



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

September 30, 1983

Docket No. 50-454

Commonwealth Edison Company
ATTN: Mr. Cordell Reed
Vice President
P. O. Box 767
Chicago, Illinois 60690

Gentlemen:

SUBJECT: INTEGRATED DESIGN INSPECTION 50-454/83-32

This refers to the integrated design inspection conducted by the Office of Inspection and Enforcement on May 23 - June 10, 1983 and June 20 - June 30, 1983 at the Byron Station, your Chicago corporate office, Sargent & Lundy Engineers and Westinghouse Electric Corporation. The inspection team was composed of personnel from the NRC's Office of Inspection and Enforcement and Region IV Office and consultants. The inspection covered activities authorized by NRC Construction Permit CPPR-130.

This inspection is the second of a series of integrated design inspections that the Office of Inspection and Enforcement plans to conduct with assistance from other NRC offices and consultants. The results of these inspections will be used to evaluate control of the design process and quality of design activities at nuclear plants.

The enclosed report identifies the areas examined during the inspection, which focused on the auxiliary feedwater system as a selected sample. Activities included examination of procedures, records, training and inspection of the system as installed at the plant. Emphasis was placed upon reviewing the adequacy of design details as a means of measuring how well the design process had functioned for the selected sample.

Findings regarding errors, procedural violations and inconsistencies are identified in the report. Unresolved items are identified where insufficient information was developed to allow final determinations on the adequacy of specific features or practices. Other observations are identified where it was considered appropriate to call attention to a matter that was not a specific finding or unresolved item. They include items recommended for your consideration but for which there are no specific regulatory requirements.

Section 1 of the report provides a summary of the results of the inspection and the conclusions reached by the inspection team. The principal points from that summary are discussed below.

In the mechanical systems discipline, there were deficiencies in the analyses related to postulated cracks and breaks in high-energy and moderate-energy lines and internal flooding. Because the overall pattern of findings indicated problems in addressing licensing commitments as well as deficiencies related to the adequacy and control of specific analyses, the team did not conclude that these analyses were complete, adequate and controlled. Accordingly, the team recommended a comprehensive review, audit, and corrective action program to assure that the design work in this area is complete, adequate and controlled.

The findings also indicated a pattern of problems concerning the availability of valid, updated calculations to support the current design in the mechanical systems discipline. The team did not conclude that valid, updated analyses were generally available. Accordingly, the team recommended a systematic review and corrective action program to assure that the necessary calculations in the mechanical systems discipline are identified, performed and updated as necessary to support the current design.

The concerns discussed above relate mostly to the documented bases and calculations supporting the design rather than the design itself. Aside from the issue of meeting licensing commitments related to postulated breaks and cracks in high-energy and moderate-energy lines, when the team examined the actual design in detail, no significant problems were found. This appeared to represent a general pattern that the team attributed to the experience of Sargent & Lundy personnel.

In the instrumentation and control discipline, there appeared to be problems in the documentation of design criteria. The lack of documented bases for setpoints, reset values, accuracy requirements, and margins was considered a systematic weakness. However, the actual design was found to be generally sound in the areas that were examined in detail. It appeared that the personnel and the working relationship between Commonwealth Edison and Sargent & Lundy functioned effectively to mitigate the design problems that did arise. In general, the inspection sample appeared to indicate a controlled design process in the instrumentation and control discipline.

In the mechanical components area, a concern was developed with respect to that portion of the balance-of-plant piping design work being performed by Westinghouse. The team examined a relatively small sample of this work and found deficiencies. The sample was too small to permit conclusions; however, it did raise questions. Accordingly, the team recommended further examination of the Westinghouse portion of the balance-of-plant piping design work to determine

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whether or not systematic weaknesses are indicated. In other respects, the team was impressed with the work reviewed in the mechanical components area which appeared to be generally correct, organized and documented indicating a controlled process.

In the civil-structural area, several findings were made with respect to detailed criteria and calculations. They were judged to be indicative of limited, minor weaknesses that had no significant impact on the structural elements that were reviewed. In general, the civil-structural design area appeared to be controlled.

In the electrical power area, a systematic weakness was identified in a specific type of analysis. This involved analyses that had been performed to justify the acceptability of lack of physical separation between safety-related cables and non-safety related cables. A number of analyses did not include full evaluations of the potential effects for degrading the safety-related cables. The team judged that the analyses should be upgraded as necessary to include such effects. However, in general, the team was impressed with the work reviewed in this area which appeared to be correct, organized and documented indicating a controlled process.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosures will be placed in the NRC Public Document Room unless you notify this office, by telephone, within 10 days of the date of this letter, and submit written application to withhold information contained herein within 25 days of the date of this letter. Such applications must be consistent with the requirements of 10 CFR 2.790(b)(1).

You are requested to respond in writing to the findings and unresolved items within 45 days after receipt of this letter. The response should include a description of your plans regarding the programs recommended by the team for: (1) high-energy and moderate-energy lines and flooding, (2) mechanical systems design calculations, and (3) Westinghouse balance-of-plant piping design. With respect to the deficiencies identified in findings, the response should address the cause, extent, corrective actions and any other information you consider relevant. For unresolved items, the response should provide information concerning acceptability of the specific feature or practice involved. Finally, the response should include your position, and the bases therefore, with respect to the necessity for conducting audits of design implementation in areas other than those audited by our inspection so as to assure yourself that deficiencies of similar importance either do not exist or are corrected. The response should be addressed to the NRC Region III Office, with copies to the NRC Region IV Office and this office.

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As discussed in the report, the NRC's followup efforts will be managed by the Region III Office with assistance from other NRC offices as needed. Some of the items identified in the report may provide bases for enforcement actions. The Regional Office will initiate any enforcement actions considered appropriate.

Should you have any questions concerning this inspection, please contact us or D. W. Hayes, Chief, Reactor Projects Section 1 in the Region III Office.

Sincerely,

Original signed by:

Richard C. DeYoung, Director
Office of Inspection and Enforcement

Enclosure:
Inspection Report 50-454/83-32

cc w/Enclosure: See next page

Distribution with Report:

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*See previous concurrences

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*DD: QASIP: IE
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