



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 141

TO FACILITY OPERATING LICENSE NO. DPR-61

CONNECTICUT YANKEE ATOMIC POWER COMPANY

HADDAM NECK PLANT

DOCKET NO. 50-213

1.0 INTRODUCTION

By letter dated June 14, 1991, the Connecticut Yankee Atomic Power Company (CYAPCO/licensee) submitted a request for changes to the Haddam Neck Plant Technical Specifications (TS). The requested changes would replace footnotes (a) and (b) to Table 3.3-2, Item 6.a with footnotes (c) and (d) and add new note "d" to Table 3.3-2, Items 3.a.1 and 3.a.2, to allow the feedwater control system to be defeated during surveillance testing and that the Limiting Condition for Operation is only applicable when the feedwater control system is in the automatic mode.

2.0 EVALUATION

As part of the resolution to A-47, "Safety Implications of Control Systems," the staff had determined that the Haddam Neck steam generator overflow protection system (feedwater isolation system) was adequate, provided CYAPCO establish TS to periodically verify the operability of the feedwater isolation system with appropriate limiting conditions for operation. In a letter dated February 28, 1991, CYAPCO submitted a license amendment request to the NRC staff proposing a TS to address the steam generator overflow protection system. This amendment provided a new limiting condition for operation (LCO) and surveillance requirements for the automatic feedwater isolation system (Steam generator overflow protection system). By letter dated May 6, 1991, the NRC staff issued License Amendment No. 136, approving CYAPCO's proposed Technical Specification.

During the implementation process CYAPCO identified some problems with this license amendment from both an operations and surveillance testing standpoint. Two specific problems were identified with License Amendment No. 136:

- (1) Normal Operations As written the LCO Item 6.a (Table 3.3-2) literally requires that the feedwater control system be operated in the "automatic" mode at all times when the reactor operates above 10% power. This is because the automatic feedwater isolation function is only in service when feedwater control is in "automatic." Placing the feedwater control system in the manual mode for one or more of the steam generators defeats both channels of the automatic feedwater isolation system. This places the plant in TS 3.0.3 with only 1 hour before a shutdown must begin. There are several occasions when the plant must be placed in the manual mode including below 30% power, when feedwater control is too unstable for the automatic mode and during automatic operation when the feedwater system is having problems (i.e., recent failure of feedwater control valve stem).
- (2) Surveillance Testing Note (b) under the "Applicable Modes" for LCO Item 6.a (Table 3.3-2) is intended to provide for taking this instrumentation out of service for surveillance testing. Performing the test would place the plant in a configuration of having more than one less than the number of minimum channels operable. This places the plant in TS 3.0.3 of having to start shutdown within 1 hour of starting the TS required surveillance.

CYAPCO proposed a TS amendment on June 14, 1991, to remedy this situation. The intent of Amendment No. 136 was to provide for periodic testing of the steam generator overflow protection system. However, because of the design of the system and the wording of the current TS (footnote (a)), the plant is basically limited to operation with the system in the "automatic mode" only. Footnote (a) will be replaced by footnote (c) which states that the feedwater isolation system LCOs are applicable only when the system is in the automatic mode. This will allow the plant to be operated in the manual mode, both trains of automatic feedwater isolation defeated. CYAPCO has stated that it is plant philosophy to operate feedwater control system in the automatic mode during full power operation and that the operators are trained to minimize manual operation of the system. It is current plant practice, whenever the plant must place one or more feedwater controllers in the manual mode, to have an "operator in attendance." This means that with only one controller in manual a designated operator, who must remain inside the operator's area ("redline"), will handle the controller to maintain steam generator level. If more than one feedwater controller is placed in manual, an additional operator is called to the control room either from home (during backshifts) or from his relief shift/training shift duties (during the day). When the additional operator arrives at the control room, he relieves the existing designated operator of his responsibilities for the feedwater control and is assigned to monitor the feedwater controllers. This plant practice has been formalized into a plant policy through an operations department instruction as a result of this TS request.

The operators receive thorough training on the plant specific simulator because proper feedwater control is critical to plant operations. The steam generator high level alarms in the control room alarms even when the controllers are in "manual." The steam generator narrow range level of 80% alarms even before the 69% wide range level setpoint (automatic feedwater isolation setpoint) is reached. By plant procedures, it is current practice for the operators to take manual control of feedwater for any steam generator that reaches the 80% narrow range level setpoint. If the operator cannot control steam generator level by the feedwater regulating valve he would isolate feedwater with the feedwater isolation motor operated valve. If the steam generator level continues to rise, the operator would trip the plant as soon as possible normally before the narrow range goes off scale high.

In Generic Letter 89-19, the NRC staff noted the successful operating history of the plant regarding overflow transients (i.e., no overflow events have been reported) as part of the basis for not requiring any modifications to the feedwater isolation system to resolve GL 89-19. While this is a relaxation from the recently issued TS, the NRC staff concludes that the TS change to reflect the existing plant operating practice of the feedwater control system meets the intent of GL 89-19 and the formalization of the "operator in attendance" practice into a policy coupled with the TS to verify operability and existing procedures should assure the continued excellent performance of the feedwater control system.

The intent of License Amendment No. 136 was to provide TS to verify the operability of the feedwater isolation system. As currently written the TS would severely restrict the operation of the plant. The design of the system is such that to perform the surveillance requirements the feedwater control system must be placed in the manual mode. The Minimum Channels Operable LCO requires that two channels per steam generator be operable in each loop with a corresponding ACTION statement which allows for one less than the Minimum Channels Operable if that channel is restored to operable status within 24 hours or reduce power to below 10% within the following hour. Placing the system in the manual mode "defeats" both channels of the automatic feedwater isolation system and would place the plant in TS 3.0.3 with only 1 hour before a shutdown must begin. Footnote (b) for Item 6.a has been replaced with footnote (d) which will provide an exception to the LCO for Item 6.a during surveillance testing. In addition, CYAPCO has added footnote (d) to TS Items 3.a.1 and 3.a.2 (Table 3.3-2), "Auxiliary Feedwater." The Minimum Channels Operable LCO requires that eight channels and six channels respectively be operable with a corresponding ACTION statement which allows for one less than the Minimum Channels Operable if that channel is placed in trip condition within 1 hour. Footnote (b) allows the surveillance test for Items 3.a.1 and 3.a.2, by placing one train, four channels and three channels total respectively, of the wide range steam generator water level--low instrumentation in "defeat." CYAPCO states that footnote (d) would provide further clarification of the interrelationship between auxiliary feedwater initiation and feedwater isolation and the exception from the minimum channels operable LCO during surveillance testing. The staff believes this statement could be interpreted as allowing both trains of auxiliary feedwater initiation to be defeated during

surveillance testing. As such the licensee has proposed to modify footnote (b) to clearly state that only one train at the most maybe taken out of service for surveillance testing at a time. The NRC staff agrees that the TS change meets the intent of License Amendment No. 136 and GL 89-19 as it provides surveillance testing to verify the operability of the feedwater isolation system. The design of the system with the current TS wording would severely restrict plant operation with no additional safety benefit.

The NRC staff has concluded that the proposed TS changes will have no adverse impact on plant safety and will maintain the intent of the current TS. Therefore, based on our review of your request, the excellent operating history of the system and the "operator in attendance" policy, we conclude that the proposed TS changes are acceptable.

3.0 EXIGENT CIRCUMSTANCES

Pursuant to 10 CFR 50.91(a)(6), CYAPCO by letter dated June 21, 1991, requested the NRC to approve this proposed amendment under exigent circumstances. By letter dated June 21, 1991, the NRC issued a Temporary Waiver of Compliance for Technical Specification Table 3.3-2, Item 6.a, "Feedwater Isolation" until this TS amendment could be processed. In that letter the NRC informed CYAPCO the NRC would process the proposed amendment under exigent circumstances as the waiver would stop the plant from derating and allow the plant to operate the feedwater control system in the "manual" mode. As part of the resolution to A-47, "Safety Implications of Control Systems," the NRC staff had determined that the Haddam Neck steam generator overflow protection system was adequate provided CYAPCO establish TS to periodically verify the operability of the feedwater isolation system with appropriate limiting conditions for operation. In a letter dated February 28, 1991, CYAPCO submitted a license amendment request to the NRC staff proposing a TS to address the steam generator overflow protection system. This amendment provided a new LCO and surveillance requirements for the automatic feedwater isolation system (steam generator overflow protection system). By letter dated May 6, 1991, the NRC staff issued License Amendment No. 136, approving CYAPCO's proposed Technical Specification.

During the implementation process CYAPCO identified some problems with this license amendment from both an operations and a surveillance testing standpoint. The principal difficulty with this new LCO is that it requires that the feedwater control system be operated in "automatic" at all times when the reactor is above 10%. The automatic feedwater isolation system is only in service when the feedwater control system is in "automatic."

On June 20, 1991, the plant had to take manual control of the feedwater control system because of problems with a steam flow transmitter in the No. 1 steam generator. Up till this time, the plant has operated in the "automatic mode." Placing the feedwater control system in the manual mode for one or more of the steam generators defeats both channels of the automatic feedwater isolation system of the corresponding steam generator. This placed the plant in TS 3.0.3 and an orderly shutdown began at approximately 3:00 pm. Therefore, the exigent circumstances exist, as the TS would cause the Haddam Neck Plant to derate when

the steam generator feedwater system is in "manual." CYAPCO had proposed a TS amendment on June 14, 1991, to remedy this situation hoping that the plant could keep the feedwater control system in the "automatic mode" until the TS could be approved. Thus, the NRC staff does not believe that the licensee has abused the exigent provisions by failing to make a timely application.

Accordingly, the Commission has determined that these are exigent circumstances warranting prompt approval by the Commission.

4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92 state that the Commission may make a final determination that a license amendment involves no significant hazards considerations, if operation of the facility, in accordance with the amendment would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- (3) Involve a significant reduction in a margin or safety.

This amendment has been evaluated against the standards of 10 CFR 50.92. It does not involve a significant hazards consideration because the changes would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

Most of the proposed changes consist of clarifications or editorial changes. The one significant change (Note "c" for Item 6.a of Table 3.3-2) specifies that the steam generator (SG) overflow protection system is required to be operable only when feedwater control is in the automatic mode. This is a relaxation from the recently issued Technical Specification that requires the SG overflow protection system to be operable at all times when the reactor is above 10% power.

As discussed in CYAPCO's February 28, 1991 license amendment request, the design basis analysis does not take credit for the automatic feedwater control system. Therefore, no design basis accidents are affected by this change. There is no impact on the probability of occurrence or the consequences of any design basis events. No safety systems are adversely affected by these changes.

It was CYAPCO's intention to add the feedwater isolation function to the Tables for ESFAS operability and surveillance requirements to enhance the reliability of the SG overflow protection system when the feedwater control system is in the automatic mode. The changes proposed herein do not detract from that original intention.

- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated.

The changes proposed herein do not alter the operation of the plant such that there is the potential for an unanalyzed accident. Without the proposed changes, plant operation above 10% power would be eventually prohibited. With the changes as proposed, plant operation can continue as it was prior to the issuance of License Amendment No. 136.

- (3) Involve a significant reduction in margin of safety

Since the proposed changes do not affect the consequences of any accident previously analyzed, there is no reduction in any margin of safety. The proposed changes do not have any adverse impact on the protection boundaries. As stated previously, the feedwater isolation function is not credited in any design basis analysis.

Accordingly, the Commission has made a final determination that this proposed amendment does not involve a significant hazards consideration.

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Connecticut State official was notified on June 21, 1991, of the proposed issuance of the amendment. The State official had no comments.

6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (56 FR 28423). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

7.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such

activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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