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

May 25, 1984

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Docket Nos.: 50-329 OM, OL
and 50-330 OM, OL

Mr. J. W. Cook
Vice President
Consumers Power Company
1945 West Parnall Road
Jackson, Michigan 49201

Dear Mr. Cook:

Subject: Request for Additional Information Regarding Structural Adequacy of Midland Diesel Generator Building

By several Board Notifications in 1983 and 1984, the NRC staff has discussed its re-review of the structural adequacy of the Midland Diesel Generator Building. This effort resulted in a report (Enclosure 1 to Board Notification 83-165, October 26, 1983) by a task group consisting of NRC structural engineers and NRC consultants from Brookhaven National Laboratory.

The task group's report (Appendix III, pp 16 & 17) presents a list of recommendations that, when implemented, will provide the basis for confirming the adequacy of the Midland Diesel Generator Building. The NRC staff agrees that these recommendations, or acceptable alternatives, are necessary and appropriate and should be implemented. Our requests for further information and/or modifications to your existing proposals to this end are enclosed.

Your responses to the enclosure are requested within 45 days of receipt of this letter. Contact our project manager should you require clarifications or are unable to meet this response date.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P. L. 96-511.

Sincerely,

Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc: See next page

IE01

MIDLAND

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ENCLOSURE

Request for Additional Information
Regarding Structural Adequacy of
Midland Diesel Generator Building

Provide the following information with respect to the "Report on the Review of the Diesel Generator Building at Midland" (hereafter called the task group's report) provided by Board Notification 83-165 dated October 26, 1983:

1. The staff requires an updated crack mapping to establish the current condition of the DGB in terms of crack widths and related stresses and to establish a baseline for comparison and evaluation of structural changes for the service life of the plant. The updated crack mapping should identify all cracks in accessible areas on both sides of DGR walls, floor and roof slabs, and pedestals. The crack mapping should accurately identify the location, size and distribution of all cracks with crack width of 5 mils or greater. Although cracks, or portion of cracks, with a width less than 5 mils need not be fully mapped, they should be addressed with respect to their location, size and frequency of occurrence. The points at which a crack shows a significant change in width should be marked in the updated crack maps.

   The crack maps should identify areas not accessible for mapping and supporting documentation should be provided to identify efforts made to crack-map these areas, reasons for declaring them as areas incapable of being mapped, and a general discussion of the cracks expected in these areas, with supporting bases for judgements.

2. Using the above crack maps, determine the maximum tensile stress in the reinforcing steel for each DGB wall, floor and roof slab, and pedestal. Because engineering judgement is required in the selection of the parameters (i.e. total crack width, length, etc.) utilized in determining the reinforcing steel stress, the bases for the selection of these pertinent parameters and the general formulation should be clearly documented. Also, significant locations of maximum stress in each structural component (i.e. wall or slab) should be documented. These locations for each DGB structural component should be determined considering long and short lengths over which bar tension is determined. Provide tables identifying the maximum stresses due to crack evaluation and all other stresses resulting from the design load combinations (ACI 318 and 349 as modified by SRP).

3. Re-evaluate your proposed crack monitoring program as identified at the December 1982 hearing session. Consideration should be given to additional monitoring of cracked surface that will be epoxied and sealed during the proposed structural repairs of the DGB. Provide a detailed discussion of the additional monitoring identified in the task group's report or of other alternative approaches you would propose.

4. Re-evaluate the Alert and Action Limits to assure that sufficient stress margins are available to resist the critical load combinations. Also, the monitoring program should mandate specific actions for the Alert and Action Limits. Provide detailed discussions on all criteria.

5. In the task group's report (Appendix III, page 5, last paragraph) three instances of inconsistencies in settlement data are identified. Address each of the inconsistencies and identify the correct data. Your response should identify pertinent settlement marker locations and discuss settlement histories as necessary to fully explain the inconsistencies.

6. The staff finds that the level of survey accuracy currently proposed in the Technical Specifications (Chapter 16 of the FSAR) for settlement monitoring of seismic Category I structures and tanks would be inadequate should future settlements be significant and a reanalysis of structures be required because of the occurrence of larger than anticipated settlements. This staff conclusion on survey accuracy is based upon Applicant's testimony during the December 1982 hearing session regarding the DGB and upon the task group's report, Appendix III, page 12. Provide a revised settlement monitoring program for the DGB and other seismic Category I structures and tanks which will establish the required level of accuracy for the settlement measurements. The proposed monitoring plan also should address the number and specific monitoring locations, the installation type and details, frequency of readings and allowable total and differential settlement limits.

   The allowable settlement limits are to be based upon the structure's capacity to safely withstand the actual movements rather than upon predicted future settlements. These limits, therefore, should consider the present state of stress in the DGB and other stresses estimated to result from required design load combinations.

7. Provide updated settlement-time history plots for all the surveyed DGB settlement markers and a summary table which compares measured settlements to date with estimated settlements for the same time period. Provide a written evaluation of this comparison that includes a discussion on the conservatism and adequacy of total and differential settlements predicted for plant service life.