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Docket No.: 50-352/353

JUL 20 1983

FACILITY: Limerick Generating Station

APPLICANT: Philadelphia Electric Company

SUBJECT: SUMMARY OF MEETING ON LIMERICK STRUCTURAL ENGINEERING REVIEW ITEMS

On Wednesday, June 8, 1983, a meeting between representatives of the Structural and Geotechnical Engineering Branch (SGEB) staff, Bechtel Corporation, and Philadelphia Electric Company, was held at the Bechtel Power Corporation, San Francisco offices. This meeting was held to discuss and resolve outstanding items in the Limerick Structural Engineering review area. Enclosed are the minutes of that meeting. The enclosure was prepared by Norman D. Romney of the SGEB staff.

Of the five items considered at this meeting, four were resolved. One item (raceway damping values) remained open pending receipt and review of additional information from the applicant. A schedule was not determined for the applicant's response.

Original signed by:

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Enclosure:  
As stated

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ENCLOSURE

MEETING MINUTES

Limerick Structural Engineering Review

On Wednesday, June 8, 1983, a meeting was held in the Bechtel Power Corporation, San Francisco offices to discuss open items in the Limerick Structural Engineering review area.

Those in attendance:

<u>Name</u>	<u>Group</u>
Richard Schlueter	Bechtel Asst Project Engineer
Drew Feters	PECO
Scott Loo	Bechtel Civil
Jamie Ulle	Bechtel Civil
Bruce Pusheck	Bechtel Civil Chief
Norman Romney	NRC SGEB/NRR
Steve Artus	Bechtel
Harold Polk	NRC SGEB/NRR
Albert K. Wong	Bechtel Civil Gp.
Ranga Palaniswamy	Bechtel Asst Project Engineer
John Benkert	Bechtel Civil Svcr.
Dennis Klein	Bechtel Licensing
Lou Pons	Bechtel Civil
Jack Brakley	Bechtel Licensing

The items discussed were as follows:

Item 1: Discussion of SGEB Question 220.21,

"Section 2.2.1 of the staff's Draft Safety Evaluation Report states, in part, that the applicant used a value of 5.1 psi on the Diesel Generator Building for the peak reflected overpressure due to the accidental detonation of a boxcar of explosives on the Conrail Reading rail line which passes through the plant site. The staff has indicated that the correct value for the peak reflected overpressure is approximately 13 psi. The applicant is requested to evaluate the affected Category I structures for the higher value of 13 psi, and demonstrate that the structural integrity of the affected structures is not impaired."

Discussion: The applicant presented original calculations which indicated that the diesel generator building was designed for a reflected overpressure that averaged 12.5 psi. The staff accepted the analysis performed by the applicant contingent upon the acceptance of the blast pressures by the Siting Analysis Branch. The applicant stated that the value of 5.1 psi as stated in the FSAR was in error since it did not reflect the values actually used in the calculations which were reviewed by SGEB.

Item 2: Discussion of SGEB Question 220.22a,

"In response to question 220.17 you indicated the DAR sections where stress margins for various structures or structural components can be found. A review of the values provided indicates in some of the cases there is little margin left. In your response to Question 220.20, it is observed that some incorrect pressure values have been used in the investigation of liner fatigue. In view of this latter observation provide your assurance that the actual stress does not extend beyond the margin in those cases where there is barely any margin."

Discussion: The applicant indicated that the low margins in the pool liner were caused by inadvertently applying a load factor of 1.5 twice when it should have been applied only once. By reducing the load factor to the appropriate 1.5 the applicant was able to demonstrate that the stress margins did increase; and the negative pressures that had been previously indicated on the liner were replaced with positive pressures. The applicant indicated that an independent internal audit of the Limerick calculations was done by Bechtel staff and Chief Civil Engineer. The result of this audit was that the error described above was not duplicated in other areas where low margins exist. The above discussion was acceptable to the staff and will be included in a formal response to the NRC.

Item 3: Discussion of SGEB Question 220.22b,

"In response to question 220.19 you indicated that damping values greater than 7% of critical are used. In Section 7.1.8.1 it is stated that in the analysis and design of electrical raceway system, different damping values are used for different support systems and different loading conditions. In addition it is stated that the damping ratios used for the electrical raceway assessment are in accordance with Reference 7.1-12. Provide the justification for using different damping values for different support systems and for different loading conditions and state clearly what damping values are used for electrical raceway assessment. The use of damping values greater than those specified in Regulatory Guide 1.61 should be justified."

Discussion: The applicant's justification of damping values on Limerick utilized a test report prepared for Grand Gulf by Bechtel to justify raceway damping values used at Grand Gulf. The staff informed the applicant that the Grand Gulf test report was accepted by NRC with caveats. To be acceptable for use by Limerick, the NRC caveats should be understood and addressed by the applicant. As a result of the foregoing this item remains open.

Item 4: Discussion of SGEB Question 220.5,

"Section 3.7.2.6 of the LGS FSAR states that for design purposes, the design response value was obtained by adding the response due to the vertical earthquake with the larger value of the response due to one of the horizontal earthquake by the absolute sum method. Regulatory Guide 1.92, "Combining Modal Responses and Spatial Components in Seismic Response Analysis" states that the design response value is obtained by taking the square root of the sum of the squares of the maximum codirectional responses caused by each of the three components of earthquake motion at a particular point of the structure. Explain and justify the approach used in the LGS analysis."



Discussion: The applicants presented an evaluation and comparison of the 2-component absolute sum method and the 3-component SRSS method performed for selected critical structural elements within the Reactor Enclosure, Control Building, and the Containment Exterior Shell. The results of this evaluation indicated that the 2-component ABS method and the 3-component SRSS method produced comparable results. However, for certain structural elements the 3-component SRSS method produced axial and bending seismic stresses that were as much as 15% higher than the stress produced by the 2-component ABS method. When these higher stresses were combined with other loads for design purposes, the structural element remained well within all allowable stress limits for all load combinations. As a result the staff concludes that for the Limerick Generating Station the 2-component ABS method is acceptable.

Item 5: Discuss DSER open items concerning comparison of RG 1.60 response spectra with Limerick Design Response Spectra.

Discussion: The staff reviewed the applicant's informal response submitted in May 1983 and found the response to be acceptable.

Conclusions:

Items 1, 2, 4, and 5 were resolved to the satisfaction of the staff. Item 3 (raceway damping values) remains open and the applicant is committed to respond. However, the applicant did not indicate a schedule to close out item 3.

DATED: JUL 20 1983

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