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June 22, 1994

Docket No. 50-213  
B14834

Re: 10CFR50.90

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

Haddam Neck Plant  
Request for Information on  
Proposed Revision to Technical Specifications  
Additional Atmospheric Steam Dump

Purpose

The purpose of this letter is to provide the NRC Staff with information to support their review of a proposed license amendment to the Haddam Neck Plant Technical Specifications. In particular, this submittal contains information about the atmospheric steam dump valve and addresses the Staff's concern about the valve's ability to function when required to control a plant cooldown following a steam generator tube rupture (SGTR).

Summary

The NRC Staff has been reviewing a proposed license amendment to the Haddam Neck Plant Technical Specifications which addresses four Anderson-Greenwood main steam safety valves (MSSVs) that were installed during the Cycle 17 refueling outage. The Staff has had questions with regard to proposed Technical Specification Section 3.7.1.1.2, Safety Valves-Remote Actuation Function. Their inquiries resulted in two supplemental letters from the Connecticut Yankee Atomic Power Company (CYAPCO) dated January 25, 1994<sup>(1)</sup> and April 11, 1994.<sup>(2)</sup>

- (1) J. F. Opeka letter to the U.S. Nuclear Regulatory Commission, "Request for Additional Information, Proposed Revision to Technical Specifications, Additional Atmospheric Steam Dump," dated January 25, 1994.
- (2) J. F. Opeka letter to the U.S. Nuclear Regulatory Commission, "Haddam Neck Plant, Request for Information on  
(continued...)

The Staff has now asked CYAPCO to expound on information provided in the April 11, 1994 submittal. In particular, CYAPCO was asked to verify that the air operated atmospheric steam dump valve can mitigate primary side repressurization and control plant cooldown following a SGTR. The information provided herein addresses the valve's operation, back up measures to ensure it can be operated, and the surveillance performed to ensure valve operability.

#### Background

In a letter dated May 4, 1993,<sup>(3)</sup> CYAPCO submitted to the NRC Staff a proposed revision to the Haddam Neck Plant Technical Specifications. In that letter, CYAPCO informed the Staff that during the Cycle 17 refueling outage, four MSSVs (one per steam line) were being replaced with valves that would significantly increase the remote manual atmospheric steam dump capability of the Haddam Neck Plant.

In a letter dated January 25, 1994, CYAPCO resolved an NRC Staff concern directed at proposed Technical Specification Section 3.7.1.1.2, Safety Valves-Remote Actuation Function, ACTION c. This ACTION statement is entered if the remote actuation function of three or more of the Anderson-Greenwood MSSVs is inoperable. It requires that at least two valves be restored to OPERABLE status within 72 hours or the plant be placed in HOT SHUTDOWN. The proposed technical specification did not place any time limits for continued operation in MODE 4 and the plant could be operated over a wide range of reactor coolant system (RCS) pressures while in this mode. With the remote actuation function of three or more of the Anderson-Greenwood MSSVs inoperable, the method for mitigating a SGTR by using these valves may be lost.

To resolve this Staff concern, CYAPCO revised ACTION c to include a provision to be in HOT SHUTDOWN, with RCS pressure less than 900 psig. This would preclude lifting the steam generator safety valve with the lowest setpoint on the faulted steam generator, if a SGTR were to occur with the plant in HOT SHUTDOWN.

More recently, the NRC Staff asked what actions would be taken if the Haddam Neck Plant were in Technical Specification Section

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(2) (...continued)

Proposed Revision to Technical Specification, Additional Atmospheric Steam Dump," dated April 11, 1994.

(3) J. F. Opeka letter to the U.S. Nuclear Regulatory Commission, "Haddam Neck Plant, Proposed Revision to Technical Specifications, Additional Atmospheric Steam Dump," dated May 4, 1993.

3.7.1.1.2, ACTION c, and a SGTR subsequently occurred coincident with a loss of off-site power.

In a letter dated April 11, 1994, CYAPCO stated that a SGTR, when RCS pressure is less than 900 psig, is unlikely because differential pressure across steam generator tubes is significantly less than when operating. Nevertheless, CYAPCO informed the Staff that Emergency Procedure E-3 (Steam Generator Tube Rupture), can be applied to provide guidance to operators on mitigation of this event. We informed the Staff that Step 13 of E-3 instructs the operators to initiate a cooldown. Step 13b (Response Not Obtained) instructs the operators to use the Terry turbine steam supply valves and/or the atmospheric dump valve for steam generator cooling, if the main condenser is unavailable for various reasons, including a loss of off-site power.

In addition, CYAPCO stated that "the steam required to run the Terry Turbine(s) alone should be sufficient to prevent plant heat up and primary side repressurization. If this is insufficient, the capacity of the atmospheric dump valves would be more than sufficient to control plant cooldown."

#### Discussion

In a recent telephone discussion, the NRC Staff informed CYAPCO that they were still concerned about the possibility of plant heat up and primary side repressurization following a SGTR. In particular, their inquiry focused on the atmospheric vent valve (i.e. atmospheric steam dump valve) referred to in Emergency Procedure E-3. The Staff requested information to attest to the valve's ability to mitigate primary side repressurization and control plant cooldown following a SGTR.

At the Haddam Neck Plant, a branch line off of each main steam line outside containment and upstream of the main steam trip valves is provided to the decay heat release header. The decay heat release header supplies steam to the two auxiliary feed pump turbines and to the atmospheric steam dump valve, a normally closed (failed close) air operated valve. This valve is opened by supplying air or nitrogen to its operator to remove decay heat or to cool down the plant whenever main steam is isolated from the turbine building. When offsite power is lost, the atmospheric steam dump valve can be manually opened from the control room where the operator can monitor reactor coolant system temperature and steam generator pressures.

The atmospheric steam dump valve is a QA Category I pressure boundary, 3 inch air operated globe valve that is sized to pass 2% of total rated steam flow. This is large enough to remove decay heat about 30 minutes after shutdown. The atmospheric steam dump valve is positioned by a non-QA control air supply.

The atmospheric steam dump valve fails shut if control air pressure is lost. Additionally, the valve may be operated locally by connecting a portable nitrogen supply to the operator. The specific instructions dictating this process are located on a placard at the valve station.

The nitrogen supply is located at the valve station which is required to hold the valve open in the event of loss of control air or during an Appendix R fire. Additional nitrogen supply is available on site should it be required. CYAPCO has in place Operations Department Instruction 73, "Schedule of Control Room Routine Activities, Tests, and Checks," which is a weekly check by the Operations Department to ensure that nitrogen bottle pressure is adequate to support accident conditions.

In a letter dated June 22, 1993,<sup>(4)</sup> CYAPCO informed the Staff that we had developed and were implementing an augmented Erosion/Corrosion Inspection Program for piping inside the Terry turbine (auxiliary feedwater) building. The purpose of this program was to provide additional assurance against a high energy line break occurring in this area and threatening the auxiliary feedwater system. CYAPCO proposed to include this augmented Erosion/Corrosion Inspection Program in the Haddam Neck Plant Technical Specifications. The NRC Staff subsequently approved this proposed license amendment by letter dated September 29, 1993.<sup>(5)</sup>

The augmented and modified Erosion/Corrosion Inspection Program will be performed on the following subset of piping: 1) Piping inside the structure that contains the auxiliary feedwater pumps (Terry turbines), 2) the steam piping from the non-return valve in the structure above the Terry turbine building to the Terry turbines and to the atmospheric steam dump valve.

CYAPCO's inclusion of the piping system to the atmospheric steam dump valve into the Erosion/Corrosion Inspection Program will reduce the possibility of a pipe break due to erosion corrosion degradation, helping to ensure the valve will perform its intended function.

CYAPCO also utilizes surveillance procedure SUR 5.7-27, "Inservice Testing of Steam Generator Atmospheric Dump Valves MS-HICV-1201, MS-CV-1302 & 1304, MS-NRV-18, 28, 38, & 48," on a quarterly basis to ensure valve operability. This test provides

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- (4) J. F. Opeka letter to the U.S. Nuclear Regulatory Commission, "Haddam Neck Plant, Proposed Revision to Technical Specification, Augmented Erosion/Corrosion Program," dated June 22, 1993.
- (5) A. B. Wang letter to J. F. Opeka, "Issuance of Amendment," dated September 29, 1993.

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both degraded valve condition criteria and inoperable valve criteria.

Conclusion


CYAPCO considers the information provided herein to be sufficient to address the Staff's concerns about the ability of the atmospheric steam dump valve to function when required following a SGTR. If you have any further questions, please contact Mr. E. P. Perkins, Jr. at (203) 665-3110.

Very truly yours,

CONNECTICUT YANKEE ATOMIC POWER COMPANY

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