

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

W. L. STEWART
VICE PRESIDENT
NUCLEAR OPERATIONS

October 21, 1985

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
Attn: Mr. Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Serial No.: 85-705
E&C/KKD:bbh: 3068C
Docket Nos.: 50-280
50-281
License Nos.: DPR-32
DPR-37

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNIT NOS. 1 AND 2
PROPOSED CHANGES TO DAMPING VALUES FOR SEISMIC ANALYSIS OF PIPING

The present Surry 1 and 2 design criteria for seismic Category I piping is stated in the UFSAR, Section 15.2. The damping factors used are 0.5 percent for the operating-basis earthquake (OBE) and 1 percent for the design-basis earthquake (DBE). Studies conducted by the Pressure Vessel Research Committee (PVRC) as documented in NUREG-1061, "Report of the U.S. NRC Piping Review Committee" have shown that use of such low damping values for seismic analysis of piping is unduly conservative. We therefore request permission to use the damping values given in the ASME Code Case N-411 as recommended in NUREG 1061. These values specifically are: five percent below frequency of 10 Hz; linear reduction from five percent to two percent between 10 Hz and 20 Hz; and two percent above 20 Hz. These damping values would apply for both OBE and DBE.

The use of these higher damping values is consistent with industry efforts to reduce the number of seismic restraints, particularly snubbers. The hardware reliability, in-service inspection and maintenance difficulties of snubbers inherently detract from the safety of Category I piping, as reported in NUREG/CR-3718, "Reliability Analysis of Stiff vs. Flexible Piping--Status Report."

As a result of discussions on September 24, 1985 with the NRC Surry Project Manager, we agree that these damping values would be used with the following considerations:

- a. These damping values will be used in analyses for cases where new piping is added, existing systems are modified, existing systems are re-evaluated for new requirements and where existing number of snubbers/supports are to be reduced.

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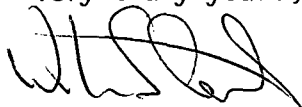
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- b. These damping values will be used only for seismic analyses using response spectrum methods and not for seismic analysis using time-history analysis methods.
- c. When these damping values are used, the +/- 15% peak broadening criteria of Regulatory Guide 1.122, "Development of Floor Design Response Spectra for Seismic Design of Floor Supported Equipment or Components," will be used.
- d. When these damping values are used, they will be used in a given analysis in its entirety.
- e. When these damping values are used together with changes in the support arrangement that increases the flexibility of piping system, the predicted maximum displacements will be reviewed in accordance with applicable project procedures to ensure that such displacements do not cause adverse interaction with adjacent structures, components or equipments.

In order to take advantage of these new damping values for potential snubber elimination during upcoming refueling outages, your expeditious approval of this request would be greatly appreciated. Pursuant to 10CFR170, an application fee of \$150.00 is attached.

Very truly yours,



W. L. Stewart

Attachment: Application Fee

cc: Dr. J. Nelson Grace
Regional Administrator
Region II

Mr. D. J. Burke
NRC Resident Inspector
Surry Anna Power Station