



**Consumers
Power
Company**

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Harold R Denton, Director
Office of Nuclear Reactor Regulation
US Nuclear Regulatory Commission
Washington, DC 20555



MIDLAND PROJECT
MIDLAND DOCKET NO 50-329, 50-330
SOIL DYNAMIC MODULUS STUDY
FILE: B2.5.4, B3.7 SERIAL: 16584
ENCLOSURE: DAMES AND MOORE REPORT: SOIL DYNAMIC MODULUS
STUDY, MIDLAND UNITS 1 AND 2, MARCH 5, 1982

The dynamic soil modulus (Dynamic E) currently in use as a design basis for the Midland Plant is given in Subsection 2.5.4.7.4 of the Midland Final Safety Analysis Report. This soil modulus value was recommended by Dames and Moore in 1970.

As part of the final design calculations and soils remedial work, we requested Dames and Moore to confirm the appropriateness of the originally recommended value for use in the seismic analysis (OBE and SSE) of all the major Category I structures founded on the glacial till. Those major seismic Category I structures include the reactor building, the auxiliary building and the service water pump structure.

The enclosed report from Dames and Moore responds to the above request. The report concludes that the dynamic modulus of elasticity value recommended in 1970 is still appropriate for the Midland Plant under OBE and SSE conditions and is applicable to all major seismic Category I structures founded on glacial till, including the service water pump structure.

It is widely recognized that there can be variations in the derived soil dynamic values based on different measurement and analytical techniques. Account for these types of differences was taken when Consumers Power Company used a $\pm 50\%$ parametric variation of the dynamic modulus during the design phase. Differences in the soil modulus are also addressed in the Dames and Moore report. To further account for these variations, we intend to use a range of soil modulus values as a part of the seismic margin review.

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JWC/TRT/RLT/dsb

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