



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

Report Nos.: 50-369/78-26 and 50-370/78-12

Docket Nos.: 50-369 and 50-370

License Nos.: CPPR-83 and CPPR-84

Categories: A3, A2

Licensee: Duke Power Company
Power Building
422 South Church Street
P. O. Box 2178
Charlotte, North Carolina 28242

Facility Name: McGuire Nuclear Station, Units 1 and 2

Inspection at: Lake Norman, North Carolina
Corporate Offices, Charlotte, North Carolina

Inspection conducted: August 8-11, 1978

Inspectors: V. L. Brownlee
B. J. Cochran
C. R. McFarland
A. R. Herdt
M. J. Gouge
T. E. Burdette

Reviewed by: A. R. Herdt 9/19/78
A. R. Herdt, Chief Date
Projects Section
Reactor Construction and Engineering Support Branch

Inspection Summary

Inspection on August 8-11, 1978 (Report Nos. 50-369/78-26 and 50-370/78-12)

Areas Inspected: Routine unannounced inspection of the QA programs for the control of QA, design, procurement and construction activities (Units 1 and 2); IE Bulletins; and licensee identified items. The inspection involved 124 inspector-hours on site by six NRC inspectors.

Results: Of the five areas inspected, no apparent items of noncompliance or deviations were identified in four areas; three apparent items of noncompliance were identified in one area. (Deficiency - Failure to issue vendor surveillance deficiency reports for identified vendor deficiencies, Details I, paragraph 4.e.); (Deficiency - Failure

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of DPC procedures to incorporate trend analysis for departmental audit data, Details I, paragraph 4.f.); (Deficiency - Inadequate followup and verification of corrective action for audit finding, Details I, paragraph 4.f.).

DETAILS I Prepared by: V. L. Brownlee 9/19/78
V. L. Brownlee, Principal Inspector Date
Projects Section
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T. E. Burdette 9/19/78
T. E. Burdette, QA Engineer Date
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Dates of Inspection: August 8-11, 1978

Reviewed by: A. R. Herdt 9/19/78
A. R. Herdt, Chief Date
Projects Section
Reactor Construction and Engineering
Support Branch

1. Persons Contacted

Duke Power Company (DPC)

- *J. R. Wells, Corporate QA Manager
- *J. C. Rogers, Project Manager
- *J. M. Curtis, QA Manager, Vendors
- *J. M. Frye, Senior QA Supervisor, Audit Division
- *W. H. Bradley, QA Manager, Engineering Services
- R. F. Wardell, Nuclear Computer Projects
- C. A. Bell, Engineering Services
- C. H. Favor, Systems and Equipment
- B. E. Hall, Systems and Equipment

The inspectors also interviewed ten other licensee employees during the course of the inspection. They included design engineers, QA personnel and document control personnel.

*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

There were no previous inspection findings reviewed during this inspection.

3. Unresolved Items

No new unresolved items were identified during this inspection.

4. Overall Review and Inspection of the Quality Assurance (QA) Program Implementation

a. General

The purpose of this inspection was to complete an overall review of the implementation of the DPC QA Program for QA, design, procurement and construction activities. Inspection activities included review and inspection of the following areas: inspection and enforcement history; QA management; QA/QC organizational/functional alignment; design control; procurement control; vendors; audits; training; and site activities relating to design control, document control; field procurement; site audits; installation activities and site QA/QC organization.

Inspection activities relating to site functions are addressed in Details II and III of this report.

b. QA Manual, Inspection and Enforcement History

The inspectors performed a review of the QA manuals and docket files to include the following: inspections relative to QA programs and site; enforcement correspondence and responses; and the construction deficiency report file.

DPC QA procedures for the control of activities within the QA Department, Design Engineering Department and Construction Department are contained within the departments respective QA manuals.

The review findings indicate the DPC has developed and is executing a QA program consistent with the SAR commitments relative to design, procurement, construction, enforcement response and reporting of deficiencies.

c. Design Control

DPC procedure Nos. PR-101, PR-130, PR-201, PR-220, PR-260, PR-280, PR-290, PR-301, PR-901, MPR-101 and MPR-140 are controlling documents for control of mechanical design activities.

The inspectors held discussions with QA and Mechanical and Nuclear Division personnel and reviewed applicable procedures which control design functions within the division. System descriptions for the component cooling and liquid radwaste systems were reviewed. The inspectors selected Project 81 component cooling pump design data sheets and supporting design calculations for review and comparison. The pump purchase requisition, specification, purchase order and addendums were checked for distribution. Additionally, the auxiliary feed pump and fuel pool cooling pump specifications and addendums were checked for proper document control.

The inspectors determined that the system description, calculations, data sheets, specifications, purchase documents and the distribution of subject documents were handled in accordance with the controlling procedures.

No items of noncompliance or deviations were identified.

d. Procurement Control

PR-301, PR-302, PR-303 are the controlling procedures for DPC procurement of nuclear safety-related items. Approval of purchase requisitions for safety-related items is performed by the Chief Engineer within the Design Division or his authorized representative. The Quality Assurance Manager, Engineering and Services or his designee reviews and approves purchase requisitions for inclusion of quality assurance requirements. Mill-Power Supply Company prepares the purchase order based on the purchase requisition. The inspector reviewed the DPC procurement procedures and the following purchase orders for compliance with procedure requirements.

PO C39984
PO C75125
PO A98538
PO A98512
PO A98536

No items of noncompliance or deviations were noted during this review.

e. Vendors

DPC Procedure Nos. QA-600, QA-601, QA-602, and QA-604 are the controlling procedures. DPC's QA Vendor Division has responsibility for source evaluation and surveillance of vendors and the preparation and issuance of the approved vendors list.

The inspectors held discussions with responsible Vendor Division personnel, reviewed the applicable procedures and reviewed the approved vendors list. The following Vendor Division records for approved vendors were reviewed:

1. ITT Grinnell, Warren, Ohio
2. Hoke Incorporated, Cresshill, N.J.
3. Tube Turns, Houston, Texas
4. ARCOS Corporation, Philadelphia, Pa.
5. Anchor Darling Valve, Williamsport, Pa.
6. Fisher Controls, Marshalltown, Pa.

In reviewing Vendor Division records, the inspectors noted a problem in the Vendor Division compliance with QA-602 in reporting vendor deficiencies. QA-602, paragraph 5.4 requires that any deficiency found as a result of QA surveillances shall be documented utilizing Quality Assurance Form QA-602B (Vendor Surveillance Deficiency Report). In the following cases, vendor surveillance deficiencies were reported in the discussions/action taken portion of the Duke Vendor Surveillance Report without issuance of a Vendor Surveillance Deficiency Report.

1. Fisher Controls Surveillance Report dated June 21, 1978
2. ITT Grinnell Surveillance Report dated March 14, 1978
3. ITT Grinnell Surveillance Report dated March 15, 1978
4. ITT Grinnell Surveillance Report dated June 1, 1978

The inspectors noted in some cases deficiency reports were written for vendor deficiencies, which were similar to those noted above, and in other cases letters were written on vendor deficiencies. This item is a deficiency (369/78-26-01 and 370/78-12-01).

f. Audits and Trend Analysis

DPC procedure Nos. QA-210, QA-230, QA-300 and WA-304 are the controlling procedures for the DPC QA audit program and trend analysis program. The company QA audit program consists of a

three tier audit/surveillance program. The corporate level audit is performed on a yearly basis by a joint utility management audit team. A departmental QA audit is performed at least twice each calendar year by the QA Audit Division. Surveillance activities are conducted on each major work activity at least once per quarter. Trend analysis reports are issued to provide a means of detecting adverse trends and reporting them to management.

The inspectors reviewed the applicable procedures, current departmental audit schedule, held discussions with responsible QA personnel and reviewed the following audits:

- (1) 1977 Corporate QA Audit - October 24-28, 1977
- (2) Civil and Electrical Division Audit - E-77-4
- (3) Document Control and Nonconforming Items - C-78-1
- (4) Mechanical and Nuclear Division - E-78-1
- (5) Vendors Division Audit - V-78-1
- (6) Document Control at McGuire - C-78-2

During review of completed audit E-77-4, the inspectors noted that finding No VI-3(13), regarding the development of a procedure for the control, writing, and issuing of design safety-related procedures, did not appear to be completely resolved. Discussions with the Managers of the QA Audit Division and Engineering Services Division further clarified the issue.

The inspectors were informed that a forthcoming management meeting would attempt to resolve this matter. This matter is identified as an inspector follow-up item (369/78-26-02 and 370/78-12-02).

During review of the audit controlling procedures for trend analysis it was noted that the DPC procedure failed to fully implement Paragraph 17.1.18 of DPC's Topical Report for analyzing audit data for quality trends and forwarding the results to management. DPC procedure QA-304 provides a means of detecting developing or existing trends adverse to quality and reporting them to appropriate management. However QA-304 failed to implement data analysis for audit data. This item is identified as a deficiency (369/78-26-03 and 370/78-12-03).

In reviewing the responses to six audits, the inspectors became concerned with corrective action responses to audit findings. For the purpose of verifying corrective action adequacy, the inspectors selected audit finding IV-5 in the completed Civil and Electrical

Division Audit E-77-4 for review. Review of the corrective action for audit finding IV-5 revealed that the action on this finding was not completed. On August 10, 1978, DPC personnel took immediate action to correct the deficiency. This appears to be a lack of adequate follow-up and verification of corrective action by the DPC Audit Division. This item is identified as a deficiency (369/78-26-04 and 370-78-12-04).

g. Training

DPC Procedure Nos. QA-130, QA-131, QA-302, QA-409 and PR-860 are the controlling procedures for training within the Design Engineering and QA Department. The QA Manager Engineering Services has the overall responsibility for the QA training for QA Department personnel. Within Design Engineering the respective Chief Engineer or Manager is responsible for QA training within the division.

The inspectors held discussions with responsible personnel and reviewed the certification and training records of the following personnel:

1. A. W. Roy - Lead Auditor
2. G. B. Robinson - Lead Auditor
3. D. L. Osborne - Records Specialist
4. P. V. Fort - Records Specialist
5. D. W. Dalton - Records Specialist
6. M. R. Bore - Records Analyst
7. E. C. Drumm - Records Analyst
8. M. D. Johnson - Records Analyst
9. D. M. Collins - Senior Design Engineer
10. A. P. Cobb - Design Engineer
11. R. F. Day - Design Engineer

No items of noncompliance or deviations were identified.

5. Licensee Identified Items

(Open) Item 369/78-26-05 and 370/78-12-05: Reactor Coolant Pump and Steam Generator Supports (10 CFR 50.55(e)) (Units 1 & 2)
On June 30, 1978, DPC notified IE:11 that Lakeside Steel, Milwaukee, Wisconsin, had informed DPC that the QA documentation (chemical and mechanical properties) for the subject supports may not be correct for the forgings manufactured by Ajax Forging and Casting Company, Ferndale, Michigan. DPC personnel have held several meetings with

Lakeside and Ajax to evaluate the matter. DPC has determined that insufficient documentation is available to attest to the quality of supplied material. DPC is in the process of removing samples from the supplied material for both physical and chemical testing. On August 3, 1978, DPC notified IE:II that the support problem had been determined to be reportable in accordance with the requirements of 10 CFR 50.55(e). The written report is due September 1, 1978.

6. IE Bulletins

(Closed) IEB 78-05 "Circuit Breaker Auxiliary Contact Mechanism - General Electric Model CR105" (Units 1 & 2)

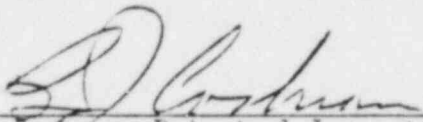
DPC's letter of response dated June 12, 1978, states that a review of the station design revealed that the subject type mechanism is not in use or planned for use in safety-related equipment at this station. IE:II has no further questions regarding this matter.

7. Exit Interview

The inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on August 11, 1978. The inspectors summarized the scope and findings of the inspection of QA program review, design control, procurement, vendors, audits and document control. The licensee acknowledged the following items of noncompliance and followup inspection effort: vendor deficiencies (Details I, paragraph 4.e); engineering assurance procedures (Details I, paragraph 4.f); audit data trend analysis (Details I, paragraph 4.f); and audit finding corrective actions and verification (Details I, paragraph 4.8).

DETAILS II

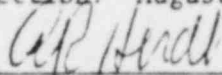
Prepared by:


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9/11/78
Date

Dates of Inspection: August 8-11, 1978

Reviewed by:


A. R. Herdt, Chief
Projects Section
Reactor Construction and
Engineering Support Branch

9/12/78
Date

1. Persons Contacted

a. Duke Power Company (DPC)

- *J. C. Rogers, Project Manager
- G. W. Grier, Project Engineer
- *T. E. Touchstone, Senior Construction Engineer
- E. L. Williams, Engineer
- *R. A. Calhoun, QA Manager (Site)
- K. S. Kisida, QA Engineer
- G. Robinson, QA Engineer
- *J. R. Wells, Corporate QA Manager

b. Contractor Organizations

(1) EDS

D. Rewinkle, Project Engineer

(2) Nuclear Power Services

J. Singh, Engineer

In addition to the above personnel, the inspector interviewed other craftsmen and engineers.

*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

Licensee actions on previous inspection findings were not examined during this inspection.

3. Unresolved Items

There were no new unresolved items identified during this inspection.

4. Independent Inspection Effort

Inspection was made of Units 1 and 2 containment buildings, cable spreading rooms, control room and the auxiliary building.

In Unit 1 containment the inspector observed the preparation for hydro of the primary system and inspected the storage of ice in the ice baskets.

In Unit 2 containment the inspector toured the lower elevations and inspected the reactor coolant pumps temporary support systems.

No items of noncompliance or deviations were identified.

5. QA Manual Review

Comparison of the RII copy of the DPC Construction Department QA manual with the site QA manual confirmed that the manuals are being maintained current with the latest revisions. The site QA organization and duties of QA personnel are as described in the QAM. Examination of the revisions to the procedures confirms that an effort is maintained to upgrade the program and increase the effectiveness.

No items of noncompliance or deviations were identified.

6. Site Design Control

On-site design effort is limited to design and design modification of pipe hangers and supports.

EDS was contracted by DPC to design the pipe hangers and supports. A design group consisting of 35 engineers from EDS, headed up by a Project Engineer, are located at the site and are responsible for the design of hangers and supports for all pipe four inches in diameter and less. The hanger or support is designed by a qualified engineer using loading information supplied by the EDS computer program. The design calculations and drawings are checked

by an engineering checker who is also a qualified design engineer and finally approved by the project engineer before given to the construction forces for fabrication and installation.

An additional design group of DPC engineers headed up by a consultant engineer is responsible for design and modification of pipe hangers and supports where there is an interference or the initial design cannot be used for some reason or other. This design is performed by qualified engineers at the site and sent to DPC design offices for checking and approval.

All other design changes are performed by the DPC design engineering department at the request of the site project engineer.

No items of noncompliance or deviations were identified.

7. Audits

QA procedure QA-300 sets forth the requirements for conducting surveillance personnel training and reporting requirements. The procedure specifies that surveillance of all major construction activities shall be performed at least once each quarter and shall be documented on the surveillance checklist. Items of nonconformance that are identified during the surveillance are documented on nonconformance reports to assure proper followup and corrective action is initiated. Copies of the surveillance reports and nonconformance reports are sent to the attention of the project manager for information and resolution. Examination of the surveillance schedule showed that the site QA manager schedules surveillance of construction activities each month plus surveillance of special activities such as "Cleaning and Installing of Unit 1 Reactor Internals" and "Storage of Primary Coolant Piping in Unit 2 Reactor Building."

The surveillance records for 1977 were selected for examination. The examination confirmed that the surveillances were performed according to schedule or when there was no construction activity in a particular area this surveillance was waived by the QA manager and the waiver was placed in the files. Nonconformance reports were issued and corrective action completed according to documented procedures.

Audits of site design activities are performed by the Corporate QA Engineering Design Group according to QA procedure 230, titled "Department Audit Scheduling and Followup." Two audit reports E-78-1 and E-78-2 were examined. Report E-78-2 conducted May 22 to June 14, 1978, was open pending corrective action for failure to follow procedures.

No items of noncompliance or deviations were identified.

8. Exit Interview

The inspector met with licensees representatives (identified in paragraph 1) at the conclusion of the inspection on August 11, 1978. The inspector summarized the scope and findings of the audit performed on the site QA surveillance programs, site design activities and QA Corporate audits of site design activities.

DETAILS III

Prepared by:

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Projects Section
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9/1/78
Date

Dates of Inspection: August 8-11, 1978

Reviewed by:

A. R. Herdt
A. R. Herdt, Chief
Projects Section
Reactor Construction and Engineering
Support Branch

9/2/78
Date

1. Persons Contacted

Duke Power Company (DPC)

- *J. R. Wells, Corporate QA Manager
- L. R. Barnes, QA Manager, Construction
- *W. H. Bradley, QA Manager, Engineering & Services
- *R. A. Calhoun, Senior QA Engineer
- K. S. Kisida, QA Engineer
- G. R. Moore, QA Technician, Civil
- L. T. Watt, QA Vault Clerk
- G. B. Robinson, QA Engineer
- V. B. Dixon, QA Engineer, Welding and Materials
- P. N. Chagaris, Resident Cashier
- B. C. Emery, Invoice Clerk
- *T. E. Touchstone, Senior Construction Engineer
- T. L. Hunt, Senior Planning & Facilities Engineer
- W. J. Keener, Document Control Supervisor
- J. H. Pope, Supervising Technician, Mechanical
- R. W. Tims, General Foreman, Electrical
- R. L. Payne, QC Supervisor, Civil

*Denotes those attending the exit interview.

2. Licensee Action on Previous Inspections

Licensee actions on previous inspection findings were not reviewed during this inspection.

3. Unresolved Items

None

4. Independent Inspection

The inspector conducted a walk through inspection of the Unit 1 and Unit 2 Reactor Buildings and the Auxiliary Building. The inspector noted the installation of the Unit 1 ice condenser, the pre hydro work in Unit 1 and the work on the support columns for the pumps and steam generators in Unit 2.

No items of noncompliance were identified.

5. Mid-Term CP QA Inspection

a. QA Manual Implementation - Document Control

For DPC projects DPC is the licensee and the constructor. QA manuals are issued to control work by the Construction Department (CD), by the Quality Assurance Department (QA), and for ASME Code requirements (ASME). The QA requirements stated in the FSAR (17.0.1) refer to the DPC topical report, Quality Assurance Program, DUKE-1. NRC has accepted Amendment 4 of DUKE-1 by NRC letter dated June 29, 1978.

The inspector selected two QA engineers assigned unrelated QA/QC activities and discussed with them the availability of applicable QA manual procedures and the controls used to notify the individuals regarding the current status of QA manual documents. The inspector subsequently verified that these two persons copies of procedures QA-101 "QA Records Storage Vault" and QA-301 "Management of Construction QA Records" have not been superseded by a later revision.

b. Drawing - Document Control

The inspector discussed with the document control supervisor the procedures used for controlling drawings related to site construction activities, physically examined the adequacy of the facilities related to the control and storage (at representative locations) of these drawings, and verified

the drawing control computer printout by checking a representative set of drawings in the master set file on site. The master-reproducible drawings are retained by the Design Engineering Department (DED) in the Charlotte offices. The controlling procedures are G-1 in the CD QA Program "Procedure for the Control of Documents" and G-1 in the QA Manual for ASME Code Work "Control of Documents - Construction".

The inspector selected a set of five drawings from the computer printout for each of the areas of (1) containment (civil, structural drawings) (2) mechanical piping, and (3) electrical cable and verified these in the field offices for the assigned craft supervisors or foremen. The field observations verified that the procedure requirements are in effect for transmittals of revised drawings on site.

The inspector reviewed the QA surveillance checklists for a representative selection of civil, electrical, and mechanical activities and noted that items related to documentation control are included to a limited extent on some for each discipline. Discussions with the Senior QA Engineer indicate that a surveillance checklist specifically for on site documentation control is being developed and is scheduled to be issued in September, 1978.

c. Site Originated Procurement - Document Control and Site Surveillance

The inspector discussed with the cashier, the invoice clerk and the QA engineers responsible for surveillance of procurement activities the procedures applicable to procurement, and examined the facilities related to procurement documents. The controlling procedures are E-3 in the CD QA Program "Field Procurement of Items and Construction Services" and E-3 in the QA Manual for ASME Code Work "Field Procurement of Materials and Construction Services." The requirements for Non-Code, safety-related items and construction services are as stated in Section E-3 of the QA Manual for ASME Code Work except for the procedures as stated in E-3 of the CD QA Program. The Senior QA Engineer is responsible for reviewing all requisitions, specifications, and attachments to assure correct QA requirements and compliance with procedures E-3 prior to issuance to Mill Power Supply Company (the

purchasing agent for DPC). Field procurement of safety-related items is relatively limited compared to the procurement by DED originated purchase requisitions (PR). None of the PR's examined had been revised. The purchase requisitions (attachment from 3A to ASME Procedure E-3) provide requirements for such items as the approved suppliers and distributors, identification and marking of materials, documentation, packaging and storage, and special instructions including references to 10 CFR 21. The inspector verified the presence of selected procurement documents in the records files for purchase orders (PO) E36782-32, E33902, E37237, E23134 and E16075. Material has been received on each of the above except E37237. The inspector compared the PO information versus the PR requirements on each of the above PO's plus sixteen other PR's selected to obtain samples of PR's for structural materials, electrical materials, welding materials, and consulting services (testing).

d. Site Installations

The CD QA Program manual procedures are applicable to the installation of safety-related components and systems. When installation procedures reference manufacturer's installation instructions manuals the manuals are available on site as controlled documents. Usually the vendors instructions are incorporated into the specifications and drawings used by the CD crafts in conjunction with the Construction Procedures used for each project. Westinghouse installation manuals for the installation of the steam generators, the pressurizer and other NSSS components were observed to be on site in the document control area. Work observed on these components during this inspection did not necessitate the use of these vendor manuals.

No items of noncompliance were identified.

7. Exit Interview

The inspector met with the licensee representatives (denoted in paragraph 1) on August 11, 1978. The scope of the inspection and the findings were reviewed. The licensee was advised that no items of noncompliance or deviations were identified during this inspection.