

JUN 20 1978

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Docket Nos: 50-329
50-330

Consumers Power Company
ATTN: Mr. S. H. Howell
Vice President
212 West Michigan Avenue
Jackson, Michigan 49201

Gentlemen:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION ON GEOLOGICAL AND SEISMOLOGICAL MATTERS

We have reviewed your responses to our acceptance review questions by our Geosciences Branch, and find that additional information is required to continue our review of geologic and seismic aspects of the Midland site. These additional requests are listed in Enclosure 1.

We request your response to these first round requests by July 31, 1978. Please advise us within seven days after receipt of this letter if you will be unable to meet this date so that we may adjust our schedules accordingly.

Should you require clarification of these requests, do not hesitate to contact us.

Sincerely,

Original signed by:
S. A. Varga

Steven A. Varga, Chief
Light Water Reactors Branch No. 4
Division of Project Management

Enclosure:
As stated

cc: See next page

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App 3

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Consumers Power Company

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361.0 Geosciences Branch

361.3 According to Section 3.7.1.1 you have increased the design response spectra shown in Figures 3.7.1 and 3.7.2 by 50% in the 0.2 to 0.6 second period range so as to account for differences between the "Housner developed" and "Newmark developed" design spectra. It appears to us that the corrected spectra would still fall below the Regulatory Guide 1.60 spectra anchored at 0.12g. This would be particularly evident for prestressed concrete structures where there is no difference in acceptable damping levels between that used in design and that indicated in Regulatory Guide 1.61 (i.e. 5%). Prepare comparative plots at different damping levels of the actual design time histories and Regulatory Guide 1.60 spectra anchored at similar reference accelerations. Discuss the differences and the adequacy of the present design with respect to Regulatory Guide 1.60 at all frequencies of interest.

361.4 You conclude that the Michigan Basin fits the Appendix A to 10 CFR Part 100 description of a tectonic province. Yet the basin is characterized by the same geologic structural features and has essentially the same geologic and tectonic history as the remainder of the Central Stable Region (Eardley, 1962).

- a) The Precambrian basement complex in the Michigan basin does not appear to be unique with respect to the surrounding region.
- b) The Precambrian crustal features, the Keweenaw rift zone (see Hinze and others, 1975, on the Mid-Michigan gravity anomaly associated with the Keweenaw rift zone) and Grenville Front,

transect the boundary of the basin.

- c) The subsidence and deposition in the basin occurred concurrently with subsidence, arching, and doming in other parts of the Central Stable Region during the Paleozoic.

Please provide information demonstrating the distinct characteristics of the Michigan basin which distinguish it from the Central Stable Region. Include geophysical and remote sensing data which may reflect structural characteristics of the Basin and adjoining portions of the Central Stable Region.

361.5

The basis for your definition of the safe shutdown earthquake rests upon the acceptance of the Michigan Basin as a separate tectonic province. The staff has been reluctant to accept subdivision of the Central Stable Region into smaller tectonic provinces. Provide additional information such as a comparative analysis of historic and instrumental seismicity that would permit acceptance of a lower reference acceleration than that normally used for the Central Stable Region (0.20g). Include in your analysis all those events listed in "Seismic Disturbances in Michigan" Circular 14, Geological Survey Division, Department of Natural Resources, State of Michigan (1977) or provide a rationale for their exclusion. The analysis should compare the seismicity of the region within 200 miles of the site with other similar sized areas in the Central Stable Region.

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REFERENCES FOR GEOSCIENCES REQUEST (361.0)

1. Docekal, J. (1970) Earthquakes of Stable Interior, with Emphasis on the Midcontinent. Ph.D. Dissertation, University of Nebraska.
2. Hinze, W. J., R. L. Kellogg, and N. W. O'Hara (1975). Geophysical Studies of Basement Geology of Southern Peninsula of Michigan, American Association of Petroleum Geologists Bulletin Vol. 59 pp 1562-1584.
3. Eardley, A. J. 1962, Structural Geology of North America, Harper and Row, New York, NY.