Central files

Consumers Power Company

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Region III
US Nuclear Regulatory Commission
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DOCKET 50-255 - LICENSE DPR-20 -
PALISADES PLANT - IE BULLETIN 79-07

Consumers Power Company's response to IE Bulletin 79-07 was discussed with Mr Howard J Wong of your office on May 1, 1979 and is stated below in its entirety:

ITEM 1

Identify which, if any, of the methods specified below were employed or were used in computer codes for the seismic analysis of safety related piping in your plant and provide a list of safety systems (or portions thereof) affected:

Response Spectrum Model Analysis:

a. Algebraic (considering signs) summation of the codirectional spatial components (ie, algebraic summation of the maximum values of the codirectional responses caused by each of the components of earthquake motion at a particular point in the mathematical model).

b. Algebraic (considering signs) summation of the codirectional inter model responses (ie, for the number of modes considered, the maximum values of response for each mode summed algebraically).

Time History Analysis:

a. Algebraic summation of the codirectional maximum responses or the time dependent responses due to each of the components of earthquake motion acting simultaneously when the earthquake directional motions are not statistically independent.

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Response

None of the methods specified above were employed or were used in computer codes for the seismic analysis of safety-related piping at the Palisades Plant.

ITEM 2

Provide complete computer program listings for the dynamic response analysis portions for the codes which employed the techniques identified in Item 1 above.

Response

Not applicable since response to Item 1 is "none."

ITEM 3

Verify that all piping computer programs were checked against either piping benchmark problems or compared to other piping computer programs. You are requested to identify the benchmark problems and/or the computer programs that were used for such verifications or describe in detail how it was determined that these programs yielded appropriate results (ie, gave results which corresponded to the correct performance of their intended methodology).

Response

The Palisades piping systems were designed and installed utilizing input from Bechtel Power Company and Combustion Engineering Inc. The following computer programs and methods of verification were used by Bechtel:

a. ME 632 - Has been verified using PISOL, PIPESD and TPIPE.

b. ME 101 - Has been verified using ME 632, TPIPE and SUPERPIPE.

c. PISOL - Has been verified using NUPIPE, PIPESD, ADLPIPE and ME 101.

d. NUPIPE - Has been verified using ADLPIPE. (In the verification, the algebraic summation option in ADLPIPE was not used.)

e. SAPIPE - Has been verified using PISOL.

f. TPIPE - Has been verified using PISOL and ME 632.

Combustion Engineering Inc did not use any computer codes to combine the effects of the different directions of seismic excitation for Palisades. The six components of force or moment and the corresponding piping stresses were calculated separately for each of the three directions of seismic excitation. Absolute summation of the maximum stresses due to two directions of seismic excitation were calculated manually to define the total seismic effects for combination with stresses due to other appropriate loading conditions.

ITEM 4

If any of the methods listed in item 1 are identified, submit a plan of action and an estimated schedule for the re-evaluation of the safety related piping, supports, and equipment affected by these analysis techniques. Also provide an estimate of the degree to which the capability of the plant to safely withstand a seismic event in the interim is impacted.

Response

Not applicable since response to Item 1 is "none."

David P. Hoffman

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