FirstEnergy

Perry Nuclear Power Plant
10 Center Road
Perry, Ohio 44081

Lew W. Myers
Vice President

440-280-5915
Fax: 440-280-8029

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Perry Nuclear Power Plant
Docket No. 50-440
Response to Request for Additional Information Regarding
Safety Relief Valve Setpoint Tolerance (TAC No. MA2290)

Ladies and Gentlemen:

In a letter dated September 16, 1998, the NRC staff issued a Request for Additional Information (RAI) concerning a request for revision of the safety/relief valve setpoint tolerance for the Perry Nuclear Power Plant (PNPP). The change to the setpoint tolerance was requested in a letter dated July 13, 1998 (PY-CEI/NRR-2298L).

Attachment 1 herein provides the response to three (3) NRC RAI questions and two supplemental information issues not specifically addressed in the RAI, but discussed with the NRC staff. The RAI responses and supplemental clarifications neither modify the proposed Technical Specification change nor impact the proposed Significant Hazards Consideration provided in the original submittal.

If you have questions or require additional information, please contact Mr. Henry L. Hegrat, Manager-Regulatory Affairs, at (440) 280-5606.

Very truly yours,

Lew W Myers

Attachment

cc: NRC Region III
NRC Resident Inspector
NRC Project Manager
State of Ohio

A001

PNPP RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION ON SAFETY/RELIEF VALVE SETPOINT TOLERANCE

Question 1

"Uncertainties of analysis parameters should be accounted for in the safety analyses used to justify new limits in the plant Technical Specifications (TSs). Provide a discussion of the Safety/Relief Valve (SRV) setpoint testing instrument accuracy and how this source of uncertainty is accounted for in the licensee's safety analysis associated with the proposed TS SRV setpoint tolerance."

Response to Question 1

The setpoint testing instrument accuracy is accounted for in the testing of the SRVs, not in the safety analysis. The Perry Nuclear Power Plant (PNPP) specifies minimum test instrument loop accuracy within the vendor contract for SRV benchtesting and refurbishment. The vendor currently used by PNPP to conduct these activities utilizes a test bench that has a stacked test instrument loop accuracy of 0.15% of the indicated (measured) set pressure. Test instrument loop accuracy is accounted for in all "as-found" and "as-left" benchtest results. The vendor is required to notify PNPP whenever the as-tested results are outside the setpoint tolerance taking into account the stacked test instrument loop accuracy.

Question 2

"Provide verification that the functional capability of all safety-related motor operated valves has been evaluated for the larger differential pressure loads resulting from the increased SRV setpoint tolerance in accordance with the Generic Letters 89-10 and 96-05 programs. In addition, provide verification that the functional capability of all safety-related air-operated and hydraulically-operated valves has not been adversely affected by the increased SRV tolerance."

Response to Question 2

A maximum expected differential pressure (MEDP) calculation is performed for valves in the Generic Letters (GL) 89-10 and 96-05 program to establish a maximum differential pressure expected during various operational conditions. MEDP calculations were prepared for MOVs included in the GL program, and were developed based on industry guidance developed generically for all BWRs, and considering PNPP plant specific requirements.

For PNPP, dynamic testing of MOVs is done at the highest differential pressure achievable under normal operational configurations for selected valves in established valve groups. Therefore, dynamic testing requirements are unaffected by the SRV safety setting tolerance increase. However, MOV operator settings for static testing are based on the calculated MEDP values (as one of the input parameters for determining required settings). Adequacy of MOV settings was assessed by evaluating the adequacy of the MEDP calculation assumptions and resulting MEDP values established for those valves potentially affected by the increase in SRV safety setpoint tolerance.

Plants defined in NEDC-31753P as Group 3 (i.e., BWR 5/6), have SRVs with two (dual) modes of operation (relief and safety), and credit the safety-grade externally powered relief mode in the analysis of abnormal operational occurrences (AOOs), the ASME overpressurization analysis, and the Anticipated Transient Without Scram (ATWS) events. The relief mode is also utilized in the calculation of the MEDP for the valves in the Generic Letters (GL) 89-10 and 96-05 program. For the SRVs operating in the relief mode there are three groups of relief setpoints. The highest setpoint group opens at 1123 psig ±15 psig. Thus, the highest relief mode pressure is 1138 psig, and all SRVs credited in the accident and transient analyses for relief mode operation would open if reactor pressure exceeded this value. This is below the lowest SRV safety mode setpoint. Therefore, the SRV safety mode setpoint tolerance increase to 3% does not affect the MEDP for these valves.

In addition, there are no safety-related air-operated and hydraulically-operated valves whose functional capability will be adversely affected by the increased SRV tolerance.

Question 3

"The NRC Safety Evaluation for topical report NEDC-31753P, dated March 8, 1993, stated that in order to increase the SRV setpoint tolerance from ±1% to ±3%, half of the SRVs should be tested every 18 months and all SRVs should be tested within 40 months. The licensee's letter dated July 13, 1998 proposes to continue testing the SRVs less frequently in accordance with the plant inservice testing program. Provide the basis for testing the SRVs less frequently than that approved for the above topical report while increasing the SRV setpoint tolerance to ±3%, or revise the proposed TS accordingly."

Response to Question 3

The current licensing basis for PNPP, as reflected in the Updated Safety Analysis Report, Section 5.2.2.10, "Testing and Inspection", is that at least half of its SRV population is removed and tested each Refuel Outage. In addition, the benchtest interval for any individual valve shall not exceed 5 years. This is also reflected in the original NRC Safety Evaluation Report Related To The Operation Of The Perry Nuclear Power Plant, dated May 1982, Section 5.2.3. No changes to this schedule are proposed by the pending license amendment request.

ADDITIONAL DISCUSSIONS

In addition to the above information provided in the Request for Additional Information, the following is provided as supplemental information to clarify two (2) items specifically discussed in NEDC-31753P and NEDC-32307P.

Item 1

The NRC Safety Evaluation Report for topical report NEDC-31753P, dated March 8, 1993, states that "Re-evaluation of the performance of high pressure systems (pump capacity, discharge pressure, etc.), motor operated valves, and vessel instrumentation and associated piping must be completed, considering the 3% tolerance limit." The PNPP submittal dated July 13, 1998 (PY-CEI/NRR-2298L), did not specifically address vessel instrumentation or the piping connected to that instrumentation.

Instruments which could be affected by the possible increase in pressure resulting from the proposed change were evaluated with respect to effects on pressure boundary integrity, instrument calibration, and instrument scaling calculations and instrument setpoint/uncertainty calculations (as applicable). Instruments in high pressure systems such as the Control Rod Drive and Standby Liquid Control Systems were excluded because the systems are designed to operate at pressures higher than that resulting from the SRV tolerance relaxation.

A review of vendor information for each instrument indicated that the increased pressure is within the pressure boundary design limit. Calibration information for the instruments was reviewed and the calibration range of all instruments is adequate considering a potential higher reactor pressure of 1200 psig.

Instrument scaling calculations use normal operating pressures as an input, rather than anticipated maximum pressures and are, therefore, not affected by this proposed change. Additionally, the reactor pressure values used in determination of static pressure effects and overpressure effects in instrument setpoint and uncertainty calculations bound the pressure resulting from the proposed SRV setpoint tolerance relaxation.

For PNPP, piping connected to the reactor coolant pressure boundary (RCPB) is designed for pressures equal to or greater than rated reactor vessel design pressure of 1250 psig. Instrument piping/tubing class is determined by the process pipe class. Additionally, instrument piping connected directly to the reactor vessel has a minimum design pressure rating of 1250 psig. All of this piping is protected from overpressurization by the SRVs which satisfy ASME Code requirements for overpressure protection for the reactor vessel and connected piping. Pressure transients associated with upset and faulted conditions analyzed in the USAR are bounded by core reload analyses which utilize a +3% tolerance for SRV safety mode operation in evaluating maximum overpressurization scenarios. Therefore, RCPB piping, including the instrument piping within the RCPB, has adequate design margin for overpressure protection.

Therefore, the proposed change in SRV setpoint drift tolerance has no impact on plant instrumentation and instrument piping/tubing.

Item 2

The topical report NEDC-32307P, Section 6.2.6, submitted with the letter dated July 13, 1998 (L.W. Myers to the Nuclear Regulatory Commission, "License Amendment Request Pursuant to 10CFR50.90: Modification of the Safety Setpoint Requirements for the Safety Relief Valves") recommended that the RCIC steam supply line isolation differential pressure set point value be re-evaluated.

RCIC steam flow is monitored by flow instrumentation for the purpose of isolating steam to the turbine if an excessive steam flow rate, indicative of a line break, occurs. The instrumentation setpoint is equivalent to 300% of steam flow at the design condition of 1192 psia and 700 gpm pump flow. Although operation beyond this design condition requires slightly increased steam flow, the margin to isolation on high steam flow is not significantly impacted. The existing high steam flow setpoint is slightly conservative (lower) than one calculated based on 300% of steady state steam flow at 1215 psia. Therefore, the evaluation concluded that the existing RCIC high steam flow setpoint would not be revised.

Commitments

There are no regulatory commitments contained in this letter.