NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

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May 28, 1985

Docket No. 50-423
A04668

Director of Nuclear Reactor Regulation
Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

References: (1) NRC Letter, D. G. Eisenhut to all Licensees of Operating Reactors, Applicants for Operating Licenses, and Holders of Construction Permits, "Supplement No. 1 to NUREG-0737--Requirements for Emergency Response Capability (Generic Letter No. 82-33)," December 17, 1982.

(2) W. G. Counsil letter to D. G. Eisenhut, NRC, "Supplement 1 to NUREG-0737, Requirements for Emergency Response Capability (Generic Letter No. 82-33)", April 15, 1983.

(3) W. G. Counsil letter to B. J. Youngblood, "Response to Question 420.06," December 16, 1983.

(4) W. G. Counsil letter to B. J. Youngblood, "Response to Question 420.6," January 13, 1984.

(5) B. J. Youngblood letter to W. G. Counsil, Request for additional information - Conformance to Regulatory Guide 1.97, dated February 12, 1985.

Dear Mr. Youngblood:

Millstone Nuclear Power Station, Unit No. 3
Conformance to Regulatory Guide 1.97, Revision 2 Guidelines

Reference (1) transmitted Supplement 1 to NUREG-0737 to all licensees of operating reactors, applicants for operating licenses, and holders of construction permits. Supplement 1 to NUREG-0737 included additional clarification regarding Regulatory Guide 1.97, Revision 2, relating to the requirements for emergency response capability. Northeast Nuclear Energy Company (NNECO) provided a response to the generic letter in Reference 2. Additional information was provided in Reference 3 and Reference 4. The technical evaluation report (TER) contained in Reference 5 provided an evaluation of these submittals. The TER has identified areas (open items) where sufficient basis for acceptability of exceptions to the guidelines of Regulations Guide 1.97, Revision 2 has not been provided. Representatives from NNECO met with the NRC

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Staff on April 16, 1985 to discuss the open items concerning certain exceptions from the guidance of Regulatory Guide 1.97, Revision 2 (Reference 5). Enclosed are NNECO's responses to those open items. These responses should fully resolve the Staff's concern regarding those open items.

If there are any questions, please contact our licensing representative directly.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMAPNY
et. al.

By Northeast Nuclear Energy Company
Their Agent

J. F. Opeka
Senior Vice President

By: C. F. Sears
Vice President

STATE OF CONNECTICUT)
) ss. Berlin
COUNTY OF HARTFORD)

Then personally appeared before me C. F. Sears, who being duly sworn, did state that he is Vice President of Northeast Nuclear Energy Company, an applicant herein, that he is authorized to execute and file the foregoing information in the name and on behalf of the applicants herein and that the statements contained in said information are true and correct to the best of his knowledge and belief.

Notary Public
My Commission Expires March 31, 1989

Conformance to Regulatory Guide 1.97

1. Reactor coolant system cold and hot leg temperature--the applicant should show that the four hot leg and the four cold leg channels have appropriate separation and independent power supplies (Section 3.3.2).

Response:

A copy of the Westinghouse Owners Group (WOG) letter dated July 14, 1983 (NSID/WOG-108) to the NRC on the above concern was presented to the NRC-ICSB staff during the December 1, 1983 ICSB meeting in Bethesda, Maryland. It was stated that NNECO concurs with the WOG position. It was also pointed out that a diverse measurement is available for hot leg and cold leg temperature indications. (core exit thermocouples for the hot leg temperature and the steam line pressure of appropriate loop for cold leg temperature). All of the hot leg temperature channels are powered from an uninterruptible power supply (UPS) that is backed by batteries and an emergency diesel generator. All of the cold leg temperature channels are powered from a different UPS which is backed by batteries and an emergency diesel generator that is separate from the one used for the hot leg temperature channels. The diverse measurement instrumentation is powered by UPSs that are independent of the ones powering the primary measurement instrumentation. The NRC-ICSB staff has reviewed this position and found it acceptable (Reference 1).

Reference (1) W. G. Counsil letter to B. J. Youngblood, NRC-ICSB Review meeting (December, 1983) dated December 19, 1983.

2. Containment hydrogen concentration--the applicant should demonstrate that these detectors will operate as specified in any postulated post-accident environment (Section 3.3.7).

Response:

The containment hydrogen concentration monitors will remain operational down to 8.0 psia.

3. RHR heat exchanger outlet temperature--the applicant should either provide the instrument range recommended by Regulatory Guide 1.97 or justify deviating from the recommended range (Section 3.3.8).

Response:

In Regulatory Guide 1.97 under type D variables, "Residual Heat Removal (RHR) or Decay Heat Removal System" is listed. In the Millstone 3 plant this function is provided by two systems. For large break LOCAs inside of containment the containment recirculation system would be used for decay heat removal. For most other accidents the residual heat removal system would be employed. The outlet temperature of the recirculation heat exchangers is monitored by Category 2 instrumentation. The instrument range is from 40°F to 350°F. The outlet temperature of the RHR heat exchangers is monitored by Category 2 instrumentation with a range from 50-400 deg. F.

The lower temperature limit of 50°F for the RHR heat exchanger outlet temperature was determined to be acceptable when compared to the regulatory guide lower limit of 32°F since discharge temperatures under post-accident conditions are not expected to be lower than 50°F. Normal refueling operations typically result in discharge temperatures greater than 90-100°F. Under both normal and post-accident conditions, cooling is not necessary below approximately 100°F. Thus, component cooling water to the RHR heat exchanger would most likely be bypassed. Therefore, instrumentation to monitor discharge temperatures between 32°F and 50°F is unnecessary.

4. Accumulator tank level--the applicant should provide the information required by Section 6.2 of NUREG-0737, Supplement No. 1, note any deviations from the recommendations of Regulatory Guide 1.97 and provide satisfactory justification for any deviation (Section 3.3.9).

Response:

While wide range accumulator tank water level instrumentation (Category 3) exists as described in FSAR Section 6.3.5.4, credit has not been taken for these channels to respond to Regulatory Guide 1.97. As such, the information required by Section 6.2 of NUREG-0737 has not been provided.

For those accidents where automatic discharge of the ECCS accumulators occurs, water level indication provides no useful information to the control room operating staff since the protection system automatically operates the accumulator isolation valves. The remaining accidents do not require use of the accumulators to maintain the plant in a safe, hot shutdown condition. While preceeding from this condition to a cold shutdown condition, accumulator tank pressure (Category 2), isolation valve status (Category 2), and nitrogen vent valve position (Category 2), listed in FSAR Table 7.5-1, are adequate for the operating staff to prevent unintentional accumulator discharge. This is done using the isolation valve position and/or venting of the accumulators, using tank pressure to verify the actions taken. In the unlikely event that discharge is desired, these 3 parameters can be used to ensure a controlled, planned discharge.

5. Reactor coolant pump status--the applicant should install the recommended instrumentation (Section 3.3.12).

Response:

Reactor coolant pump breaker status and motor current are provided in the control room.

6. Pressurizer heater status--the applicant should provide the instrumentation recommended by Regulatory Guide 1.97 (Section 3.3.13).

Response:

NNECO is providing Category 2 pressurizer heater current instrumentation for the two sets of pressurizer heaters powered by emergency power sources. The heater current display will be via the plant computer.

7. Steam generator pressure--the applicant should provide additional information on safety relief valve setpoints (Section 3.3.14).

Response:

The lowest main steam safety relief valve setpoint is 1185 psig. The highest main steam safety relief valve setpoint is 1225 psig.

The total capacity of the steam generator safety relief valves is in excess of 100% of nominal loop steam flow. With a significant lower heat generation rate and therefore steam generation rate under post-accident conditions, a single valve is generally adequate to relieve steam. In the unlikely event that the valve with the highest set pressure (1225 psig) is actuated, the operating staff has adequate indication to monitor steam pressure with the existing instrumentation (0-1300 psig).

8. Containment spray flow--Environmental qualification needs to be addressed in accordance with 10 CFR 50.49 (Section 3.3.15).

Response:

The containment spray system is composed of the quench spray system and the recirculation spray system. The quench spray system operates at the beginning of an acident on a CDA signal. This spray system takes suction from the RWST. The quench spray flow transmitters are commercial grade, differential pressure transmitters.

The operators can monitor the operability of the quench spray system by monitoring RWST level (Category 1), valve alignment (Category 2), containment pressure (Category 1), and containment temperature (Category 1).

The recirculation spray system operates a few minutes after quench spray initiation. With the proper valve line-up, the flow through the recirculation heat exchangers goes directly to the recirculation spray headers. There are category 2 transmitters which measure the flows through the recirculation heat exchangers.

9. Heat removal by the containment fan heat removal system--the applicant should provide the recommended instrumentation for this variable (Section 3.3.16).

Response:

The function of the containment heat removal system is to remove heat from the containment atmosphere to limit, reduce, and maintain at acceptably low levels the containment pressure and temperature following a LOCA or secondary system rupture. In addition to heat removal provided by passive means such as heat transfer to containment walls, structures and equipment located inside containment, the Millstone 3 design includes active containment heat removal system. This system consists of the quench spray system (QSS) and the recirculation spray system (RSS). The containment air coolers are not considered part of the containment heat removal system and are not utilized during post-accident conditions. The containment air coolers are designed to maintain bulk air temperature in the containment suitable for personnel and equipment operation during normal plant operation and loss of offsite power.

10. Containment sump water temperature--the applicant should either supply the recommended instrumentation or provide additional justification for not supplying it (Section 3.3.17).

Response:

Containment sump water temperature is classified as a Category 3 parameter. Containment sump water temperature is not used in any of the plant's emergency operating procedures (EOPs). These EOPs are based upon revision 1 of the Westinghouse Owner's Group Emergency Response Guidelines which were approved by the NRC.

Containment sump temperature is not required for emergency core cooling system (ECCS) operation or assurance of NPSH, because NPSH calculations conservatively assumed saturated water was present. See FSAR Subsection 6.2.2. Containment water level measurements indicate the amount of water with containment cooling verified by other paramters (containment pressure, temperature and recirculation spray flow).

11. Makeup flow-in--the applicant should verify the alternate instrumentation used for this variable is Category 2 (Section 3.3.18).

Response:

As listed in the Millstone 3 Design Basis to Respond to Regulatory Guide 1.97 Rev. 2 attachment to the FSAR both charging flow and reactor coolant pump seal injection flow are designated Category 2 variables.

12. Component cooling water temperature to ESF system--the applicant should show that the temperature of the cooling water to each ESF system component is known to be within design limits (Section 3.3.20).

Response:

All of the components listed in Table 9.2-1 are not part of ESF systems. The Millstone 3 ESF systems are listed in Chapter 6 of the FSAR. Of these ESF systems the only one receiving direct service water cooling is the containment recirculation system. In this system the recirculation heat exchangers utilize the service water for cooling. To ensure that the service water flows to the heat exchangers, service water valve status (Category 2), the service water pump status (Category 2), and the service water flow to the recirculation heat exchangers (Category 2) are provided. The service water temperature is a Technical Specification variable and is monitored on a regular basis in accordance with the Technical Specification surveillance requirements. In addition, service water temperature is dependent on the time of year and little can be done to adjust this temperature. Therefore, we have declined to list service water temperature to the recirculation heat exchangers as a Regulatory Guide 1.97 post accident monitoring variable.

The charging and safety injection pump lube oil coolers are supplied with independent closed cooling water systems. These independent cooling systems ensure that the cooling water to these components is within design limits under all conditions. Each of these closed cooling water systems is cooled by service water via separate heat exchangers. Service water temperature is monitored as discussed above. In view of the fact that the lube oil coolers are the only loads on these cooling systems, pump status and valve position indication are adequate to monitor the cooling system operability.

13. High level radioactive liquid tank level--the applicant should either supply the recommended instrumentation, or provide additional justification for not doing so (Section 3.3.21).

Response:

Level indication is provided for the two high level radioactive liquid waste tanks. Level is measured from 9 inches above the bottom bend line to the upper bend line for a total span of 37'10". This range is adequate because the level will normally be within this range. High and low level alarms will alert the operators if the level approaches the range extremes.

14. All other identified release points--the applicant should provide justification for the deviation from the recommended range for the hydrogen recombiner cubicle ventilation--noble gas (Section 3.3.24).

Response:

The hydrogen recombiner (HR) cubicle vent is not considered a release point. The hydrogen recombiner cubicle ventilation monitor is used to actuate a closure of the HR cubicle on an alarm reading.

Therefore, the range of the HR monitors does not need to meet that specified in Regulatory Guide 1.97 Revision 2. In addition, the setpoints for the HR monitors are used to:

(1) alert at the threshold limit for reportability of unplanned gaseous releases and,

(2) alarm when 1 maximum permissible concentration (MPC) of Kr-85 could occur at the site boundary.

Neither of the two setpoints would result in concentrations exceeding those specified in 10CFR20.