



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report No.: 50-414/85-61

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

Docket No.: 50-414

License No.: CPPR-117

Facility Name: Catawba Unit 2

Inspection Conducted: December 2-6, 1985

Inspectors: *G. A. Belisle for* *12/20/85*
L. H. Jackson Date Signed
G. A. Belisle for *12/20/85*
R. W. Wright Date Signed
Approved by: *G. A. Belisle* *12/20/85*
G. A. Belisle, Acting Branch Chief Date Signed
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection involved 74 inspector-hours at corporate headquarters in the areas of licensee actions on previous enforcement matters and licensee management of design activities.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

S. Alexander, Supervisor, Design Engineering, Mechanical/Nuclear Division (M/ND)
C. Bell, Lead Auditor, Quality Assurance (QA), Audit Division (AD)
G. Bell, QA Audit Supervisor, AD
L. Boyles, Supervisor, Drawing Control, General Services Division (GSD)
*A. Cobb, Manager, Project Management Division (PMD)
*J. Curtis, QA Manager, Vendors
J. Crenshaw, Senior Engineer, Electrical Division (ED)
*L. Davison, QA Manager, Technical Services
S. Derrick, Supervisor, Central Records, GSD
R. Dover, Technical Assistant, ED
J. Frye, QA Manager, AD
R. Gamberg, Design Engineer, M/ND
*G. Grier, Corporate QA Manager
T. Harrall, Supervisor, Design Engineering, ED
J. Harrington, Design Engineer, ED
W. Hogan, Engineering Associate, Civil/Environmental Division (C/ED)
W. Houston, Senior Engineer, PMD
D. Kulla, Supervisor, Design Engineering, C/ED
*T. Mathews, Manager, Duke Projects, PMD
*R. Medlin, Design Technical Supervisor
I. Pearce, Civil Engineering, Principal Engineer, C/ED
*C. Robinson, Senior QA Supervisor, Vendors, QA
T. Smith, Engineering Associate, C/ED
T. Wyke, Chief Engineer, M/ND

Other licensee employees contacted included engineers, technicians, and office personnel.

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on December 6, 1985, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters (92702)

(Closed) Severity Level IV Violation (50-414/85-08-01): Failure to Audit Vendors Triennially.

The licensee response dated May 25, 1985, was considered acceptable by Region II. The inspector conducted interviews with Senior Managers in the vendor inspection and audit groups and determined that the licensee is actively implementing their commitment to audit vendors. The inspector reviewed documents which confirmed that they have audited approximately 65 vendors and only five vendors remain to be audited to meet the January 1, 1986 commitment. The inspector selected two audits at random and verified that adequate essential elements were being audited by the licensee.

The inspector concluded that the licensee had determined the full extent of the violation, taken action to correct current conditions, and developed corrective actions needed to preclude recurrence of similar problems. Corrective actions stated in the licensee response have been implemented.

4. Licensee Management of Design Activities (35060)

a. Design Assurance

Duke Power Company (DPC) has assigned overall responsibility for design of the Catawba Nuclear Station to its Design Engineering Department (DED) and responsibility for quality assurance of design to its Quality Assurance Department (QAD).

The inspectors discussed the organization of the DED and the QAD with responsible licensee engineers. DPC organizational staffing and responsibility statements are documented in licensee procedures.

The engineering QA program contains procedures and instructions for implementation and assurance of design control during the various phases of design activities. These procedures assure the design is performed in accordance with approved criteria and that deviations and nonconformances are controlled.

The DED QA procedures listed below were examined to verify the systematic management of the Duke design process and to assure that the QA program met requirements:

<u>Number, Revision</u>	<u>Title</u>
PR-101, R24	Engineering Calculations
PR-130, R18	Engineering Drawings
PR-170, R4	Design Specifications
PR-201, R25	Variation Notices
PR-202, R9	Design Nonconformance

Number, Revision
(Continued)

Title

PR-301, R24
PR-901, R28
PR-931, R9

Procurement Specifications
Document Control
Design QA Records Collection,
Maintenance, and Storage

b. Personnel Interviews

The inspectors interviewed managers from DED and QAD to ascertain the following:

Their understanding of design verification;
Their interface with design assurance and QA;
Their implementation of design verification;
Means of dispositioning design verification findings; and
Criteria for competency of design verifiers.

Discussions with managers revealed that each safety-related design document, such as calculations, specifications, purchase requisitions, or drawings are prepared by qualified individuals in DED. This individual specifies and includes the appropriate codes, standards, and SAR commitments within the design documents. Each design document is then checked by another individual qualified in the same discipline and is reviewed for concept and conformity with applicable codes and standards. The document is either approved by the chief engineer or his designee who has overall responsibility for the design function. If the document involves coordination with other engineering divisions, then it will either be reviewed by the chief engineers or authorized representatives from their respective divisions. Conflicting design verification findings are generally resolved by the next level of supervision. However, individuals assigned to perform the check and review of a nuclear safety-related document have full and independent written authority to withhold approval of the document until every question concerning the work has been resolved. If required, problem resolution can be escalated to the VP, DED by individuals in design engineering or escalated to the corporate QA manager by individuals in QA.

The minimum requirements for engineers, designers, and technical assistants within DED are delineated in DPC's DED Job Classification Description Manual.

The managers interviewed by the inspectors appeared knowledgeable in the areas of design and the design verification process.

c. Design Engineers Interview - Designer

Various design engineers and engineering associates from the Catawba Projects, Electrical, Civil/Environmental, and Mechanical/Nuclear Design Divisions were interviewed to determine their understanding of implementing procedures for the control of the design process.

The following design documents prepared by these individuals were examined by the inspectors and discussed with their authors:

Procurement Specification CNS 1361.00-00-0005, Rev. 6, Electrical Penetrations, Instrumentation, and Control

Design Change Authorization DCA-EPSP-011 Effecting Train A of Drawing CN-2702-02.01, Rev. 7, One Line Diagram 4160 Volt Essential Auxiliary Power System (EPC) 4160 Volt Switchgear No. 2 ETA

Calculation CNC 1139.14-23-0001, Rev. 34, Waste Evaporator Concentrate Sample Cooler and Heat Exchange Platform

Calculation CNC 1139.14-00-0010, Rev. 2, Auxiliary Building - Radiation Shield Wall at El. 594.

Calculation CNC 1223.19-00-0008, Rev. 0, Nuclear Water System, Train A & B, Technical Specification Allowable Leak Rates

Calculation CNC 1223.03.00-0005, Rev. 0, Pressurized Power Operated Relief Valve Set Point Calculation

Preparers of the above selected design documents were asked by the inspectors to discuss their specific involvement in the development, handling, and selection of the following design attributes:

- Design inputs, received, and established;
- Design assumptions, received, and established;
- Design interface;
- Design documents used to verify design inputs; and
- Handling design changes.

The inspectors confirmed that the design engineers interviewed were qualified, employed approved design procedures, utilized acceptable design criteria and specifications, maintained satisfactory design interface with other disciplines/organizations when necessary, implemented design changes appropriately, and had a good understanding of their role in the implementation of the design process.

d. Design Verification

The inspectors interviewed design verifiers and confirmed that they understood their responsibilities in the design verification process and that they had the required independence to perform their job. The inspectors examined recent designs for which these personnel served as design verifiers, and reviewed qualifications which authorized them to perform design verifications. All verifiers interviewed were qualified and competent to perform their assigned functions.

e. Design Interface - Review of New Contract

The inspectors selected a contract for the Reactor Building Electrical Penetration Assemblies to confirm that there was objective evidence of effective interface control. Specification CNS-1361.00.00.0005 had been certified by a Registered Professional Engineer. The specification was incorporated into the bid package. Conax Corporation was the successful bidder. The contract required the penetrations to be in accordance with ANSI N45.2.2-1972, IEEE 317-1976, IEEE 383-1974, and Duke Power Company's specification CNS 1393-00-0001, Revision 4, for seismic qualifications. A design pressure of 72 psig at 327°F was specified. The specifications for the penetrations required them to be qualified for a radiation dose level of 1×10^8 RADS. Evidence that similar penetrations had been qualified to a more harsh environment than required for Catawba penetrations were on file at DPC. In fact, the inboard ends of the Test Data Bases One and Two were subjected to a gamma radiation dose rate of 2.04×10^6 rads/hours for a period of 109.7 hours yielding an average integrated total dose of 2.238×10^8 rads in air.

Interface documents were transmitted by letters between Conax and DPC. Review and approval were formally documented.

f. Design Document Control and QA Records

DPC QA Topical Report, Section 17.1.17, specifies the licensee's program commitments for quality records. The topical report commits to ANSI N45.2.9-1974. Duke Design Engineering Procedures PR-901 and PR-931 provide instructions for document control and design QA records collection, maintenance, and storage. Supervision from the GSD explained their records responsibilities and duties and how they implement the above mentioned procedures. Particular attention and questions were directed toward the licensee's document control measures concerning the interface of quality documents between DPC corporate design, the Catawba site, and manufacturers/suppliers. Several design documents that were examined and identified in paragraph 4.c were requested and retrieved from the microfiche files without problems.

g. Audit Reviews

The following Design Engineering Department audits performed by the QA Audit Division were examined by the inspectors to verify that the scope and depth of the subject audits extended to all applicable Appendix B elements, that audit team members were qualified, that audit findings were reported to upper management and the organizations audited, that corrective actions were being initiated, and that there was followup and readudit by QA as necessary:

Audit DE-85-1 (CD) Civil/Environmental Division of Design Engineer Department (DED)

Audit DE-85-2 (ED) Electrical Division, DED

Audit DE-85-4 (MD) Mechanical/Nuclear Division/DED

Audit DE-85-6 (GS) General Services Division, DED

Within these areas, no violations or deviations were identified.