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SUBJECT: Responds to NRC 870515 request for addl info re proposed Amend 97 to NPF-14. Addl surveillance requirements & alternative methods of closing HPCI F002 valve discussed.

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MAY 19 1987

Director of Nuclear Reactor Regulation
Attention: Dr. W. R. Butler, Project Director
Project Directorate I-2
Division of Reactor Projects
U.S. Nuclear Regulatory Commission
Washington DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION
ADDITIONAL INFORMATION ON EMERGENCY REQUEST -
PROPOSED AMENDMENT 97 TO NPF-14
PLA-2861 FILES A17-2, R41-2

Reference: Letter, PLA-2859, B. D. Kenyon to W. R. Butler,
dated May 14, 1987.

Based on a request from the Staff in a telecon on May 15, 1987, this letter has been prepared to address the compensatory measures PP&L considered in preparing our referenced proposed emergency change request. The actions considered were either for additional surveillance requirements or for alternative methods of closing the HPCI F002 valve. The following is a summary and disposition of each item.

A. Additional Surveillance

1. Increased walkdowns of the HPCI steam piping

   The purpose of this surveillance would be to supplement our leak detection capability so that the operator would be provided extra time to respond to a precursor to an actual steamline break. The intent would be to provide isolation prior to a large break occurring, since the F002 valve can automatically fully close against a low ΔP event.

   Although PP&L feels that our current leak detection is adequate, we are willing to commit resources on a periodic basis to walkdown the piping in question.

2. Operability testing of the F003 valve on a more frequent basis

   The additional testing of the F003 valve (the outboard isolation valve on the HPCI steam piping in question), would be designed to assure the isolation function of the penetration, assuming the F003 valve does not fail in the event. There are two concerns that have to be weighed against this potential enhancement:

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- o Increased cycling of the valve may actually degrade its leak tightness. It is currently cycled (per the Inservice Inspection Program) on a 3 month frequency or prior to returning the valve to service after maintenance.

- o Each time this valve is cycled shut, HPCI becomes unavailable. Depending on the chosen frequency for testing, this could be unacceptable, as evidenced by our earlier arguments which showed that HPCI availability is of utmost importance to safety.

B. Alternatives to Ensure Valve Closure

1. Posting an operator at the MCC to bypass the torque switch

For this activity, an operator would be posted 24 hours a day with a pair of jacks or a temporary switch to bypass the torque switch in the event of a HPCI steamline break.

- o Once a steamline break occurred, the operator would be under severe stress to remain at the MCC while a break was occurring in an adjacent room.

- o There could be a personnel safety hazard from radioactive contamination within a short time of the line break.

- o It requires the operator to perform his tasks within 10 minutes to be of benefit before an operator in the control room would initiate rapid depressurization and close the valve.

- o Posting an operator to perform a function that can be performed otherwise is an improper use of an important resource. Given the fact that this operator will be unavailable to perform other safety-related work, we find this alternative unacceptable.

2. Designate by procedure, an operator to be available immediately to enter the area to close the valve.

For this alternative an operator would be designated to respond to an unisolable steam line break. Adjacent to the HPCI Room/RHR Equipment Room there would be a staging area equipped with emergency personal protection items and the electrical items required to close the valve.

- o Time constraints are probably prohibitive. The operator would have to travel to the area, dress in protective clothing, access the area and perform the required task. However, if the planned response was not effective, this action would be the logical contingency action, and furthermore, the operators are very familiar with the actions that they would be required to take.

3. Provide bypass switch capability in remote location

Given the concerns with posting an operator at the MCC and the time required to get an operator to the MCC given the steamline break, providing a remote capability (preferably in the control room) to bypass the torque switch was evaluated. This modification is feasible and would allow the full closure of the F002 valve against the full ΔP in a HPCI steamline break event with minimal risk of failing the valve motor. The only negative side to performing this modification is the resource/time impact. Even if the temporary modification was performed to minimal standards, our estimates indicate the design and installation will take a significant amount of time, and will require approximately 300 feet of cable to be installed. PP&L would not hesitate to make this commitment if it was shown to be a significant safety enhancement. However, we are not convinced at this point that this is the case, given the relatively short time the modification would be in effect and our original assessment of the consequences of the event.

4. Permanent bypass of the torque switch to close the valve with full motor torque

This alternative would require a temporary modification to the electrical circuit to bypass the torque switch in the closing circuit of the valve. Full motor torque would be placed on the valve to close it until the motor operator failed. Valve integrity, however, would be maintained.

- The probability of the F002 valve inadvertently closing between now and the Unit 1 3rd Refueling and Inspection Outage is $4X10^{-3}$ per year which is greater than that for a HPCI line break (4×10^{-5} per year).

- A false signal from the leak detection system or an operator error would fail the valve operator.

- If a break in a system other than HPCI occurred in the RHR equipment room and the torque switch was not bypassed, the valve might automatically close. This could occur in a situation where HPCI was required to mitigate the break.

- Closure of the F002 to failure would make HPCI unavailable, and as previously stated, this detracts from our safety objectives.

5. Use a normal shutdown path per Emergency Procedures presently in place, if the radionuclide inventory is well below Technical Specification limits.

Our present Emergency Procedures include the actions necessary to shutdown the reactor in the event of an unisolable steam break. These procedures require reactor depressurization if the radionuclide inventory in the vessel is high (this was our referenced proposal); however, if the inventory is well below Technical Specification limits, the procedures direct the operators to shutdown the plant in a rapid, but normal manner.

In conclusion, we would like to provide a more realistic perspective on the HPCI Steamline break that we have been rigorously evaluating due to the torque switch problem. Our referenced proposal indicated that the radiological consequences of this event were a small fraction of 10CFR100 limits. This assessment assumed failed (leaking) fuel resulting in the specific activity of the reactor coolant being at Technical Specification limits. Additionally, the control room operators were said to have adequate emergency procedures to ensure full closure of the F002 valve following reactor depressurization.

In reality, Susquehanna's current fuel inventory has high integrity based on specific activity levels, and therefore the dose consequences expected if a HPCI steamline break occurs before the Unit 1 third Refueling & Inspection Outage would be significantly less than described originally. Without failed fuel, the plant could be shutdown and depressurized in a normal fashion (depressurization would take about 3 hours) due to a HPCI steamline break and the resulting dose would be less than that calculated in our referenced proposal. Furthermore, the operators are very familiar with the actions they must take in the event of the break, not only due to the emergency procedures, but also due to the actions being normal steps in an existing surveillance procedure.

We are prepared to discuss these issues with your staff or their earliest convenience.

Any questions on this letter should be directed to Mr. R. Sgarro at (215) 770-7916.

Very truly yours,

H. W. Keiser
Vice President-Nuclear Operations

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