



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos. 50-413/82-18 and 50-414/82-16

Licensee: Duke Power Company
422 South Church Street
Charlotte, NC 28242

Facility Name: Catawba

Docket Nos. 50-413 and 50-414

License Nos. CPPR-116 and CPPR-117

Inspection at Catawba site near Rock Hill, South Carolina

Inspectors: *C. M. Upright for* *8/6/82*
R. W. Wright Date Signed

C. M. Upright for *8/6/82*
A. G. Debbage Date Signed

Approved by: *C. M. Upright* *8/6/82*
C. M. Upright, Section Chief Date Signed
Engineering Inspection Branch
Division of Engineering and Technical Programs

SUMMARY

Inspection on July 12-16, 1982

Areas Inspected

This routine, unannounced inspection involved 64 inspector-hours on site in the areas of QA inspection of civil work performance involving protective coating activities and site procurement, receiving, storage, and maintenance.

Results

Of the two areas inspected, no violations or deviations were identified in one area; two violations were found in the protective coatings area (Failure to initiate nonconforming item reports concerning coatings storage temperatures - paragraph 5.e; Failure to conduct civil work activity surveillances at required frequency - paragraph 5.f).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

J. C. Rogers, Project Manager
*T. H. Robertson, Construction Engineer
*R. A. Morgan, Project QA Engineer
*H. D. Mason, QA Engineer, Civil, Electrical & Instrumentation
*J. C. Shropshire, QA Engineer, Mechanical, Welding & NDE
*D. P. Hensley, QA Technician
K. W. Schmidt, QA Engineer, Surveillance
J. N. Warren, QC Engineer, Civil, Electrical & Instrumentation
M. Manley, General Supervisor Materials
C. Anderson, Materials Controller "A"
R. L. Payne, Supervisory Technician, Civil QC
R. W. Vassey, Structural Inspector, Coatings, QC
J. R. Norris, Structural Inspector, Coatings, QC
T. A. Summey, Structural Inspector, Coatings, QC
B. W. Childers, Powerhouse Mechanic General Foreman
L. D. Wilson, Warehouse Manager
J. A. Akers, QA Supervisor, Vender Division
R. L. Bagwell, Storage Supervisor

Other licensee employees contacted included numerous construction craftsmen, several technicians, QA/QC personnel, and office personnel.

Other Organizations

W. M. Crute, Senior QC Engineer, Bahnson Service Company
T. E. Payne, QC Engineer, Bahnson Service Company

NRC Resident Inspector

*P. K. Van Doorn

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on July 16, 1982, with those persons indicated in paragraph 1 above. The following new items were identified and discussed at the exit interview:

- a. Violation 413/82-18-01, 414/82-16-01, Failure to initiate a nonconforming items report concerning coating storage temperatures (paragraph 5.e).

- b. Violation 413/82-18-02, 414/82-16-02, Failure to conduct civil work activity surveillances at required frequency (paragraph 5.f).
- c. Unresolved Item 413/82-18-03, 414/82-16-03, Measurement of dry film thickness of coated concrete surfaces and adhesion acceptance criteria (paragraph 5.a).

The licensee acknowledged the inspection findings with no dissenting comments and replied that they were still evaluating the coatings unresolved item.

3. Licersee Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. New unresolved items identified during this inspection are discussed in paragraph 5.a.

5. QA Inspection of Civil Work Performance (35061)

The inspector observed the protective coatings work in progress in the vicinity of hanger no. 1A-KC-4147 for reactor building Unit 1, for a portion of a steam generator enclosure wall in Unit 2, and for miscellaneous steel and hanger materials being processed in the blast building. This inspection was conducted to determine whether site work is being performed in accordance with NRC requirements and SAR commitments, that the QA/QC program is functioning in a manner to assure that requirements and commitments are met, and to assure that prompt and effective action is taken to achieve permanent corrective action on significant discrepancies.

- a. The following acceptance criteria were examined to verify the inspection objectives:
 - FSAR Section 3.8.2.6, Table 3.8.2-3, Containment Coatings
 - DPC Coatings Service Level I Field System Manual
 - Service Level I, Architectural Coating Schedule File No. CN-1167.02
 - ANSI N101.2, Protective Coatings (Paints) for Light Water Nuclear Reactor Containment Facilities
 - ANSI N101.4, Quality Assurance for Protective Coatings Applied to Nuclear Facilities

- Regulatory Guide 1.54, Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants
- Procedure M-20, R7, Inspection of Coatings for Class I Service Areas
- Procedure QA-140, R5, QC Inspector Training
- Procedure QA-300, R9, Construction Surveillance
- Procedure QA-304, R3, Construction QA Trend Analysis
- Procedure Q-1, R16, Control of Nonconforming Items
- Procedure H-7, R6, Identification and Control of Coating Materials for Use in Class I Service Areas
- Procedure R-2, R7, Corrective Action
- Procedure V-1, R3, Training of Personnel
- Procedure CP-11, Verification of Psychrometers and Thermometers

The inspector reviewed the above listed acceptance criteria and utilized observations of completed work and discussions with craft and QA/QC personnel to determine if the latest revisions of these documents were being employed and are in agreement with the SAR and to determine if these documents adequately describe critical points and methods of application as well as inspection and test holdpoints which properly reflect design intent.

FSAR Table 3.8.2-3, Containment Coatings, lists pertinent specifications that apply to various base materials to be coated along with allowable coating thickness, application methods, temperature and humidity requirements; methods of inspection and finish acceptance criteria are also included. For concrete walls and floor surfaces, the methods of inspection are visual-touch-elecometer-tooke gauge. A tooke gauge is an optical dry film thickness measuring device which is not subject to magnetic variations. Listed as finish acceptance criteria for all types of surfaces (steel and concrete) is the property adhesion. Examination of the above controlling procedures and discussion with QC inspection personnel revealed that the existing coatings program does not measure dry film thickness for concrete surfaces and does not require in-process adhesion testing on any coated surface.

Within this area, one unresolved item was identified. As of the time of the exit interview, the licensee was still researching this matter with Duke Power Company (DPC) licensing and design personnel and could not explain how DPC measures the acceptability of paint adhesion on a coated surface or why dry film thickness (tooke gauge) measurements on

concrete surfaces are not being performed as a method of inspection. This item was identified as Unresolved Item 413/82-18-03, 414/82-16-03, Measurement of dry film thickness of coated concrete surfaces and adhesion acceptance criteria.

b. Field Inspection

Field observations and discussions with painting crafts, warehouse, and QC personnel were conducted to cover the following phases of protective coatings work: storage, mixing, surface preparation, environmental condition considerations, coating application, testing, and quality records to verify program implementation. Inspector discussions with various painting craftsmen and foremen from Units 1 and 2, the blast building, and observation of their work indicated that the craft level of knowledge pertaining to their activities was adequate to provide the required quality of workmanship.

Within this area, no violations or deviations were identified.

c. Quality Control

The inspector reviewed the above listed QC procedures (paragraph 5.a) and conducted discussions with QC inspectors to determine if the frequency, timing, acceptance criteria utilized for testing, and inspection of protective coatings work was adequate and that QC findings received proper management attention. Observation of the coating inspectors employed and examination of the Inspector Certification Report dated July 7, 1982, revealed that all QC coatings inspectors observed monitoring coating activities were currently certified.

Within this area, no violations or deviations were identified.

d. Nonconforming Items Reports (NCIs)

The inspector reviewed selected reports on safety-related protective coatings discrepancies that have occurred during various phases of coating activities to verify as applicable that:

- the action taken corrected the items
- the items were considered for reportability to the NRC
- the corrective action prevented recurrence
- the licensee has an adequate program to detect trends in discrepancies

Protective coating related nonconforming item reports reviewed included the following: NCI 9412, 13667, 13698, 13817 and 13848

Additionally, the following Field Applied Coatings - Deviation and Corrective Reports (work performed incorrectly that can be corrected without altering or violating the drawings or specifications) were

examined to verify they met the intent of Procedure M-20: Serial Numbers 0009, 0010, 0011, 0013, 0014 and 0016.

The inspector examined the following Catawba Construction QA Trend Analysis Reports:

- NRC Violations and Deviations dated 2/25/82
- NRC Unresolved Items dated 2/12/82
- R Discrepancies 9/12/77 - 6/18/82

Review of the subject trend analysis reports revealed the licensee has an adequate program to detect trends in discrepancies and DPC's involvement in followup actions appears adequate.

Within this area, no violations or deviations were identified.

e. Materials and Equipment

The following testing equipment utilized in protective coating activities inspection was examined for current calibration: Nordson (SN 7945) dry film thickness gauge, surface temperature thermometer (SN CKCNT-19640), and sling psychrometer (#2).

Examination of the paint storage warehouse and mixing shed areas revealed that all paint examined was usable and still within its allowable shelf life. The inspector noted a high-low thermometer in the vicinity of the Service Level I coating materials stored in the paint warehouse and a daily log to record the subject temperatures. The warehouse materials controller was unsure of the allowable temperature limits to be maintained when asked by the inspector and he did not appear to know where to obtain these limits. DPC Construction Department Procedure H-7, Section 4.2, states that storage of Service Level I coating materials shall be in an enclosed warehouse with controlled temperature in order that the material temperature will not exceed the limits specified on the Products Data Sheets. Inspector review of the daily temperature log readings revealed that the subject warehouse reached temperatures below 35°F on both December 21, 1981 and January 11, 1982. Thirty-five degree Fahrenheit is the minimum allowable temperature for epoxy patching compound (Product #46-X-16-00) and elastomeric caulking compound (Product #46-J-10-00), materials believed to have been present in the warehouse on those dates. DPC Construction Department Procedure Q-1 states that any person finding a nonconforming item (an item which does not conform with QA procedures) shall initiate a Nonconforming Item Report (NCI). Inspector record review revealed that NCI reports were not initiated to evaluate the nonconformance in either instance.

Within this area, one violation was identified as discussed above. This violation is identified as 413/82-18-01, 414/82-16-01, Failure to initiate a nonconforming items report concerning coating storage temperatures.

f. Audits and Construction Surveillances

- Departmental Audit CD-81-12(CN), Storage & Coatings, 10/19-22/81
- Civil Surveillance CE1-1, Civil Work Activities, 3/12/82, 9/28/81, 6/30/81, 3/31/81, and 12/9/80

The inspector reviewed the above list QA Department Audit Division audit and project QA staff surveillance of civil work activities (concrete and grout, miscellaneous and structural steel, field coating application, calibration of equipment, document review, and inspector certification review) conducted at the Catawba Nuclear Station. The inspector reviewed the subject audit/surveillances for coating activities monitored to determine whether the licensee audit/surveillance results indicate when applicable that:

- Coating applications were done in accordance with specifications
- Craftsmen are qualified and competent to perform the work
- QC reports are technically accurate
- QC procedures and inspectors meet requirements
- QCIs and Field Applied Coatings - Deviations and Corrections are technically accurate
- Materials and equipment meet specifications

Within this area, one violation was identified. The audit/surveillances were also examined to determine if they were conducted at proper frequency, were meaningful, effective, reflect quality performance, and whether corrective actions taken as a result of the audit/surveillance findings were proper, timely, and complete. DPC Procedure QA-300, Section 4.1, states that surveillance shall be conducted on each major work activity at least once each calendar quarter. Review of the civil work activity surveillances revealed this quarterly calendar year frequency was not met in that no civil work activity surveillances were performed for the fourth quarter of 1981 nor the second quarter of year 1982. This discrepancy was identified as Violation 413/82-18-02, 414/82-16-02, Failure to conduct civil work activity surveillances at required frequency.

6. Procurement, Receiving, and Storage (35065)

a. Procedures Reviewed

Program requirements and procedures governing procurement, receiving, and storage control activities were reviewed for completeness and effectiveness. The documents reviewed included the following:

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| E-3, R17 | Field Procurement of Items and Construction Services |
| FE-14, R1 | Control of Onsite Vendor Work |
| M-22, R1 | Equipment Disassembly and Reassembly Inspection |

M-28, R5	Inspection of Housekeeping Requirements
P-1, R21	Receiving Inspection
P-3, R13	Storage Inspection
Q-1, R16	Control of Nonconforming Items
R-2, R7	Corrective Action
CP-168, R6	Storage and Installation of Electric Motor Operated Valves
CP-208, R1	Motor Rotation Procedure
QA-300, R9	Construction Surveillance
QA-601, R5	Vendor Evaluation
QA-602, R6	Vendor Surveillance Procedure

b. Storage of Equipment and Materials

All warehouses, storage buildings, and laydown areas were inspected to verify that equipment remaining in storage was retained in the correct level of storage environment. Specific equipment and material examined in each storage area included electrical induction motors, ITT Grinnell hanger materials, motorized valves, electrical cable, structure steel, carbon and stainless steel piping, fuel storage racks, and zinc-based paint materials. During the warehouse inspection, it was observed that all gates were locked; a written record of entry and exit maintained for non-warehouse personnel, all warehousing zones were kept clean, all nonconforming items were segregated and identified, and the equipment requiring vendor documentation or where inspection requirements had not been determined were also segregated and marked with QC HOLD tape and/or tags.

c. Procurement and Receiving Inspection Activity

Onsite procurement activity was reviewed. There are three principal sources where safety-related purchase requisitions are generated. These are the DPC engineering supervisors, the warehouse manager, and Bahnson Service Company. Purchase requisitions generated by DPC are reviewed by the site QA unit prior to being forwarded for conversion to purchase orders. An approved vendors list dated July 1, 1982, is supplied by corporate headquarters and was available onsite. Approximately five purchase requisitions per month are generated by the engineering supervisors.

The following recent purchase requisitions were examined to ensure that the technical and quality assurance requirements were specified, that the requirements of 10 CFR Part 21 were included when necessary, and that all requisitions had been adequately reviewed and approved in accordance with established procedures:

- Purchase requisition #8337-01417S dated June 16, 1981, was for E7018 electrodes. This requisition resulted in purchase order #C436888-13 dated July 28, 1981, for 51,450 lbs. of coated electrodes to ASME Code Section III 1974 through summer 1974 addenda. Physical property tests and test reports were required.
- Purchase requisition #8337-01844S dated December 22, 1981, was for angle and flat steel bars to ASTM A36 specification. This requisition resulted in purchase order H-07918 to Metrolina Steel Company.
- Warehouse purchase requisitions reviewed were for additions to previously approved indefinite quantity purchase orders. One example was for the purchase of Redhead concrete expansion anchor bolts. The original order to Poe Corporation was C82010 dated May 26, 1977. The most recent addition to this order was dated June 8, 1982, for the supply of stainless steel wedge anchors.

Bahnsen Service Company (BSC) has a contract with DPC to construct HVAC systems. BSC generates the purchase order for the procurement of materials and equipment needed to install the HVAC systems. Approximately 5 to 6 safety-related purchase orders are generated each month. A typical purchase order was #1100-CNS dated March 17, 1982, for 100 half-inch stainless steel bolts, nuts, and lockwashers fabricated to ASTM specification 304. Chemical analysis, physical test reports, and certificate of compliance were required with the shipment. Documentation was to be reproducible, right of access to the vendor and records were stipulated, and no material substitutions were permitted. Requirements of 10 CFR Part 21 were required and the purchase order was reviewed by the QA unit prior to placing the order with the Sure Loc Company, Charlotte, North Carolina. The receiving inspection report dated March 23, 1982, verified that the purchase order requirements had been met.

The receiving inspection unit is located in warehouse #2 and the current strength is four inspectors. The inspection work load varies but approximately 12 shipments are received per day. The following recent receiving inspection reports (RIR) were examined to ensure that they had been adequately completed and that nonconformances were clearly identified:

- Mill Power Order (MPO) #C-56366 was for mechanical shock suppressors from ITT Grinnell. The RIR dated July 14, 1982, identified one nonconforming item.

- MPO #C-56366 was also for NF component supports. The RIR dated July 14, 1982, identified that some identification markings were illegible or not traceable to the mill test reports.

Receiving inspection reports for equipment identified during the maintenance inspection (paragraph 6.e) were also examined. Two charging safety injection pumps, serial numbers 49780 and 49781, were both received on January 28, 1977. These RIRs identified that equipment data reports NPV-1, NPP-1, and N-1 had been received. These data reports were stored in the QA vault in QA file 30 205-2-1.

d. QA Surveillance

Surveillance of receipt and storage activities is performed quarterly by the site QA unit. Items of equipment are selected and the surveillance checklist is used to verify actions which include the following:

- The documentation has been reviewed and approved by the QA unit.
- Identification markings match the document numbers.
- Selected items are in the correct storage level.
- Receiving inspectors were certified.
- Storage inspections are reviewed and completed corrective action is verified.
- Equipment maintenance forms have been generated (P-3A's) and the QC inspection is current.
- The material release log is reviewed to assure equipment traceability to the receiving inspection report.
- Previous surveillance reports are reviewed to determine whether recurrent problems exist.

Surveillance performed in January 1982 is documented in the checklist SH-1-1-82. The items selected were limit switch #7236734 and shield concrete masonry units.

Surveillance performed in April 1982 is documented in the checklist SH-1-4-82. The items selected were 50HP Reliance Electric Motors #26719 and #28027. The report stated that the megger and thermometer used in the motor winding insulation tests were within the specified calibration limits. Also, no recurrent problems were identified.

Surveillance of BSC is conducted by DPC-HQ Vendors Division. Surveillances were previously performed by the site QA unit through August, 1981. Surveillance reports prior to and subsequent to the takeover date were reviewed by the inspector to verify that problem areas

identified by the site QA unit had been satisfactorily resolved by the vendor division. Surveillance report CE1-2-10-81 issued by the site QA unit identified that BSC had not obtained temporary rigging attachment authorizations as required by procedure CP-442. The BSC management response was that they had not been issued CP-442, but that they would obtain a copy, conduct personnel training, and document the training. A DPC Vendor Division surveillance report dated February 18, 1981, verified that the training had been conducted. A copy of the documented training was attached to this report. Subsequent vendor surveillances of BSC were conducted March 16 and June 1, 1982.

e. Inplace Storage and Maintenance

During a walk-through of the reactor and auxiliary buildings, several items of installed equipment were selected for verification of the maintenance inspection activity. These included the excess letdown heat exchanger, component cooling pumps, centrifugal charging safety injection pumps, and the reactor vessel head assembly. Maintenance requirements and records for these items were examined. The equipment was covered as specified, the electric motor heaters were activated, and humidity indicator cards were within the specified range. Records indicated that the shaft and gear drive rotations had been performed at the frequency specified.

Within this area, no violations or deviations were identified.