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SCHWENCER,A. Licensing Branch 2

SUBJECT: Requests increase in allowable usage factor for reactor feedwater piping between containment isolation valves RFW-V-10A (B) & RFW-V-32A (B). Relaxation of fatigue limit can be adopted w/o jeopardizing structural integrity.

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

January 17, 1985
G02-85-022

Docket No. 50-397

Director of Nuclear Reactor Regulation
Attention: Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Schwencer:

Subject: NUCLEAR PLANT NO. 2
REQUEST FOR FATIGUE USAGE LIMIT RELAXATION

Reference: Letter, G02-84-541, G. C. Sorensen (SS) to A. Schwencer (NRC), "Feedwater Piping Thermal Deflect Events; Final Report", dated October 16, 1984

The reference provided a report on several Reactor Feedwater (RFW) Piping deflection events at WNP-2, the analysis of the events and modifications completed to accommodate any further such events. Additionally, in the Executive Overview of the report and during a meeting with the staff on September 25, 1984, it was stated that a relaxation would be sought on the 0.1 usage factor limit imposed on certain portions of the RFW piping.

Accordingly, this letter requests an increase in the allowable usage factor from 0.1 to 0.4 for the subject piping. The piping specifically being addressed is RFW piping located between the containment isolation valves, RFW-V-10A (B) and RFW-V-32A (B). WNP-2 feedwater piping design by the Architect/Engineer was designed and analyzed to conform to the 0.1 usage factor limit. Restricted use of feedwater, particularly during hot-shutdown, places unnecessary dependence upon safety systems for maintenance of core coverage. Restricted use of the feedwater results from applying design operational transients to the piping design. The transients specified a controlled 100°F/hr. cool down of the pipe and a step change of 165°F when feedwater is returned to supply the Reactor Pressure Vessel. Reactor feedwater must provide water to the Reactor Pressure Vessel for a multitude of transient conditions for which the temperature of feedwater is not a controlled parameter. Precluding the use of this system during these transients is not warranted to achieve an arbitrary 0.1 usage factor limit.

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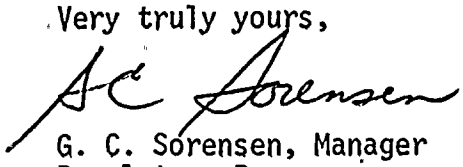
WNP-2 Licensee Event Report (LER) 84-113 is one case in point when an RPS actuation occurred on Reactor Pressure Vessel low water level. This low level occurred during hot-shutdown and was due in part to reluctance of the operator to use feedwater because of usage factor limits (cold feedwater, hot pipe).

It is the Supply System's opinion that relaxation of the 0.1 fatigue limit can be adopted without jeopardizing the RFW system structural integrity or compromising the concept of significant engineered safety margins. This request is based on the precedence established by Section XI of the ASME Code for the Owner's in-service inspection program. Specifically, the ASME Code stipulates a threshold fatigue usage limit of 0.4 for determining pressure boundary inspection points in Class 1 systems. Below this limit, adequate assurance is provided by the Code design approach and design margins such that fatigue is waived as a credible failure mechanism. Although the MEB 3-1 break exclusion fatigue limit of 0.1 may only be marginally exceeded in the ongoing RFW re-analysis, a total cumulative fatigue usage of less than 0.4 would be an acceptable and justifiable RFW break exclusion zone upper limit based on ASME Code criteria. In conjunction with the relaxed fatigue limit, the Supply System will, as part of the WNP-2 fatigue usage monitoring program, be utilizing the plant's real time data acquisition system to monitor, collate, and archive RFW system operating events. This computer data base will be periodically reviewed and reconciled against the RFW design basis fatigue cycles to provide a comprehensive assessment of pressure boundary integrity. This program augments our in-service inspection program which includes periodic 100% volumetric examination of the RFW break exclusion zone.

An additional factor in this matter is the Staff's emerging position on leak-before-break criteria. Based on the fracture mechanics approach, it is becoming more apparent that instantaneous guillotine pipe rupture is generally not a credible event. In any case, the thrust of the Supply System program is to demonstrate a low RFW fatigue usage combined with a fatigue usage monitoring program to assure that the essence of the break exclusion concept is maintained.

Should you have any questions, please contact Mr. P. L. Powell, Manager, WNP-2 Licensing.

Very truly yours,



G. C. Sorensen, Manager
Regulatory Programs

PLP/tmh

cc: R Auluck - NRC
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