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ARTHUR E. LUNDVALL, JR.
VICE PRESIDENT
SUPPLY

November 10, 1982

Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attn: Mr. Robert A. Clark, Chief
Operating Reactors Branch #3
Division of Licensing

Subject: Calvert Cliffs Nuclear Power Plant
Unit No. 1; Docket No. 50-317
Three-Year Containment Surveillance Report

Reference 1: NRC letter dated June 22, 1982 from R. A. Clark to A. E. Lundvall, Jr., Request for Additional Information

Reference 2: Letter from A. E. Lundvall, Jr. to R. A. Clark (NRC), dated September 21, 1982, Containment Structure Surveillance

Gentlemen:

In Reference 1, you requested that we respond to several technical questions conerning the subject document. The originator of the request within the NRC was Mr. Norm Romney (Structural Engineering Branch). The additional information that was desired concerned the results of and the conclusions we had drawn from the three-year containment tendon surveillance tests at Unit 1. In Reference 2, we submitted to you our responses to this request.

Shortly after submitting the desired information, a telephone conversation was held (October 5, 1982) between your Mr. Romney and our Mr. Mike Gahan. During this conversation, Mr. Romney verified that he had received our responses to his questions and then asked two further questions. As we were anxious to close out the long-standing issue of the three-year Unit 1 containment tendon surveillance report, and because Mr. Romney had indicated that these were his last questions, Mr. Gahan agreed to respond to Mr. Romney's new, but informal, request. Accordingly, we contacted Mr. Romney by telephone on October 27, 1982 with our prepared responses. Participants in this conversation were your Messrs. D. Jaffe and N. Romney and our Messrs. B. Montgomery and M. Gahan. After relaying our responses (shown on Attachment 1), Mr. Romney continued to ask additional technical questions, some of which we considered to be peripheral to the issue of the three-year report. As a result of this conversation, we decided that it would be in our best interests to formally respond to Mr. Romney's October 5 questions. In addition, we agreed to include a statement as to the value of the modulus of elasticity for concrete that was used in a reanalysis discussed in Reference 2.

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We would like to use this letter as a vehicle to document an understanding reached during the October 27 telephone call that, with these responses, no further information would be required by the NRC with respect to the three-year report. The purpose of the report was to demonstrate that despite lower-than-predicted tendon lift-off values measured during the Unit 1 three-year surveillance tests, the containment design still exhibits the required margin for the expected lifetime of the plant. We understand that there is a closely related issue concerning our request to amend the Unit 1 Technical Specifications to modify the acceptance criteria for future tendon surveillances. This issue, however, is being dealt with separately. Consequently, we feel that any further requests for information concerning the three-year report are unnecessary.

Very truly yours,

Arthur E. Rundquist Jr.

AEL/BSM/gvg

Attachment 1: Response to Additional NRC Questions

cc: J. A. Biddison, Jr., Esquire
G. F. Trowbridge, Esquire
Mr. D. H. Jaffe - NRC
Mr. N. Romney - NRC

RESPONSES TO ADDITIONAL NRC QUESTIONS

DATED OCTOBER 5, 1982

(Three Year Tendon Surveillance, Containment, Unit 1)

Question 1:

A. Did the Berkeley Tests use actual samples from the site?

B. Were the tests performed in accordance with standard ASTM tests?

Response:

A. As stated in the report* samples of the materials used in the concrete at Calvert Cliffs were shipped for testing. Specifically, cement, coarse and fine aggregate, and standard water reducing agent (WRA), and air entraining agent (AEA) admixtures were used. The Calvert Cliffs design mix "recipe" was used for combining the materials in the laboratory.

B. Detailed descriptions of tests are given in the report*. These tests met or exceeded the requirements of ASTM C512-69.

Question 2:

Why was the reanalysis performed?

Response:

The tendon surveillance tests in 1977 indicated lift-off forces, which, when corrected for a 40-year life, resulted in lower prestress levels than those predicted in the original design. A reanalysis was initiated to confirm that the containment was conservatively designed. The reanalysis utilized actual test and/or field records, final information (rather than the interim information as provided in the FSAR) regarding concrete creep, strength, and modulus of elasticity. The reanalysis confirmed that the containment structure conforms to all original design criteria committed to in the FSAR even after the lower lift-off values were taken into account.

With respect to the modulus of elasticity (E), two sources were reviewed: The Pirtz Report (referenced in Question 1, above), and the cylinder tests performed during construction. The E values used in the reanalysis were those developed in the Pirtz Report. These values are lower and thus more conservative than the interim values developed as a result of the cylinder tests.

* Report to Bechtel Corporation of STUDIES OF CONCRETE FOR CALVERT CLIFFS NUCLEAR CONTAINMENT VESSEL, 3/4 in. maximum size aggregate. Final Report by David Pirtz, University of California, Davis Hall, Berkeley, California; March 1973.