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

Report Nos.: 50-413/84-88 and 50-414/84-39

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

Docket Nos.: 50-413 and 50-414 License Nos.: NPF-24 and CPPR-117

Facility Name: Catawba 1 and 2

Inspection Conducted: March 13 - August 24, 1984

Inspectors: J. J. Blake 8/31/84
Jerome J. Blake, Section Chief Date Signed

B. Uryc 8/31/84
Bruno Uryc, Investigations Coordinator Date Signed

Approved by: J E Conlon for 8/31/84
J. R. Herdt, Branch Chief Date Signed
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope: This special, announced inspection involved 80 inspector-hours on site and in the NRC Regional Office in the areas of monitoring and reviewing the Duke Power Company investigation of concerns identified during a meeting in the NRC Region II Office on March 13, 1984 (see Inspection Report Nos. 50-413/84-31 and 50-414/84-17 dated April 23, 1984).

Results: One apparent violation was found in the area of inadequate implementation of the quality assurance requirements in the welding program.

REPORT DETAILS

1. Licensee Employees Contacted

   R. L. Dick, Vice President-Construction, Acting Project Manager
   A. R. Hollins, Investigation Director

   NRC Resident Inspector

   P. K. VanDoorn

2. Exit Interview

   The inspection scope and findings were summarized during a telephone conversation on August 29, 1984, with Mr. R. L. Dick. The licensee was advised that there would be one new violation as a result of this inspection.

   Violation (50-413/84-88-01; 50-414/84-39-01): Inadequate Implementation of QA Requirements in the Welding Program (Paragraph 6).

3. Licensee Action on Previous Enforcement Matters

   (Closed) Unresolved Item (50-413/84-31-01; 50-414/84-17-01): Fabrication of Socket Welds. This item concerned allegations that socket welding had been done without proper records on hand, without regard for interpass temperature, and without regard for authorized weld bead deposit sequence. During the conduct of the Duke investigation (as described in paragraph 5 of this report), these three concerns were pursued during the worker interviews. The concern about interpass temperature control was also the subject of metallurgical studies by Duke and by Brookhaven National Laboratories under contract to NRC Region II. Results of the investigation of these concerns is as follows:

   a. Welding Without Proper Records On Hand

      This was investigated by Duke and reported under the heading, "Process Control" in their final investigation report. The conclusion of that report was that there had not been a widespread problem but there had been cases where supervisors had urged welders to start work prior to paperwork being issued and/or to continue work while the paperwork was at another location. There was no evidence of defective work due to the fact that in each case the worker involved was aware of the work requirements. Duke concluded that corrective action in this case would include meetings with workers and supervisors to ensure that there was a correct understanding of the exact procedural requirement in this area.

b. Welding Without Regard for Interpass Temperature

During the Duke investigation into this matter, one of the welders offered to demonstrate how sockets had been welded in violation of interpass temperature requirements. The licensee's investigative team allowed the welder to demonstrate the technique of welding of sockets using a nearly continuous welding technique (interpass temperature exceed 700°F). Using the demonstration weld as one of the samples, the licensee made up eight socket welds. Two of each of the following sizes:

2-inch, Sch. 40 Pipe welded to 2-inch, 3000 #coupling
1-inch, Sch. 40 Pipe welded to 1-inch, 300 #coupling
1-inch, Sch. 160 Pipe welded to 1-inch, 6000 #coupling
2-inch, Sch. 160 Pipe welded to 2-inch, 6000 #coupling

One socket sample from each set was welded with an interpass temperature of 350°F (the maximum allowed by procedure) and the companion socket from each set was welded with no interpass temperature controls. The test welds were cut in half to provide two, 180-degree segments of each test weld. One segment was forwarded to NRC Region II's contractor, Brookhaven National Laboratory (BNL), for metallurgical analysis and one segment was metallurgically analyzed by Duke Metallurgical Laboratory. The results of the analyses by both BNL and Duke showed that all of the sample welds were acceptable when compared with the ASTM A-262 Practice A test for susceptibility to intergranular stress corrosion cracking. Duke metallurgists also used the test samples and other appropriate samples available from the Catawba weld test facility to develop a technique for conducting ASTM A-262 Practice A tests on welds in the field.

A metallurgical expert from BNL observed field tests on weld joints at Catawba and concluded that the techniques employed by Duke provided an acceptable method of determining the sensitization of stainless steel socket welds.

The conclusions reached by the licensee as described in the final report of the Duke investigation were that the violation of interpass temperature requirements was not widespread, was not directed by the welder's foreman, and if it did occur, it would not have had an adverse affect on the integrity of the welds in question. Based on the review of the Duke report and inspection activities described in paragraph 5 the NRC feels that there is reason to believe that violation of interpass temperature did occur in isolated instances and that when it did occur, it was probably because the welder's perception that his foreman was directing him to ignore the procedure to meet the schedule. This condition is considered to be an example of the QA problem described in the violation described in paragraph 6 of this report.

c. Welding Without Regard for Authorized Weld Bead Deposit Sequence

This concern involved welders who stated that because of space limitations they altered the welding sequence from that described in the procedure. The conclusion reached by the licensee was that the techniques described by the welders did not constitute a violation of the procedure and therefore, no procedure changes were required. NRC agrees that there was no technical violation of the procedure, but is concerned that welders did the work with the perception that they were in violation of the procedure. This is another indicator that some of the welders at Catawba were working under some perceived production pressures from their foremen.

This unresolved item is closed and the concerns are a part of the violation described in paragraph 6 of this report.

(Closed) Unresolved Item (50-413/84-31-02, 50-414/84-17-02): Unauthorized Removal of ARC Strikes. This item was investigated by the licensee who could find no evidence that ARC strikes were removed from anywhere but the weld zone without proper authorization and documentation. The valve body described during interviews by NRC did not show evidence of ARC strike removal, neither did any of the similar valves in the vicinity. The allegation that a foreman had removed an ARC strike without authorization could not be substantiated. The hardware that was purported to be involved showed no evidence of ARC strike removal. The NRC considers this unresolved item to be closed as the perceived production pressure conditions which were purported to be the cause of the alleged procedure violation are the subject of the violation described in paragraph 6 of this report.

4. Background

NRC Inspection Report Nos. 50-413/84-31 and 50-414/84-17 dated April 23, 1984, provided the details of how the concerns about foreman override originated; what actions were taken in the NRC Region II inquiry of the concerns; and the actions taken by Duke Power Company to investigate and resolve the issues.

Throughout the licensee action on these concerns, periodic status reports were provided to the Regional Office, and followup monitoring of the progress was performed by Region II as described in the following paragraphs.

On April 18, 1984, a senior member of licensee management met with members of the Region II staff to provide an update on the status of the licensee investigation. During the meeting, the licensee representative provided details concerning the formulation of the investigative team, the formation of a review board and the development of their investigative approach. The licensee representative also briefed the staff on the investigative activity that had been accomplished to date which included additional concerns which had been raised during interviews with licensee employees, as well as the description of technical issues being developed.

On April 27, 1984, senior members of the Region II staff were briefed on the status of the licensee investigation. The licensee was informed that the staff would conduct a continuing on-site review of the licensee's investigation to include a review of the technical adequacy of the investigation and a review of the administrative and investigative methodology being utilized by the licensee.

5. Review of Duke Investigation

During the period May 1-3, 1984, members of the Region II staff conducted the first on-site review of the licensee's investigation. The review of the investigative methodology included examination of the techniques and methods used during personal interviews conducted by the licensee; documentation of the interviews; credentials of the interviewers; and, the general adequacy of the investigative process. Approximately 146 unsigned affidavits were reviewed by the staff. These affidavits were prepared as a result of the interviews conducted by the licensee. The staff personally interviewed the licensee interviewers to determine the adequacy of their preparation and ability to conduct interviews. The staff was satisfied that the four individuals selected to conduct interviews were well qualified for the task. The staff found that the investigative process had been initiated from a high level of licensee management and responsibility was fixed at the highest levels of licensee management. A professional engineer was assigned to direct the Duke investigative effort. This individual was selected from the licensee's corporate staff. Several individuals who had been interviewed during the investigation were personally contacted by the Region II reviewers to determine their view and impressions of the process. These individuals reported that they were satisfied that their interviews were conducted in a professional manner and that they were given ample opportunity to express their concerns to the licensee. Throughout this period of review by the staff, licensee representatives were available to answer staff questions and clarify procedural matters for the staff.

On May 24, 1984, another on-site visit review of the licensee's investigation was conducted. The licensee's investigative plan and proposals to initiate resolution of the concerns expressed by employees was reviewed. These procedures were found to represent a valid and logical approach to resolving the concerns.

During the period June 12-13, 1984, another on-site review was conducted. Briefings were conducted with those individuals appointed by the licensee to lead the technical teams assigned to address technical concerns. These individuals were well prepared to discuss the actions of their particular teams. The Investigation Director described the action he planned to ensure that the technical teams conducted the appropriate followup. The Investigation Director also discussed the proposed personnel actions in connections with those issues categorized as employee relations concerns. The staff was advised that the personnel action proposals would be submitted to licensee senior management officials. In addition, the staff reviewed an additional 105 affidavits and these were found to be thorough and well written.

During the period July 23-24, 1984, a final on-site visit was conducted to continue the staff's review of the licensee's investigation. This particular visit centered on examining the proposed resolution of technical concerns. Also, the investigative methodology being used to provide feedback to the employee concerns was also reviewed. The staff was also advised that the proposed recommendations relative to the employee relation concerns had been approved for implementation by licensee senior management.

6. Review of Investigation Report

On August 3, 1984, by letter from Duke Power Company Legal Department to the Atomic Safety and Licensing Board, the licensee forwarded the final report. "Investigation of issues raised by the NRC staff in inspection reports 50-413/84-31 and 50-414/84-17."

As discussed in paragraph 5 above, the conduct and depth of the licensee's investigation was reviewed periodically during the course of the investigation. The review of the final report was conducted to evaluate the technical detail and context of the licensee's conclusions.

The licensee's report not only addressed the issues and questions raised by NRC in Inspection Report Nos. 50-413/84-31 and 50-414/84-17 but also reported all the concerns which had been raised during their interviews of over 200 construction craftsmen.

The principal conclusions reached by Duke Power Company were that: (1) quality construction standards were being met at Catawba, and (2) the foreman override issue is not a pervasive problem at Catawba. The investigation did identify the fact that there were definite problems associated with some specific first line supervisors and one second line supervisor.

The licensee reported that one first line welding supervisor was to be removed from his supervisory position; his supervisor, the general foreman, was also removed from his supervisory position; and the superintendent was to be formally counseled regarding his role in allowing conditions be what they were. In addition, three other supervisors were to be formally counseled as to how their words and actions might have been understood to mean that workers were to ignore quality requirements for the sake of production deadlines. Duke also concluded that communication sessions should be held with construction craftsmen and supervisors to preclude repetition of the misunderstanding which were involved in the majority of the worker's concerns.

Based on the review of the final investigation report; the inspection trips to review the conduct of the investigation; and discussions with licensee representatives, Region II has concluded that the situation which existed with the welding foreman and his supervisor, who were removed from supervisory positions because they perpetuated the atmosphere that procedure controls could be waived when production pressure dictated, should be

considered a violation of 10 CFR 50, Appendix B, Criterion II, which requires that "The applicant shall regularly review the status and adequacy of the quality assurance program. Management of other organizations participating in the quality assurance program shall regularly review the status and adequacy of that part of the quality assurance program which they are executing."

The following information is pertinent to the conclusion that formal response to this violation is not required.

a. The final Duke Power Company investigation report acknowledges that the condition cited in the Notice of Violation exists.

b. The answers to the questions of the reason for the violation, the corrective actions and results and the actions to prevent recurrence are fully answered in the licensee's August 3 submittal.

c. Full compliance was achieved by completion of the Duke Power Company recommended personnel actions.

7. Followup Interviews by Region II Staff

As part of the followup by Region II consideration was given to contacting those licensee employees who expressed concerns during the investigation. One of the problems encountered with proceeding to contact these individuals was the fact that the individuals were advised by the interviewers that their information would be held in confidence. This, in essence, was a pledge of confidentiality given to the individuals that were interviewed. The staff considered going to the site to contact these individuals, however, it was felt that such an action could possibly draw undue attention to the individuals by virtue of the fact that arrangements to talk with them would have to be made through their supervisors. This was a particularly sensitive area for these individuals since personnel actions had resulted from their statements. It was then decided to telephonically contact the individuals at their homes and conduct an interview after explaining why they were being contacted by telephone. The staff felt that there were two important issues that should be addressed with these individuals. The first was to determine if they were contacted by the licensee and satisfied with the resolution of their concern. The second was to determine if they were advised by interviewers that they could contact the NRC if they were not satisfied with the results of the licensee investigation. The Investigation Director was contacted and requested to provide the home phone numbers of all those individuals who expressed concerns. There were 37 individuals who expressed concerns during the licensee investigation. The staff has contacted 27 of these individuals and they have all stated that they were satisfied with the results of the licensee investigation and they felt that their concerns were appropriately addressed during the investigation. Of the remaining 10 individuals, nine have no phone or have an unlisted number, and one could not be contacted. Based on the large sample already contacted and their consistent satisfaction with how their concerns were addressed, the staff will continue to attempt to contact the remaining individuals but will not amend this report unless a differing opinion is voiced.