



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

SEP 29 1983

MEMORANDUM FOR: William Paton, Attorney
Office of the Executive Legal Director

FROM: George Lear, Chief
Structural and Geotechnical Engineering Branch
Division of Engineering, ONRR

SUBJECT: MIDLAND REVIEW - EVALUATION OF FINDINGS FOR REMEDIAL
ISSUES (60% STRUCTURAL REVIEW)

We are continuing the structural review of the document "Applicant's Proposed Findings of Facts and Conclusions of Law on Remedial Soil Issues," along with related information. We reported on the initial 30% of the review by phone on September 19, 1983, (phone conversation between Rinaldi and Paton) and by the document dated September 22, 1983. The 30% review addressed Seismic Models and the Borated Water Storage Tanks. This evaluation represents the second phase of the review, addresses the Auxiliary Building and the Service Water Pump Structure, and accomplishes the established 60% structural review level. The final phase of the structural review will address the Diesel Generator Building, the Diesel Fuel Oil Tanks and the Duct Banks and Conduits. The completion of the final phase will be, as per our previous agreement, on October 15, 1983.

The remedial measures for the Auxiliary Building and the Service Water Pump Structure, assuming they are successfully completed, will provide reasonable assurance that these structures will perform their intended safety functions throughout the operating life of the plant. However, the enclosure provides comments on some of the sections of the subject document. The sections that have been reviewed include 210 thru 269.

We take this opportunity to communicate the fact that the package of all of the abstracts of the transcripts in Consumer Power - Midland Hearings, prepared by Isham, Lincoln & Beale, lacks any abstract for the Diesel Generator Building hearing.

The second phase of the structural engineering review has been performed by Frank Rinaldi of my staff and John Matra (NSWC), staff consultant.

George Lear, Chief
Structural and Geotechnical
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Enclosure: As stated

cc: See page 2

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ENCLOSURE

Comments on Applicant's Proposed Findings of Fact and Conclusions
of Law on Remedial Soil Issues - Sections 210 thru 269

- Section 216 It does not mention the temporary post-tensioning ties installed at the top of the Control Tower that provide additional needed support to structural members as a result of the differential settlement and loss of buoyance forces.
- Section 218 The second sentence needs to establish that the unacceptable stresses caused by differential settlement will be aggravated by the postulated environmental forces of tornado and earthquake.
- Section 221 The support system for the FIVP needs to be identified. The term, "different manner," is not a clear description of the support system.
- Section 229 The results of a pier load test have established a new soil modulus value and new analyses and limits have been established. Final agreement on the acceptance criteria has not yet been reached.
- Section 232 The NRC Structural Staff determined that loads equal to 1.5 times SSE load appear to be conservative in relation to loads which would result from the SSRS, however, a final conclusion will be reached after the evaluation of the appropriate seismic margin reports.
- Section 244 The conclusions are subject to the satisfactory completion of the proposed remedial measures, establishment of acceptable monitoring and repair programs, and acceptance of the results of the seismic margins reports. This section as stands, mentions only the first requirement.
- Section 248 It does not identify the cracking in the structure, including some through cracks. Also, it does not address the post-tensioning cables placed to reduce potential stresses due to differential settlement effects and loss of buoyance forces. Sections 249 and 255 discuss to some extent cracks and the post-tensioning cables, but are not reflected in the first sentence of Section 248.

- Section 255 The NRC Structural Staff considered the primary use of the post-tensioning cables as a prudent approach to reduce potential stresses in the structure, prior to and during the underpinning of this structure, due to effects of differential settlement. However, the applicant, as stated in this section, stresses the fact that they were used only to offset any loss of buoyancy.
- Section 262 It needs to point out that a pier load test will be performed to confirm the soil modulus capacity of the soil. If the test does not confirm the previously assumed value, additional evaluations and controls need to be established.
- Section 264 The last sentence does not state the Structural Staff conclusions on the capacity to meet the SSRS loads. The comment for Section 232 applies to this item.
- Section 269 The first sentence does not state the Structural Staff conclusions on the adequacy of the SWPS. The comment for Section 244 applies to this item.