just prior to application of Phenoline 305 top coat.

5. I-85-817-WBN-05, Coatings Applicator Certification

The plant coatings applicator certification program should be formalized in an approved site instruction.

6. I-85-817-WBN-06, Unqualified Coatings Program

An approved procedure should be developed which ensures a formal list of unqualified coatings inside containment is maintained and updated as necessary and reviewed to the acceptance criteria of the OE analysis (Ref. 2). This will have to be resolved by the organizations involved; i.e., the plant, OE, and OC.

7. I-85-817-WBN-07, Temporary Protection

The cost and feasibility of temporary protection of coatings on containment floors should be investigated for areas of high traffic and likelihood of damage during refueling outages.

8. I-85-817-WBN-08, Use of Available Expertise

The plant maintenance and related QC organizations and the OC coatings applicator and its related QC organizations should make full use of the coatings expertise available within Nuclear Services and OE to assure high quality workmanship, inspections, and procedures for coatings repairs inside containment.

DOCUMENTS REVIEWED IN INVESTIGATION I-85-817-WBN
AND REFERENCES

1. NSRS Report I-85-812-SQN, "Containment Coating Repair," Investigators C. E. Chmielewski and L. E. Brock

2. Office of Engineering calculation titled "Guidelines for the Control of Unqualified Coating Systems Inside the Containment," Revision 0, December 21, 1983, RIMS No. NEB 840120 219

3. Office of Engineering Calculation titled "WBN Hydrogen Volume Percent in Containment Following a LOCA," Revision 1, May 16, 1984, RIMS No. B45 850423 200

4. "Safety Aspects of Nuclear Containment Coatings," Power Engineering, Volume 89, December 1985, pp. 42-43

5. NUREG-0797 Supplement No. 9, March 1985

6. Watts Bar Nuclear Plant Final Safety Analysis Report, updated April 1985, Subsections 3.8.2.2.2 and 6.1.4

7. Watts Bar Nuclear Plant Design Criteria WBN-DC-10-1, "Protective Coatings for the Interior of the Containment Vessel and Items Located Within the Containment Vessel," April 16, 1974

8. Watts Bar Nuclear Plant Construction Specification No. N3A-932, "Special Protective Coating Systems Approved for Use in Coating Service Levels I and II and Corrosive Environments," Revision 2, May 18, 1984

9. TVA General Construction Specification G-14, "Selecting, Specifying, Applying, and Inspecting Paint and Coatings," Revision 3, August 29, 1984

10. TVA General Construction Specification G-55, "Surface Preparation, Application, and Inspection of Special Protective Coatings for Nuclear Plants," Revision 4, August 10, 1984

11. TVA General Construction Specification G-44, "Verification Testing of Paint and Coatings Products," Revision 4, October 31, 1984

12. U.S. NRC Regulatory Guide 1.54, "Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants," June 1973

13. ANSI N101.4-1972, "Quality Assurance for Protective Coatings Applied to Nuclear Facilities"

14. ANSI N101.2-1972, "Protective Coatings (Paints) for Light Water Nuclear Power Reactor Containment Facilities"

15. ANSI N512-1974, "Protective Coatings (Paints) for the Nuclear Industry"

16. U.S. NRC Regulatory Guide 1.33, Revision 2, February 1978

17. ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants"

18. Division of Construction Nonconformance Report 6144, June 20, 1985 (W850910K0222)

19. Quality Control Procedure QCP-2.12, "Protective Coatings Inspection," Revision 12, June 13, 1985

20. TVA Nuclear Quality Assurance Manual, Part II, Section 5.3A, "Training and Certification Program for Quality Control Inspectors," revised October 12, 1984

21. Watts Bar Nuclear Plant Administrative Instruction AI-7.1, "Quality Control (QC) Inspection Program," Revision 9, April 10, 1985

22. Quality Control Instruction QCI-2.13, "Qualification of Protective Coatings Applicators," Revision 5, July 26, 1985

23. Quality Control Instruction QCI-2.12, "Protective Coatings Application Instructions," Revision 1, June 20, 1984

24. Administrative Instruction AI-7.6, "Q List," Revision 0, January 8, 1985

25. TVA Nuclear Quality Assurance Manual, Part III, Appendix A, "Critical Structures, Systems, and Components (CSSC) List (Mechanical and Electrical)," revised July 17, 1979

26. WCAP-7825, "Evaluation of Protective Coatings for Use in Reactor Containment," Westinghouse Electric Corporation, December 1971, RIMS No. NEB 810204 304

27. Watts Bar Nuclear Plant Maintenance Instruction MI-270.10, "Application Repair of Protective Coatings," Revision 4, April 24, 1985

28. Quality Assurance Topical Report, TVA-TR75-1A, Table 17D-2, "Quality Assurance Standards for Design and Construction (Regulatory Guidance) Applicable to the Watts Bar Nuclear Plant," Sheet 8, Revision 7

29. 10CFR50 Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," Criterion III, "Design Control"

30. Quality Training Program Manual, Section III-1, "Training Qualification, and Certification Procedure for Inspection Personnel (Except Welding and Nondestructive Examination)," Revision 3, dated December 9, 1985

31. Quality Control Instruction QCI-1.11-2, "Qualification/Certification of CONST Quality Control Inspectors," Revision 7, July 1, 1985

TVA 64 (OS-9-65) (OP-WP-5-85)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO: R. P. Denise, Assistant to the Deputy Manager of Nuclear Power, LP6N40A-C

FROM: K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K

DATE: MAR 13 1986

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. I-85-817-WBN

Subject CONTAINMENT COATING REPAIR

Concern No. IN-86-273-001

and associated recommendations for your information and further processing in accordance with the WBN Special Employee Concern Program.

A response to this report is not required as it is provided for your information and use only, and will not be tracked by NSRS.

Should you have any questions, please contact W. D. Stevens at telephone 6231-K.

K. W. Whitt

MAH:GDM
Attachment
cc (Attachment):
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Denise

WATTS BAR NUCLEAR PLANT SITE DIRECTOR'S OFFICE
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