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August 4, 1988
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Mr. A. Bert Davis
Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Perry Nuclear Power Plant
Docket No. 50-440
Considerations Regarding
Restoration of Feedwater Heater

Dear Mr. Davis:

This letter provides a summary of the discussion held on August 4, 1988 between members of your staff (R. Knop, K. Connaughton and G. O'Dwyer) and various members of the Perry Plant staff. We are also including, as requested by your staff, a request for Nuclear Regulatory Commission (NRC) implementation of discretionary enforcement.

The subject of this discussion was the restoration of the feedwater system 6A Heater and the steps we intend to take to preclude an inadvertent plant transient. As described in Attachment 1 to this letter, isolation of the 6A Heater has caused a reduction in plant thermal efficiencies as well as increased condenser pressure resulting in a reduction in maximum electrical generating output. Continued increases in electrical demand have made it advisable to restore the 6A Heater to service without significantly reducing plant power.

As described in Attachment 1 and discussed with your staff, we intend to voluntarily enter Technical Specification Limiting Condition for Operation Action Statements 3.3.1 and 3.3.2 in order to prevent an inadvertent plant scram. This transient could result from the processing of a small quantity of air through the reactor. We recognize previous NRC endorsement of voluntary entry into Technical Specification Action Statements by licensees and it is our commitment to exercise proper judgment within the latitude permitted by our License. However, we also recognize the interest your staff has shown in this specific evolution. Consequently, as requested by your staff, we

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hereby seek expeditious approval of NRC discretionary enforcement so that we may voluntarily enter Technical Specification Actions 3.3.1 and 3.3.2 in order to restore the 6A Heater to service. If you have any questions, please feel free to call.

Very truly yours,

M. D. Lepstel for

Al Kaplan
Vice President
Nuclear Group

AK:cab

Attachment

cc: R. Knop
K. Connaughton
T. Colburn
Document Control Desk

Considerations Regarding Restoration
of Feedwater 6A Heater

The 6A Feedwater Heater was removed from service due to a tube leak and was isolated and repaired with the plant on-line. Repairs are now in progress and preparations are being made to return the heaters to service. However, due to the piping configuration, a calculated 80 SCF of air which cannot be vented is trapped just downstream of the heater inlet isolation valve. This air has a high potential for causing a main steam line (MSL) isolation and reactor scram if processed through the reactor vessel with the MSL radiation monitors in service.

The extraction steam which normally supplies the 6A Heater is currently being dumped directly into the high pressure condenser contributing to the high condenser back pressure problems which have resulted in a 5" increase in condenser pressure and a reduction in power output.

Electrical demand (system load) continues to increase with increasing temperature and humidity conditions. Placing the 6A Heater back in service will (1) provide additional efficiencies and therefore increased MWe and (2) reduce thermal load on the condenser reducing pressure.

A reduction to less than 20% of rated could facilitate system restoration and prevent a MSL high radiation trip due to the activation of the air to nitrogen-16. However, the calculations for this are subjective (requiring some basic assumptions) and therefore do not guarantee prevention of a reactor scram. Additionally, two other factors were also considered: (1) we do not want to jeopardize the plant with a complete feedwater cycle; and (2) due to system load considerations and discussions with the system dispatcher, it was concluded that a significant reduction in power to perform or restore from maintenance would not be advisable.

A core physics analyst with General Electric evaluated the reactivity effects of the potential air injection. He postulated that in all likelihood, the air would rise directly to the steam dome following injection from the feedwater nozzles, thus avoiding passage through the core. If the air did pass through the core, its effect would be an increase in core void fraction, causing an insertion of negative reactivity. However, because of the large void formation normally existing in the BWR core (approximately 400 FT^3 at rated power), the effects of this additional voiding would be negligible. Discussion with GE also indicated that any effects on RPV level instrumentation, jet pump operation, and IGSCC would be negligible.

In order to control the restoration of the feedwater 6A Heater, TXI-0060 "Returning Feedwater Heater 6A to Service Following Maintenance" was generated. The purpose of this instruction is to document a step by step process intended to remove as much of the entrained air as possible and to control the heatup process.

After verifying the heater isolated, the procedure first directs the performance of a fill and vent using the 6A heater vent valve and leakage past the feedwater side inlet and outlet valves. Once vent flow is established, the vent line is closed and a flush/heatup is commenced using the feedwater inlet bypass valve (1") and the 6A Heater drain valve. This flush is expected to remove a portion of the trapped air from the system. Twenty-four hours are then allowed for heatup to equalize with 6A Heater inlet temperatures. An 8 hour heatup is subsequently performed to equalize the heater to 6B Heater outlet temperature.

Following heatup, the trip function of one (of two) MSL radiation monitor trip system is bypassed (using the inhibit button holddown devices for two MSL radiation monitor channels as described in existing surveillance instructions) to prevent an inadvertent isolation and reactor scram during restoration of feedwater flow. The time period the plant is in this condition will not exceed one hour (as delineated in Technical Specifications 3.3.1 and 3.3.2). Operators will monitor the non-bypassed MSL radiation monitor channels in order to provide manual actuation of the trip logic should conditions warrant.

Once the trip logic is bypassed, feedwater flow is established through the heater by opening the feedwater outlet and inlet valves. A momentary spike on the radiation monitors and associated half trip of the logic are then expected once the air passes through the reactor. Following the observance of a spike, but prior to exceeding one hour limit, the trip logic will be restored to service. Heating steam will then be restored to the 6A Heater, restoring the feedwater heating system to full operation.