



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 131

TO FACILITY OPERATING LICENSE NO. DPR-61

CONNECTICUT YANKEE ATOMIC POWER COMPANY

HADDAM NECK PLANT

DOCKET NO. 50-213

INTRODUCTION

Pursuant to 10 CFR 50.90, Connecticut Yankee Atomic Power Company (CYAPCO) has proposed to amend Operating License No. DPR-61 for Haddam Neck Plant. By letter dated July 26, 1990, CYAPCO proposed to amend the Technical Specifications (TS) by adding an exception to specification 4.0.4 for entry into Mode 3 for surveillance requirement 4.7.1.2.2, "Auxiliary Feedwater System Operability." The amendment will allow the plant to progress to Mode 3 without first demonstrating auxiliary feedwater (AFW) operability.

DISCUSSION

On April 26, 1990, the NRC issued to CYAPCO an entirely new set of Technical Specifications for the Haddam Neck Plant in the Westinghouse Standard Technical Specification format. The Haddam Neck Plant is in the process of implementing these new Technical Specifications which are much more prescriptive and detailed than the former custom Technical Specifications. The AFW system surveillance requirement 4.7.1.2.2 was performed in September 1989 in anticipation of referencing this surveillance during the startup for Cycle 16. However, the "A" AFW pump failed this surveillance test. The pump was disassembled, inspected, rebuilt and sent to the manufacturer to be retested. The pump successfully passed the test. However, CYAPCO has concluded that they must perform the AFW operability test with the pumps in place to meet surveillance requirement 4.7.1.2.2. In addition specification 4.0.4 would require that this surveillance be performed prior to entering Mode 3.

EVALUATION

The amendment will allow the Haddam Neck Plant to proceed to Mode 3 without first demonstrating AFW system operability. The reason for the change is that there is insufficient steam pressure in Mode 4 to perform the AFW system full flow operability surveillance. The AFW operability test will be performed in Mode 3, assuring the operability of the AFW system in Modes 1 and 2. Therefore, design basis accidents which are postulated to occur during power operation will not be affected. Only those accidents initiated from subcritical (i.e.,

Mode 3) conditions such as steam line break or uncontrolled rod withdrawal could be affected. Decay heat loads are normally significantly reduced at the time of transition from Mode 4 to Mode 3 (refueling) and especially during this startup (Cycle 16) since the plant has been shut down for almost eleven months. Therefore, for accidents during Mode 3 operation, such as steam line break, consequences and auxiliary feedwater flow requirements are significantly less during this Mode change than for other limiting transients initiated from power. In addition, operation of the auxiliary feedwater system for accidents which can have significant consequences during Mode 3 results in more severe consequences (i.e., increased cooldown and heat to containment). With respect to long-term decay heat removal, in Mode 3, only the steam generators are available for decay heat removal, and the auxiliary feedwater is the only safety-related system for supplying water to the steam generators. In the event that the auxiliary feedwater fails while in Mode 3, a cooldown to residual heat removal entry conditions would be required. TS 3.4.1.2 requires that at least two main steam generators are operable in Mode 3. With a minimum indicated level, each steam generator has a substantial amount of water to cool down the reactor coolant system, especially after a refueling when decay heat load is significantly reduced. The low decay heat load would provide 18 hours for manual actions to align/start auxiliary feedwater, or to restore the AFW system or additional steam generators, while the reactor coolant system is maintained in hot standby with decay heat removal through the steam generator safety valves.

The staff has reviewed the amendment request and concludes that the full-flow testing of the AFW system is not possible during Mode 4 because of insufficient secondary steam pressure to drive the Terry turbine for the AFW pumps. The exception to Specification 4.0.4 for the AFW system 18 month surveillance test for entry into Mode 3 has been approved for other plants because of similar problems in testing the AFW system in Mode 4 (insufficient secondary steam pressure to drive the turbine driven AFW pumps).

Based on the above the staff has determined that the proposed TS changes will have no adverse impact on plant safety and will maintain the intent of the current TS. Therefore, the staff concludes that the proposed TS changes are acceptable.

EXIGENT CIRCUMSTANCES

Pursuant to 10 CFR 50.91(a)(6), CYAPCO by letter dated July 26, 1990, requested the NRC to approve this proposed amendment under emergency circumstances. By letter dated July 27, 1990, the NRC issued a Waiver of Compliance for specification 4.0.4 for entry into Mode 3 for surveillance requirement 4.7.1.2.2 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 allow the plant to progress to Mode 3 to perform the AFW system operability surveillance. On April 26, 1990, the NRC issued CYAPCO an entire new set of TS. The Haddam Neck Plant is in the process of implementing the new TS which are much more prescriptive and detailed than the former custom TS.

As a result of implementing the new procedures for the new TS the plant discovered a situation where specification 4.0.4 and surveillance requirement 4.7.1.2.2 required the AFW system operability surveillance to be performed prior to entering Mode 3. CYAPCO had anticipated this situation and performed this surveillance prior to shutting down for refueling (the surveillance was performed in September 1989). However, the AFW "A" pump failed the surveillance necessitating the retest of the AFW system prior to entering Mode 3. In Mode 4 the secondary steam pressure is insufficient to drive the turbine driven AFW pumps. Therefore, the exigent circumstances exist, as the TSs prevent the resumption of power operation.

One upgraded TSs were modelled after the Westinghouse Standard TS (WSTS) in which this situation also exists. Because of the wording in the WSTS several plants have requested and the staff has approved similar TS changes for an exception to 4.0.4 for entry into Mode 3 for the surveillance requirement on AFW system operability. Thus, the 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.

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 of consequences of any 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 in 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 of occurrence or consequences of an accident previously analyzed.

Since assurance of operability of auxiliary feedwater in Modes 1 and 2 is not affected, design basis accidents which are postulated to occur during power operation will not be affected. Only those accidents initiated from subcritical (i.e., Mode 3) conditions such as steam line break or uncontrolled rod withdrawal could be affected.

Also, the effect of this change on decay heat removal with main feedwater unavailable (e.g., due to a loss of normal power (LNP), etc.) has been evaluated.

For accidents which can have significant consequences during Mode 3 operation, such as steam line break, operation of auxiliary feedwater typically results in more severe consequences (i.e., increased cooldown). Since decay heat loads are significantly reduced at the time of transition from Mode 4 to Mode 3, auxiliary feedwater flow requirements are far less significant than for other limiting transients initiated from power. Therefore, not having demonstrated operability of auxiliary feedwater prior to entry into Mode 3 will not result in increased consequences of any design basis accident initiated from Mode 3.

With respect to long-term decay heat removal, in Mode 3, only the steam generators are available for decay heat removal, and auxiliary feedwater is the only safety-related system for supplying water to the steam generators. In the event that auxiliary feedwater fails while in Mode 3, a cooldown to residual heat removal (RHR) entry conditions would be required in order to reestablish stable long term decay heat removal.

T.S. 3.4.1.2 requires at least two steam generators to be operable during Mode 3. With a minimum indicated level, each steam generator has a substantial amount of water available to cool down the reactor coolant system (RCS), especially considering the fact that decay heat load is significantly reduced.

The low decay heat load would provide a substantial amount of time for manual actions to align/start auxiliary feedwater, or to restore the AFW system or additional steam generators to operable status, while the RCS is maintained hot with decay heat removal through the steam generator safety valves.

Based on the above, it is concluded that not having demonstrated operability of the auxiliary feedwater system under the conditions to which the 4.0.4 exemption would apply will not have any significant impact on the ability to maintain adequate long-term decay heat removal.

The proposed change has no impact on the probability of occurrence of any design basis accident. In addition, there is no impact on the probability of failure of AFW. No physical changes or changes in operating procedures are proposed.

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

The possibility of an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report is not created. Since there are no changes in the way the plant is operated, the potential for an unanalyzed accident is not created. No new failure modes are introduced.

3. Involve a significant reduction in a margin of safety.

The proposed changes do not have any adverse impact on the protective boundaries. The margin of safety, as defined in the basis for any Technical Specification, is not reduced. The proposed changes do not adversely impact any of the safety systems, nor do they increase the number of challenges to the safety systems.

Accordingly, the Commission has determined that this amendment involves no significant hazards considerations.

STATE CONSULTATION

In accordance with the Commission's regulations efforts were made to contact the Connecticut State representatives. The state representative was contacted and had no comments.

ENVIRONMENTAL CONSIDERATION

This amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 29. We have 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 staff has previously published a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding. 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 to be prepared in connection with the issuance of the amendment.

CONCLUSION

We have 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, and (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.

Dated: September 19, 1990

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