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 AUTH. NAME: AUTHOR AFFILIATION  
 BOUCHEY, G.D. Washington Public Power Supply System  
 RECIP. NAME: RECIPIENT AFFILIATION  
 TEDESCO, R.L. Assistant Director for Licensing

SUBJECT: Responds to 810709 ltr re NRC review of plant-unique load definition methodologies. Util does not anticipate need to assess plant for condensation oscillation load definition. Detailed rept will be submitted re condensation oscillation.

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## Washington Public Power Supply System

P.O. Box 968 3000 George Washington Way Richland, Washington 99352 (509) 372-5000

August 13, 1981  
G02-81-239

Docket No. 50-397

Mr. R. L. Tedesco  
Assistant Director for Licensing  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Office of Nuclear Reactor Regulation  
Washington, D. C. 20555



Dear Mr. Tedesco:

Subject: SUPPLY SYSTEM NUCLEAR PROJECT NO. 2  
CONDENSATION OSCILLATION LOAD FOR WNP-2

- References:
- (1) NRC letter to Supply System, R. L. Tedesco to R. L. Ferguson, dated July 9, 1981
  - (2) Letter G02-81-189, G. D. Bouchev, Supply System, to R. L. Tedesco, NRC, dated July 22, 1981
  - (3) Letter G02-80-172, D. L. Renberger, Supply System, to B. J. Youngblood, NRC, dated August 8, 1980

Reference (1) stated that in order to provide sufficient time for NRC review of plant-unique load definition methodologies for WNP-2, complete descriptions of these load definitions need to be filed no later than August 7, 1981. The plant-unique load definition reports for chugging and SRV discharge were transmitted for NRC review by References (2) and (3), respectively. At the present time, as indicated in Reference (2), we do not anticipate a need to assess the WNP-2 plant for a condensation oscillation load definition.

Studies are proceeding to evaluate the condensation oscillation data, to confirm that it does not represent a governing load for structures, piping, and equipment in WNP-2. While submittal of a condensation oscillation load definition methodology for WNP-2 is not anticipated, a detailed report will be submitted summarizing the results of these studies.

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The generic condensation oscillation load definition developed for the Mark II Owners group, and acceptable for those plants with reinforced concrete containments, has been determined to be excessive for the WNP-2 plant. This load is defined in terms of the most severe tank bottom center pressure-time histories recorded in the 4TCO tests, applied directly to the boundaries of Mark II containments without consideration of multi-vent effects or other effects believed to be important. It is generally accepted that this approach is highly conservative. The extent of this conservatism is evident in comparisons of pool bottom rms pressure-time histories and bounding PSD's for pool bottom pressures, for 4TCO tests 2, 5, and 7, and JAERI test 1101. These comparisons are contained in the GE-designated proprietary material presented to the ACRS Fluid Dynamics Subcommittee and to the NRC in San Mateo, California on April 28 and 29, 1981.

Figures 1 and 2, attached to this letter, show the envelopes of the Fourier amplitude spectra of the 4TCO pressure traces representing the two condensation oscillation load cases, i.e., the "basic" load, and the load to be used with ADS actuation of safety relief valves. These figures also show the envelope of the bottom center response pressures produced by the WNP-2 chugging sources specified in the revised chugging load report transmitted by Reference (2). A comparison of the chugging envelope with the CO load with ADS case in Figure 2 indicates the excessive bounding nature of the chugging load. It is significant to note, as illustrated in Figure 2, that even a reduced load of about 25 percent of the design chugging load still comfortably envelopes the CO load with ADS case.

Comparison of the chugging envelope with the basic CO load envelope in Figure 1 also indicates the general bounding nature of chugging. Although at two discrete frequencies equal to 2 Hz and 7 Hz, the basic CO load Fourier Amplitude Spectrum envelope exceeds the chugging envelope, the more significant exceedence of the CO envelope by the chugging envelope elsewhere (at frequencies of 6 Hz and 11 Hz) should preserve the bounding nature of chugging. This assessment is further strengthened by the comparison of 4TCO and JAERI data discussed above.

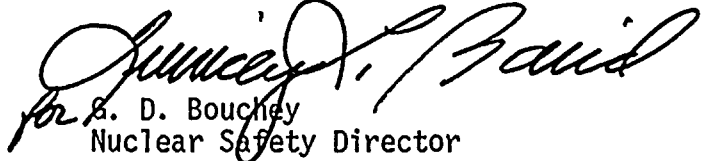
Based on the examination and evaluation of available test data to date, and based on the discussion above, it is our opinion that studies currently underway will demonstrate that CO loading is less critical than the chugging load. In these studies, the evaluation of 4TCO test data is conducted in a manner similar to that described in the Report transmitted by Reference (2), in order to distinguish the condensation oscillation loading characteristics from the



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induced effects recorded on the test facility structural boundary. When these studies are completed and summarized in report form, they will be submitted for NRC review. This is expected to be completed before the end of this year.

Very truly yours,

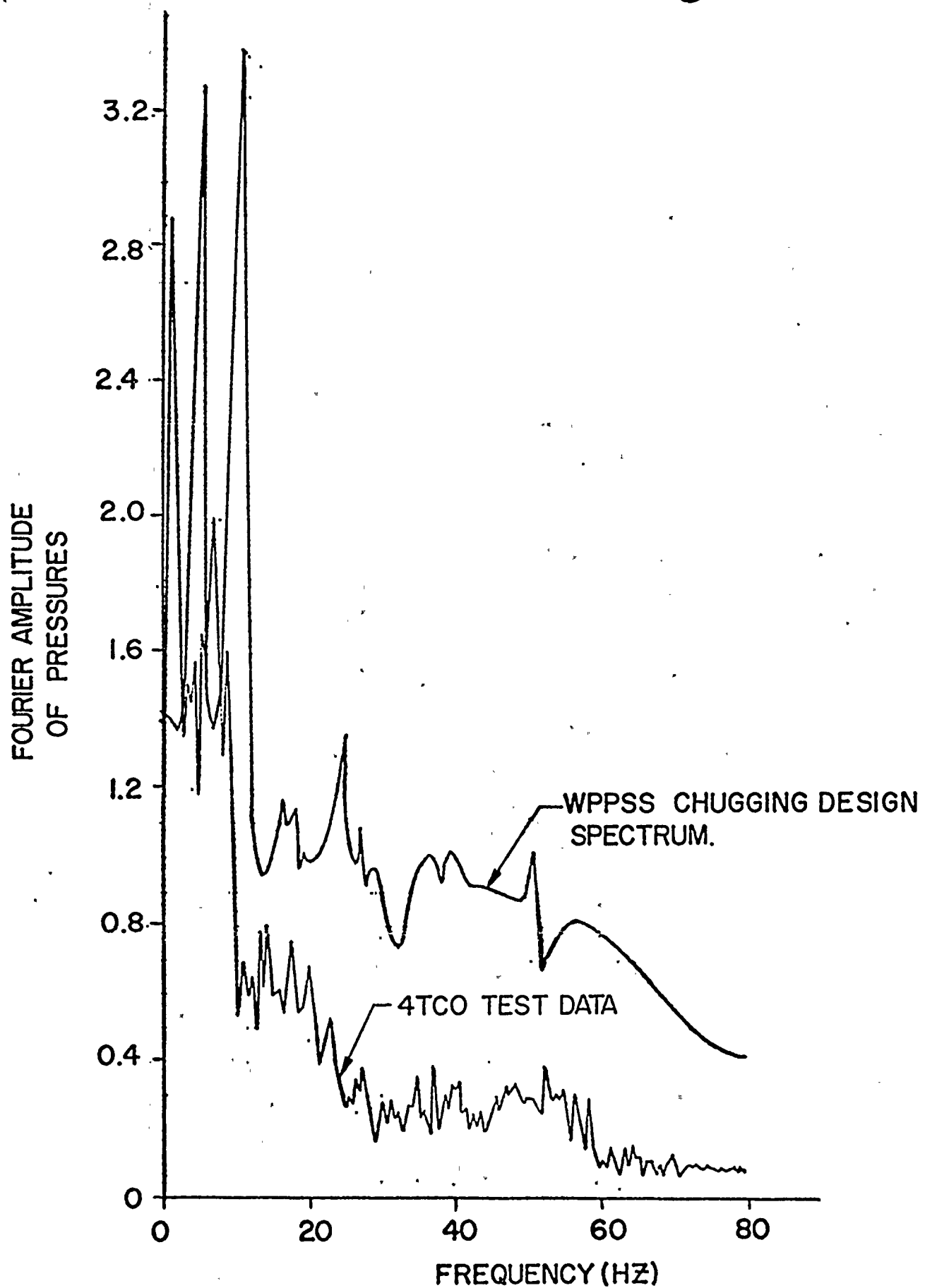
  
G. D. Bouchey  
Nuclear Safety Director

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Attachments: Figures 1 and 2

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