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March 8, 1984

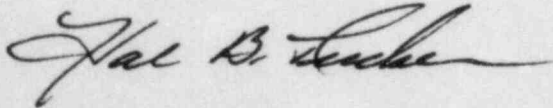
Mr. James P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

Re: RII:RWW
50-413/83-17
50-414/83-16

Dear Mr. O'Reilly:

Please find attached a Final Report of corrective action taken in response to Violation No. 414/83-16-02 as identified in the above referenced inspection report.

Very truly yours,



Hal B. Tucker

LTP/php

Attachment

cc: NRC Resident Inspector
Catawba Nuclear Station

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NRC VIOLATION 414/83-16-02

IMPROPER CONCRETE MIX PLACED

In order to insure that the Design Engineering specified concrete mix strengths were placed with a high degree of confidence, a statistical evaluation of previously completed work was conducted. This evaluation was done jointly by the Quality Assurance and Construction Departments.

First Phase

In the first phase of our sampling, a total of 422 placements out of a total of approximately 4200 were chosen for review. For identification purposes, the prepour numbers assigned by the Structural Inspection group were used. The prepour numbers selected for review were chosen using a random number generator programmed for the selected population size. An individual comparison between the mix specified and placed was conducted. The drawings were compared with the actual placement documents.

The results of our initial sampling program were satisfactory and indicated that a 95% confidence level in previous work was achieved. Out of the sample, two improperly specified mixes were found to have been placed.

The following errors were detected during the first phase of sampling:

Error #1

Prepour Number 4457, Repair of two (2) 10 inch pipe sleeves, elevation 594, Auxiliary Building, Unit 1. Variation Notice number 10154 was written to detail the repair. Mix C-1 (5000 psi) was specified on the Variation Notice, Mix A-1 or A-2 (3000 psi) was specified on the M-2A Prepour Site Inspection and Mix A-1 (3000 psi) was actually placed. Mix A-1 or A-2 was the mix that would normally be required in this area. This error was reported to Design Engineering on NCI 17640. After reviewing the data, Design Engineering determined that the repair was satisfactory and no rework would be required. The compressive cylinder breaks for this particular placement satisfied the 5000 psi requirements.

Error #2

Prepour Number 4461, Auxiliary Building Hatch Covers (H-51) 9 each. Mix B-2 was specified on Design drawing CN 1215-1, however, Mix A-1 (3000 psi) was specified on the M-2A, Prepour Site Inspection, and subsequently placed. This error was reported to Design Engineering on NCI #17639. Design Engineering concluded that for this specific application, the concrete placed for the hatch covers was acceptable.

Analysis of the First Phase Results

After reviewing the first phase results, we felt that it was important to provide more than the minimal standards for this item. It was determined that the sample size should be increased to reflect some of the items that may have been problem areas. These "problem areas" identified for special review/emphasis were defined as pours/areas requiring higher strength mixes than the others for a particular elevation/series. Several other hundred were chosen at complete random. These items were not selected by statistical sampling techniques but by using good judgement and relevant observations made during the first phase of this review.

Second Phase

During the "expanded" second phase of this investigation, the areas determined to have a high potential for error were evaluated. Once again, the Design drawings were compared to the documents detailing the actual mix placed.

One particular area that seemed to have the most potential for problems was the Auxiliary Building, Unit 1 and 2 concrete hatch covers. An especially close evaluation was made of this area. One minor item was noted, determined to be readily correctable and was corrected during the course of this investigation. However, no additional problems were found outside of the original problem found in this area and reported on NCI #17639 (see errors found in the first phase of this investigation above).

A total of approximately 1114 additional items were evaluated during the second phase analysis. No errors were detected during this phase of the investigation.

Final Analysis

In summary, a total of approximately 1500 items were reviewed out of a total population of approximately 4200 placements. Thirty-seven percent (37%) of the total placements made were reviewed during the first and second phases of our investigation.

Final Conclusion

Based on this analysis, we have determined that a confidence level exceeding 95% has been established that the strength mix specified by Design Engineering on the Design drawings/documents was indeed placed in every case. Therefore, we plan to do no additional reviews of previously completed work.