

April 19, 1999

MEMORANDUM TO: Docket File

FROM: Jack Cushing, Project Manager, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

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SUBJECT: WASHINGTON PUBLIC POWER SUPPLY SYSTEM (WPPSS)
NUCLEAR PROJECT NO.2 (WNP-2) - FACSIMILE TRANSMISSION,
QUESTIONS ON THE LICENSEE'S RESPONSE TO GENERIC LETTER
88-20, "INDIVIDUAL PLANT EXAMINATION FOR EXTERNAL EVENTS"
(TAC NO. M83695)

The attached questions were transmitted by fax today to Mr. Paul Inerra of WNP-2 to prepare him and others for an upcoming telephone conference call. This memorandum and the attachment do not convey a formal request for information or represent an NRC staff position.

Docket No. 50-397

Attachment: List of Questions

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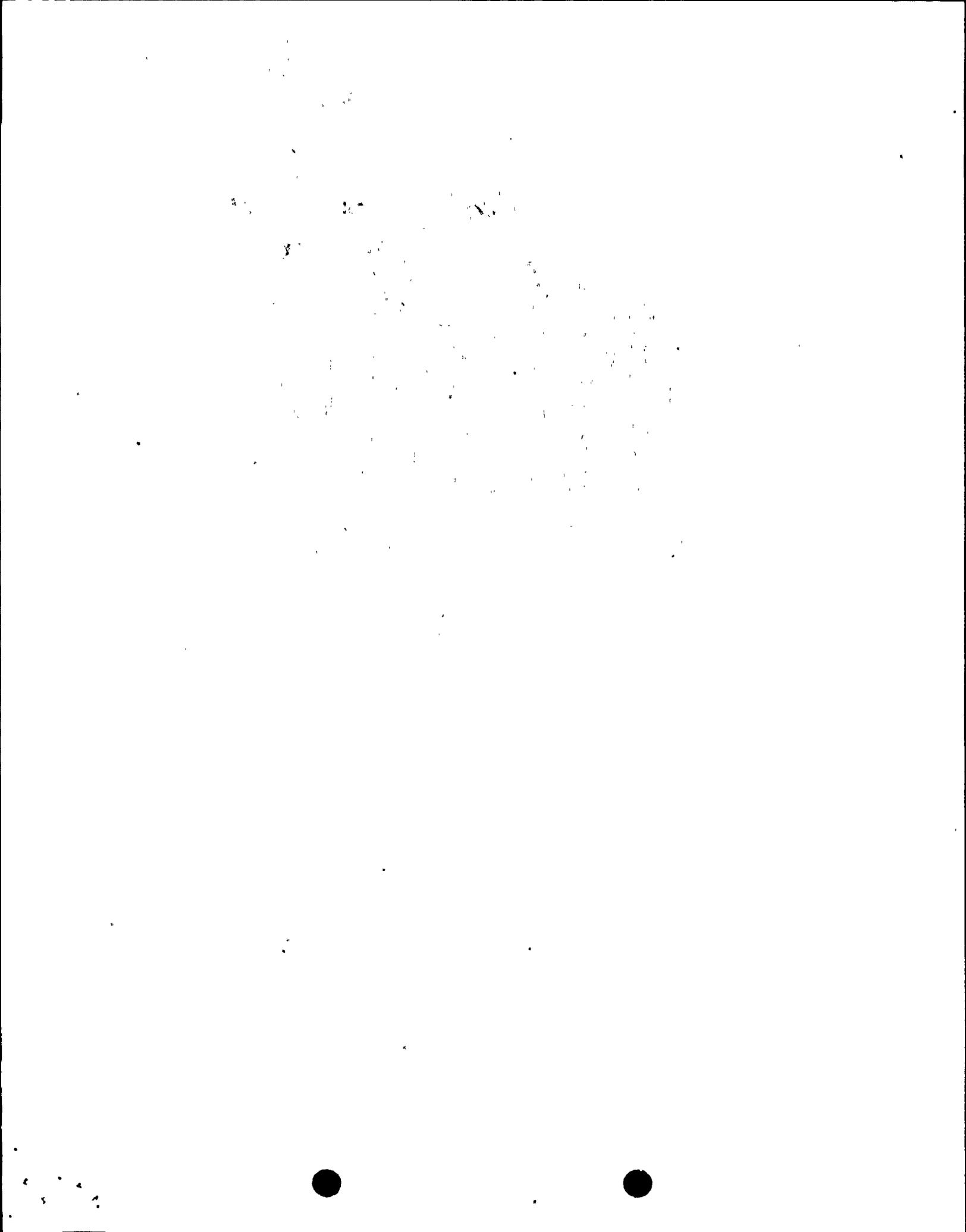
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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SUPPLEMENTAL REQUEST FOR ADDITIONAL INFORMATION

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WNP-2

DOCKET NO. 50-397

Seismic

1. According to your response to the previous seismic question 1 regarding the calculation of mean hazard curves, the figure provided on page 15 indicates that the calculated mean exceedance probability at 0.3g is not consistent with the probability density function, which was also provided in the same figure. Since a logarithmic scale is used for the annual exceedance probabilities, the location of the mean exceedance probability should be shifted near the 85-th percentile curve. The mean seismic hazard, if calculated correctly, would be about two times larger than the value used in the WNP 2 IPEEE analysis.

Please provide the seismic probabilistic risk assessment (PRA) results obtained with corrected and revised mean hazard curves (e.g., revised seismic core damage frequency (CDF) calculations, identification of dominant contributing sequences and seismic failures).

2. According to your response to the previous seismic question 2, regarding the initial screening of components, the list of screened components provided in Attachment 1 indicates that storage tanks (e.g., emergency diesel generator (EDG) day tanks) and transformers were screened based on walkdown observation, generic calculation and judgement, that these components are generally rugged. In past seismic PRA studies, however, these components were often identified as weak links.

Please describe the rationale for this screening, such as unique seismic design features of the WNP2 plant, when compared with other plants.

3. According to your response to the previous seismic question 3, regarding the comparison of new and old floor spectra, the comparisons provided indicate that the 0.25g design basis earthquake (DBE) spectra do not envelope the 0.5g median spectra at the higher frequency range (higher than 10 Hz), particularly for the diesel generator building and turbine building.

Please explain why this optimistic assumption does not impact the component screening and the calculated plant CDF.



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4. Regarding your response to seismic question 4, structural fragility analysis, the EQE report provided in Attachment 3 is a very brief outline of fragility analysis, and does not provide any more details than the submittal.

To confirm the validity of the screening performed, please provide the detailed structural fragility calculation packages for the following components:

-Reactor building, overturning moment of biological shield wall (0.51g)

-Turbine building, shear on column line 13 wall (0.51g).

5. Your IPEEE submittal and responses to previous seismic question 5 and 6 indicated that a large number of structures and components were screened based on the generic evaluation of seismic design margin. However, the described generic screening criteria are not consistent with the guidance cited in NUREG-1407 (Section 3.1.1.3) for seismic PRA fragility estimation. Further clarification is provided below.

Generic screening criteria for flexible components..... The response relating to the assumed response factor, FRE, stated that a factor of 1.28 was assumed for question 5b, and also a factor of 2.0 was assumed separately for question 5c. Therefore, in the fragility calculation, a factor of 2.56 ($=1.28 \times 2.0$) was assumed to represent the ratio of the SSE demand to the median demand. This assumption is not consistent with the provided comparison of old and new floor spectra.

Average demand/code allowable ratio..... The response relating to the ratio of average demand to code allowable stated that the assumed value of 0.7 for this ratio is considered to be conservative. This observation is not consistent with the seismic design practice in the nuclear industry, particularly for anchorages and seismic support structures.

Generic screening criteria for rigid equipment..... In the response to the previous question-6 (pp.27-29), a median fragility value of 0.86g was estimated. Then, an additional capacity of 0.19g was considered to account for the horizontal resistance afforded by friction, to obtain the total fragility of 1.05g. Addition of friction forces to the calculated capacity values has not been accepted in past fragility analyses.

Please identify the screened structures and components which would not have been screened if the generic screening criteria discussed above had not been used, and provide fragility estimates for those components. Please also describe how the seismic CDF estimate, the identification of dominant contributing accident scenarios to the seismic CDF, and the identification of dominant seismic failures, would be affected by incorporation of these additional components into the seismic PRA model.



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Fire

There is no supplemental RAI in the fire area.

High Wind, Flood and Other External Events (HFO)

There is no supplemental RAI in the HFO area.