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MURRAY R. EDELMAN
VICE PRESIDENT
NUCLEAR

September 24, 1985
PY-CEI/NRR-0363 L

Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Perry Nuclear Power Plant
Docket Nos. 50-440; 50-441
SER Outstanding Issue 8
Mark III Containment System Issues

Dear Mr. Youngblood:

The purpose of this letter is to provide additional clarification of our previous submittals dated September 2, 1982, January 26, 1983, January 5, 1984 and June 24, 1985 regarding results of certain of our action plans to resolve the Mark III Containment System Issues raised by Mr. John Humphrey. The attachment to this letter should resolve the remaining concerns on the use of RHR in the steam condensing mode and the design of the RCIC turbine exhaust to the suppression pool. (CEI Action Plan 6)

We recognize that the NRC staff's review of the remaining Mark III Containment System Issues for Perry is not yet complete and additional confirmatory information may be required. It is our intent to work with the staff to resolve all of these issues prior to initial licensing. However, should additional information be required, CEI is committed to providing such submittals prior to startup following the first refueling outage. This commitment will be reflected, if necessary, in an FSAR amendment prior to licensing. If you have any questions, please let me know.

Very truly yours,

Murray R. Edelman

Murray R. Edelman
Vice President
Nuclear Group

MRE:njc

Attachment

cc: Jay Silberg, Esq.
John Stefano (2)
J. Grobe

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RCIC Turbine Exhaust to Suppression Pool

As described to the NRC Staff in the May 19, 1983 meeting, startup testing of the RCIC system at early plants (before 1972) experienced problems within the suppression pool that had not been predicted, (i.e., pressure instability in exhaust line, cycling and slamming of the exhaust line swing check valve and pipe and torus vibration and movement). Most of these problems were eliminated by installing vacuum breakers in the exhaust line. Also, RCIC Turbine exhaust spargers were first installed and tested at Browns Ferry in 1973. The exhaust sparger and vacuum breakers were added to the BWR/6 base design of the RCIC System. At operating plants equipped with the RCIC exhaust sparger and vacuum breakers, there have been no reports of containment or system failures or deformation.

As addressed in our June 24, 1985 submittal, (Attachment 6-1), PNPP has incorporated the sparger and vacuum breaker design. Based on this and the fact that there have been no operating problems at BWR plants which have incorporated these changes, we believe the issue regarding loads associated with operation of the RCIC turbine exhaust has been resolved.

RHR Heat Exhanger Safety Relief Valve Loads (Action Plan 6 3.1, 3.3, 3.7)

Our Action Plan 6 addressed the Issues 3.1, 3.3 and 3.7 regarding the loads associated with actuation of the RHR relief valves. These included a) vent clearing, b) condensation oscillation, c) chugging, d) discharge bubble pressure, and e) other submerged structure loads on equipment in the suppression pool.

Items a),d) & e) - By letter dated January 5, 1984, CEI addressed vent clearing loads, including air clearing load, water jet load and dynamic piping loads, for the containment, the RHR heat exchanger relief valve discharge piping and submerged structures. In addition, discharge bubble pressure and submerged structure loads were discussed in the submittal. These loads have been evaluated and verified as bounded by original design or incorporated as new design basis loads.

Item b) - By letter dated June 24, 1985, CEI addressed the condensation-oscillation loads by reference to the generic evaluation (AECM-84/0443 dated September 7, 1984) and concluded that this load is bounded by the main steam safety relief valve design basis loads. The containment wall loads and submerged structure loads were evaluated and are less severe than the above referenced design basis loads. Additionally, clarification was provided on the submerged structure drag load methodology.

Item c) - With respect to chugging loads, our June 24, 1985 letter described our basis for not addressing chugging and lateral tip loads. Such loads cannot occur with a single active failure and when recognizing the operators ability to control the system, particularly during startup in the steam condensing mode.

The following clarification of the RHR system design capability and operation provides additional basis for concluding the PNPP design and operation in the steam condensing mode is acceptable. The lateral load capability of the RHR relief valve discharge line is 11.5 kips, which is a static equivalent load. Instrumentation is available in the control room which will be used to monitor system pressure downstream of the pressure control valve and water level in the heat exchanger.

During start-up and operation of the RHR system in the steam condensing mode system pressure and heat exhanger water level will be continuously monitored by the control room operator. The pressure control valve maintains downstream pressure below 200 psig. A failure of the relief valve alone (i.e., failure to reseat) is not credible since system operating pressure is below the valve setpoint. Failure of the control valve in the open position will immediately pressurize the downstream piping, and will be indicated in the control room. When the pressure reaches 500 psig, the relief valve will open. Since the relief valve capacity is greater than the control valve capacity, cyclic operation may occur. A relief valve failure is not postulated since it would constitute an additional failure to the control valve failure.

System operation above 200 psig is indication of a system malfunction (control valve failure). The operator's immediate response to the system parameters will be to terminate system operation by closing the steam supply valve (F052) and thus preclude relief valve actuation. Based on the readily available line pressure and heat exchanger level indication, it is conservatively estimated that this action will occur well before 10 minutes after the control valve failure and would minimize cyclic operation of the relief valve.