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

CONNECTICUT YANKEE ATOMIC POWER COMPANY

DOCKET NO. 50-213

HADDAM NECK PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 93
License No. DPR-61

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Connecticut Yankee Atomic Power Company (the licensee), dated June 1, 1987, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C.(2) of Facility Operating License No. DPR-61 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 93, are hereby incorporated into the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Cecil O. Thomas

Cecil O. Thomas, Director
Integrated Safety Assessment Project Directorate
Division of Reactor Projects III/IV/V
and Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 9, 1987

ATTACHMENT TO LICENSE AMENDMENT NO. 93

FACILITY OPERATING LICENSE NO. DPR-61

DOCKET NO. 50-213

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

REMOVE	INSERT
3-10	3-10
3-10a	3-10a
3-10b	3-10b
-	3-10c
4-4a	4-4a
4-4b	4-4b
-	4-4c

3.6 CORE COOLING SYSTEMS

Applicability: Applies to the operating status of the core cooling systems.

Objective: To define those limiting conditions for operation that are necessary to insure operability of the core cooling system.

Specification:

A) The reactor shall not be critical unless the following conditions are met:

1) Pumps

All of the pumps associated with at least one of the two trains of emergency core cooling equipment must be operable. The pumps associated with each train of emergency core cooling equipment are the following:

a. One high pressure safety injection pump rated at 1750 gpm at a head of 2250 feet.

b. One charging pump rated at 360 gpm at a pressure of 2300 psig.

c. One low pressure safety injection (core deluge) pump rated at 5500 gpm at a head of 590 feet.

d. One residual heat removal (RHR) pump rated at 2200 gpm at a total head of 300 feet.

2) At least one of two residual heat exchangers operable.

3) System valves and interlocks required for proper operation of core cooling systems operable.

B) The following valves and their operators will be positioned and verified as stated below:

1) Once per 12 hours

VALVE NO.	LOCATION	ACTION
RH-FCV-602	RHR heat exchanger bypass line	Valve locked in closed position, Air supply isolated whenever reactor critical and coolant temperature is above 350°F.
RH-FCV-796	RHR heat exchanger discharge line	Valve blocked in the throttled position, Air supply isolated whenever reactor critical and coolant temperature is above 350°F.

VALVE NO.	LOCATION	ACTION
RH-MOV-22	Containment Sump Suction	Valve locked in open position, circuit breaker locked open during post-LOCA long-term cooling phase.
SI-MOV-24	RWST line	Valve locked in open position, circuit breaker locked open whenever reactor coolant temperature is above 350°F.
SI-FCV-875	HPSI mini-flow line	Valve blocked and locked in open position whenever reactor coolant temperature is above 350°F.
RH-MOV-874	RHR recirc-ulation	Valve locked in closed position and circuit breaker locked open whenever reactor is critical and reactor coolant temperature is above 350°F.*
SI-MOV-854A	HPSI Pump Suction Line	Valve locked in open position whenever reactor coolant temperature is above 350°F.
SI-MOV-854B	HPSI Pump Suction Line	Valve locked in open position whenever reactor coolant temperature is above 350°F.
SI-MOV-901	RHR/HPSI Crosstie	Valve locked in closed position whenever reactor coolant temperature is above 350°F.
SI-MOV-902	RHR/HPSI Crosstie	Valve locked in closed position whenever reactor coolant temperature is above 350°F.

Amendment No. 19, 33, 77, 93

2) Prior to startup from cold shutdown (Mode 5)

VALVE NO.	LOCATION	ACTION
SI-V-907	HPSI loop 1 injection line	Valve blocked and locked in throttled position.
SI-V-908	HPSI loop 2 injection line	Valve blocked and locked in throttled position.
SI-V-906	HPSI loop 3 injection line	Valve blocked and locked in throttled position.
SI-V-905	HPSI loop 4 injection line	Valve blocked and locked in throttled position.
SI-MOV-873	Core deluge line	Valve is locked open and electrically disconnected.

*Except as permitted by Technical Specification 4.3.

C. The following actions shall be taken to disable the High Pressure Safety Injection Pumps whenever the RCS temperature is below 340°F and the RCS is not vented by a minimum opening of three (3) inches (nominal diameter) or its equivalent.

1. De-energize the HPSI pumps by racking out the breakers and locking the cabinets.

2. Close and lock the HPSI pump discharge valves (SI-V-855A & B).

D. The following actions shall be taken to disable one centrifugal charging pump whenever the RCS temperature is below 340°F and the RCS is not vented by a minimum opening of three (3) inches (nominal diameter) or its equivalent.

1. Place the control switch in the trip pullout position.

2. Red tag the switch "DO NOT OPERATE."

BASIS

This specification assures that adequate emergency core cooling capacity is available whenever the reactor is critical. Based on the loss of coolant accident analysis, melting of the cladding is prevented with only one high pressure safety injection pump and one low pressure safety injection (core deluge) pump in operation. Additionally, during the post-LOCA recirculation phase, sufficient cooling exists with only one charging, one HPSI, and one RHR available. Each of the two trains of emergency core cooling equipment includes these three pumps. With the pumps associated with both trains of emergency core cooling equipment operable,

substantial margin exists whenever normal power supplies or both diesel generators are available. With only one diesel generator operating and the pumps associated with that diesel operable as required in Item (2) of Specification 3.12, the high pressure safety injection pump and the low pressure safety injection pump would be started automatically. When the safety injection pumps are operating on off-site power, the charging pump would be started automatically. The RHR and charging pumps would be available for manual start for long-term recirculation cooling.

As described in Reference 3, the RCS OPS, in conjunction with administrative controls, prevents exceeding the temperature and pressure limits in Specification 3.4 while RCS temperature is under 340°F or the RCS is not vented. Part C establishing limiting condition for operation regarding the disabling of the HPSI pumps to further assure that a pressure transient is not initiated. Part D establishes requirements regarding the disabling of a charging pump to assure that a pressure transient is not initiated while retaining the flexibility to establish, under strict administrative controls, a redundant emergency boration path should such action be necessary.

FCV-796 is required to be throttled open within the range specified in and for the reasons sited within References (6) and (7). That throttled position has been determined by separate analyses to insure acceptable core performance during post-LOCA recirculation.

In order to use the HPSI pumps to provide high pressure recirculation following a small break loss of coolant accident (LOCA) coincident with a single active failure, the following modifications to the emergency core cooling system have been made. A piping crosstie between each HPSI pump suction and the RHR pump discharge has been installed. Two valves, SI-MOV-901 and SI-MOV-902 have been installed in this crosstie. The two manual HPSI pump suction valves have been replaced with motor-operated valves, SI-MOV-854A and B, to prevent contaminated water from entering the RWST when using the HPSI pumps to provide flow to the core during recirculation. These valves will not be energized until 1989 and no credit will be taken for their use until this time and they will be locked in their safe position.

The manual core deluge isolation valve has been replaced with a de-energized motor-operated valve, SI-MOV-873. This valve will be locked open to ensure that adequate flow is available to the core deluge system.

REFERENCE:

(3) D.C. Switzer (CYAPCO) letter to D.L. Ziemann (NRC), dated May 22, 1978.

(4) D.C. Switzer (CYAPCO) letter to D.L. Ziemann (NRC), dated May 24, 1978.

(5) D.C. Switzer (CYAPCO) letter to A. Schwencer (NRC), dated September 7, 1977.

(6) E.J. Mroczka (CYAPCO) letter to C.I. Grimes (NRC), dated December 17, 1986.

(7) E.J. Mroczka (CYAPCO) letter to C.I. Grimes (NRC), dated December 19, 1986.

F) Periodic leakage testing of each ECCS check valve listed in Table 4.3.1 shall be accomplished prior to entering operational mode 1:

1) After every time the plant is placed in the cold shutdown condition for refueling.

2) After every time the plant has been placed in the cold shutdown condition for 72 hours if testing has not been accomplished in the preceding 9 months.

3) Prior to returning the valve to service after maintenance, repair, or replacement work is performed.

Leakage may be measured indirectly using pressure indicators, if accomplished in accordance with approved procedures and supported by computations showing that the method is capable of demonstrating compliance with the leakage criteria of section 3.14.A.6. The minimum differential pressure across these check valves during these leakage tests shall not be less than 150 psid.

Table 4.3.1 - ECCS Check Valve

SI-CV-862A
SI-CV-862B
SI-CV-862C
SI-CV-862D
SI-CV-872A
SI-CV-872B

G) The correct position of each ECCS throttle valve listed below shall be verified within 4 hours following completion of each valve stroking operation or maintenance on the valve when the ECCS subsystems are required to be OPERABLE.

ECCS Throttle Valves

Valve Number	Valve Number
SI-V-905	SI-V-907
SI-V-906	SI-V-908
RH-FCV-796	

H) A flow balance test shall be performed, during Mode 5 or 6, following completion of modifications to the ECCS subsystems that alter the subsystem flow characteristics, to verify that:

1) For the High Pressure Safety Injection pump injection lines, with a single pump running and two lines isolated, the flow rate through each line is equal to 1000 $\pm$ 100 gpm.

2) For RHR pump discharge lines, with a single pump running, the flow rate through the discharge line is equal to 1500 ± 280 gpm.

Basis: The core cooling systems are the principal plant safeguard. They provide the means to insert negative reactivity and limit core damage in the event of a loss-of-coolant incident.

Pre-operational performance tests of the components are performed in the manufacturer's shop. An initial system flow test demonstrates proper dynamic functioning of the system. Thereafter, periodic tests demonstrate that all components are functioning properly.

Surveillance requirements for throttle valve position and flow balance testing provide assurance that proper ECCS flows will be maintained in the event of a LOCA.

In order to assure that a pressure transient occurring during the testing of the HPSI pumps will not exceed the pressure and temperature limits of specification 3.4, there must be appropriate relief paths available; this is provided for in specification 4.3.A.4.

The separation of emergency power systems and associated core cooling equipment into two independent groupings permits complete function testing of the individual systems and equipment.

The containment spray water is provided, if required, by the low pressure safety injection pumps, which are also part of the core deluge system. It is not desirable to test the valve at monthly intervals since it requires closure of a manual valve in the spray header. This valve must be closed to prevent initiation of spray when the motor-operated spray valve is open since the residual heat removal system will always be pressurized. Closure of the manual valve is not desirable at power and, therefore, dictates that the motor-operated spray valve be tested at refueling intervals only.

The surveillance in Specification E) assures that the limiting conditions for operation required for low temperature overpressurization protection have been met.

The surveillance in Specification F) tests the operability of check valves which act a primary coolant system pressure isolation valves and thereby reduces the potential for an intersystem loss of coolant accident.

In order to use the high pressure safety injection (HPSI) pumps to perform high pressure recirculation (HPR) following a small break loss of coolant accident (LOCA), successful operation of SI-MOV-24 and RH-MOV-874 is required. The monthly surveillance to be performed on these two valves will increase the probability that the valves are available to perform their function during the small break LOCA. Since SI-MOV-24 will not be closed to any measurable extent during the surveillance, there will be no effect on safety injection availability. Surveillance on RH-MOV-874, will only last for a short time and the probability

of a small break loss of coolant accident concurrent with the surveillance is extremely low. If the valve becomes inoperable during this time, RH-V-783 in series with RH-MOV-874 can be closed. Therefore, there will be no measurable impact on HPSI system availability as a result of the surveillance.

Reference: (1) FSAR - Section 6.3