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October 23, 2000
PY-CEI/NRR-2519L

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Perry Nuclear Power Plant
Docket No. 50-440
Additional Information to Support In-Service Examination
Program Relief Request IR-030

Ladies and Gentlemen:

By letter dated April 17, 2000 (PY-CEI/NRR-2491L), several relief requests were submitted for the Perry Nuclear Power Plant (PNPP) In-Service Examination Program. One of those Relief Requests, IR-030, addresses examination of Reactor Pressure Vessel (RPV) shell welds. As a result of Nuclear Regulatory Commission (NRC) review of this relief request, additional information was requested regarding potential cold RPV over-pressurization events. Attachment 1 provides the information requested.

There are no regulatory commitments contained in this letter. If you have questions or require additional information, please contact Mr. Gregory A. Dunn, Manager - Regulatory Affairs, at (440) 280-5305.

Very truly yours,

John K. Wood

Attachment

cc: NRC Project Manager
NRC Resident Inspector
NRC Region III

A047

# RELIEF REQUEST NO. IR-030

## Requested Information

In addition to the discussion on high pressure injection sources, provide additional discussion, specifically regarding the Feedwater system, related to non-design basis cold over-pressure transients.

## Response

As discussed in the letter dated April 17, 2000, PY-CEI/NRR-2491L, it is highly unlikely that a Boiling Water Reactor (BWR) would experience a cold over-pressure transient. As stated in the referenced letter, for a BWR to experience such an event would require several operator errors. This is the case regarding the Feedwater system.

The purpose of the Feedwater system is to maintain Reactor Pressure Vessel (RPV) water level automatically within predetermined limits during all modes of plant operation. The Feedwater system is comprised of three sets of pumps:

- Four motor driven Reactor Feedwater Booster Pumps (RFBPs)
- Two Reactor Feedwater Pumps Turbines (RFPTs)
- One Motor-driven Feedwater Pump (MFP)

Three of the four booster pumps are required for normal operation with the fourth pump on standby. Booster pumps are manually started and controlled from the control room. The discharge pressure of these pumps is too low (~ 345 psig) to contribute towards a postulated RPV cold over-pressure transient.

A control system regulates Feedwater flow to maintain reactor water level by controlling the admission of steam to the RFPT drives like the Reactor Core Isolation Cooling (RCIC) system as described in the April 17, 2000 letter. Therefore, there is no concern towards these turbine driven pumps contributing to a postulated RPV cold over-pressure transient.

The primary function of the MFP is to serve as an automatic source of Feedwater following a loss of an operating RFPT to prevent a RPV low level scram or to prevent the actuation of the RCIC system following the loss of both RFPTs.

Feedwater system control may be maintained by automatic or manual means. Under either control method, redundant RPV level controls are in place that would isolate the RPV in the event a high RPV level was reached. Even though high RPV level protection is only required in Mode 1 (Run), administrative controls are in place for all other modes of operation.

For a RPV cold over-pressure transient to occur, the RPV would be required to go solid. The high level MFP trip would come in before the RPV became solid, thus preventing the over-pressure condition. In addition, the operator would have to make several unlikely errors to provide a cold RPV over-pressure transient via the MFP. Therefore, due to high level controls and good operator practices, the likelihood of a non-design basis cold over-pressure transient being caused by the Feedwater system is highly remote.