U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-454/84-45(DRS); 50-455/84-30(DRS)

Docket No. 50-454; 50-455

Licensee: Commonwealth Edison Company
P.O. Box 767
Chicago, IL 60690

Facility Name: Byron Station Unit, 1 and 2

Inspection At: Bechtel Power Corporation (Bechtel), San Francisco, CA
NRC Region III Office (RIII)

Inspection Conducted: June 5-7, July 23-24, 1984 (Bechtel)
September 14, 1984 (RIII)

Inspectors: D. H. Danielson — Date 9/20/84

James W Muffett
J. W. Muffett — Date 9/20/84

Approved By: D. H. Danielson, Chief
Materials and Processes Section — Date 9/20/84

Inspection Summary

Inspection on June 5-7, July 23-24, and September 14, 1984 (Report No. 50-454/84-45(DRS); 50-455/84-30(DRS))
Areas Inspected: Special announced safety inspection to review the Bechtel Power Corporation Independent Design Review of Byron Station. The inspection involved a total of 119 inspector hours by two NRC inspectors.
Results: No items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

Commonwealth Edison Company

**B. R. Shelton, Project Engineer Manager

Bechtel Power Management (BPM)

*John M. Amaral, Manager QA
*R. S. Cahn, Licensing
**C. W. Dick, Project Manager
*D. B. Hardie, Quality Engineer
**E. M. Hugher, Team Leader
*C. Jordan, Team Leader
*Peter Karpa, Manager, Engineering BPM
*R. S. Powell, Principal Engineer
*D. Wolfe, Project QA Engineer

The inspector also contacted and interviewed other contractor employees.

*Denotes those attending the exit meeting interview at Bechtel on July 24, 1984.

**Denotes those attending the meeting in Region III on September 14, 1984 and the meeting at Bechtel on July 24, 1984.

2. Byron Independent Design Review

The purpose of this special inspection was to examine the Bechtel Power Corporation (Bechtel) independent design review (IDR) of Units 1 and 2 of the Byron Station. Three systems were selected for this review: The Component Cooling Water System, Essential Service Water System, and DC Distribution System. The purpose of the IDR was to provide an assessment by an outside party of the adequacy of the design of the Byron Station by Sargent and Lundy Engineers.

a. Program and Procedures

The inspectors reviewed the following Bechtel documents and procedures related to the IDR. All procedures required for the IDR were contained in a Team Procedures Manual.

- IDR Plan, Revision 0, dated May 4, 1984
- IDR of the Byron Station, QA Program Plan, Revision 0, dated May 4, 1984
- IDR-1, Communications, dated May 7, 1984
- IDR-2, Review Process, dated May 9, 1984
- IDR-3, Processing of Observations, dated May 25, 1984
- EDP-5.34 Indoctrination/Orientation, Revision 2, dated March 28, 1978

- EDP-4.37, Design Qualification, Revision 5, dated December 30, 1982
- QADP-B8, Qualification of Auditors, Revision 5, dated December 27, 1982
- QADP-B9, Orientation and Training, Revision 4, dated March 4, 1982
- BADP-B10, Quality Action Request, Revision 1, dated February 14, 1975
- QADP-C1, Quality Assurance Monitoring Act, Revision 1, dated March 25, 1976
- QADP-C3, QA Work Plan Log, Revision 4, dated December 22, 1983
- QADP-C5, Project Quality Audits, Revision 7, dated September 24, 1982
- QADP-C11, Quality Program Document List, Revision 4, dated December 22, 1983

These procedures had a distribution that included the Project Manager, Project QA Engineer (PQAE) and Group Leaders. Also, these procedures were used only to control Bechtel work during the review and they were not used to measure the Sargent & Lundy Engineers process.

b. Indoctrination and Training

The inspector evaluated the project team's compliance to the requirements for indoctrination and training of engineering personnel and for the QA auditor. This evaluation included the review of an audit report that verified that all personnel who were required to receive training had in fact been properly trained.

In addition to reviewing this audit report the inspector selected several engineering personnel and group leaders and verified that they had received the general QA and engineering indoctrination and training as well as project unique training in the IDR plan and procedures. As part of this review the inspector also verified that the PQAE assigned to this project was properly trained and qualified in accordance with ANSI N45.2.23 and approved Bechtel procedural requirements.

c. Audits

The audit program included both quality assurance monitoring of design review activities as well as quality assurance audits. The inspector reviewed the following monitoring/audit documents:

- Byron Independent Design Review Quarterly Audit Schedule dated May 17, 1984
- Quality Audit Checklist No. 2.0, Design Control Indoctrination and Training, Revision 0, dated May 15, 1984
- Project Audit 2.0-1, Indoctrination and Training, Audit date May-15-22, 1984
- Work Plan and Log for the period May 1-31, 1984

. Work Plan and Log for period May 31 to June 30, 1984

The inspector verified that quality assurance audits and monitoring activities were planned, scheduled, performed, reported and closed in accordance with the approved Bechtel procedures. The design verification audit that was scheduled for the week ending June 8, 1984 was postponed to the following week due to the NRC inspection.

d. Potential Observations

A number of the potential observations were reviewed. These included potential observations which had completed the resolution process as well as some which had not completed this process. The following is a list of the potential observations:

(1) Potential Observation 8.2:

(2) Potential Observation 8.5:

(3) Potential Observation 8.10

(4) Potential Observation 8.14

(5) Potential Observation 8.16

(6) Potential Observation 8.17

(7) Potential Observation 8.18

(8) Potential Observation 8.19

(9) In addition to the above, a review of the Bechtel reviewer's notes yielded the the following observation:

"Document EMD 023136, Revision 04, Supports 037 and 038 located at modes 326 and 328 are reported to be deleted in the body of the report, yet they are included in the stress analysis model (and results) and hanger drawings for these supports are also included in the final report.

Bechtel's approach to resolving the safety significance of these observations appeared to be to determine if in the particular instance noted whether the hardware required change. Since one of the stated purposes of the IDR was to draw broader conclusions about the design of the Byron Plant, observations and discrepancies must be judged as to whether these discrepancies are of a type which have the potential to cause hardware changes in other instances.

The observations have been reviewed and summarized in the final IDR report. The final report also contains a trending analysis which addresses the generic aspects of the observations and also discusses root causes for the observations. This final report which was submitted to the NRC on August 16, 1984, is under review by the NRC.

e. Conclusion

Bechtel's IDR effort was performed by experienced reviewers. The reviewers were doing a detailed review. The program procedures dealing with the dispositioning of the observations were functioning properly. No items of noncompliance or deviations were identified. The acceptability of the IDR effort to the NRC will be determined from NRC's review of the final report.

4. Exit Interview

The inspector met with representatives (denoted in Persons Contacted paragraph) at the conclusion of the inspection at Bechtel Offices. The inspector summarized the scope and findings of the inspections noted in this report.