

July 24, 1992

Docket No. 50-336

Distribution:

Mr. John F. Opeka  
Executive Vice President, Nuclear  
Connecticut Yankee Atomic Power Company  
Northeast Nuclear Energy Company  
Post Office Box 270  
Hartford, Connecticut 06141-0270

Docket File  
NRC & Local PDRs  
PD I-4 Plant  
SVarga  
JCalvo  
SNorris  
BVissing  
OGC  
DHagan  
GHill (4)

Wanda Jones  
CGrimes  
RJones  
ACRS (10)  
OPA  
OC/LFMB  
A. R. Blough  
S. Brewer

Dear Mr. Opeka:

SUBJECT: ISSUANCE OF AMENDMENT (TAC NO. M82744)

The Commission has issued the enclosed Amendment No. 161 to Facility Operating License No. DPR-65 for Millstone Nuclear Power Station, Unit No. 2, in response to your application dated January 31, 1992.

The amendment changes the Technical Specification by deleting the surveillance requirement (Section 4.5.2.C.1) associated with the Shutdown Cooling System (SDCS) auto closure interlock (ACI) concurrent with the deletion of ACI circuitry.

A copy of the related Safety Evaluation is also enclosed. The notice of issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original signed by

Guy S. Vissing, Senior Project Manager  
Project Directorate I-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 161 to DPR-65
2. Safety Evaluation

cc w/enclosures:  
See next page

**NRC FILE CENTER COPY**

OFFICE	LA:PDI-4	PM:PDI-4	D:PDI-4	OGC	
NAME	SNorris	GVissing:ln	JStolz	EHOLLER	
DATE	7/14/92	7/14/92	7/15/92	7/20/92	

OFFICIAL RECORD COPY  
Document Name: SDCSAMEN

9207290216 920724  
PDR ADOCK 05000336  
P PDR

CP-1  
DF01

Mr. John F. Opeka  
Northeast Nuclear Energy Company

Millstone Nuclear Power Station  
Unit 2

cc:

Gerald Garfield, Esquire  
Day, Berry and Howard  
Counselors at Law  
City Place  
Hartford, Connecticut 06103-3499

R. M. Kacich, Director  
Nuclear Licensing  
Northeast Utilities Service Company  
Post Office Box 270  
Hartford, Connecticut 06141-0270

W. D. Romberg, Vice President  
Nuclear, Operations Services  
Northeast Utilities Service Company  
Post Office Box 270  
Hartford, Connecticut 06141-0270

D. O. Nordquist  
Director of Quality Services  
Northeast Utilities Service Company  
Post Office Box 270  
Hartford, Connecticut 06141-0270

Kevin McCarthy, Director  
Radiation Control Unit  
Department of Environmental Protection  
State Office Building  
Hartford, Connecticut 06106

Regional Administrator  
Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, Pennsylvania 19406

Bradford S. Chase, Under Secretary  
Energy Division  
Office of Policy and Management  
80 Washington Street  
Hartford, Connecticut 06106

First Selectmen  
Town of Waterford  
Hall of Records  
200 Boston Post Road  
Waterford, Connecticut 06385

S. E. Scace, Nuclear Station Director  
Millstone Nuclear Power Station  
Northeast Nuclear Energy Company  
Post Office Box 128  
Waterford, Connecticut 06385

W. J. Raymond, Resident Inspector  
Millstone Nuclear Power Station  
c/o U.S. Nuclear Regulatory Commission  
Post Office Box 376  
Waterford, Connecticut 06385-0376

J. S. Keenan, Nuclear Unit Director  
Millstone Unit No. 2  
Northeast Nuclear Energy Company  
Post Office Box 128  
Waterford, Connecticut 06385

Charles Brinkman, Manager  
Washington Nuclear Operations  
ABB Combustion Engineering  
Nuclear Power  
12300 Twinbrook Pkwy, Suite 330  
Rockville, Maryland 20852

Nicholas S. Reynolds  
Winston & Strawn  
1400 L Street, NW  
Washington, DC 20005-3502



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

NORTHEAST NUCLEAR ENERGY COMPANY

THE CONNECTICUT LIGHT AND POWER COMPANY

THE WESTERN MASSACHUSETTS ELECTRIC COMPANY

DOCKET NO. 50-336

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 161  
License No. DPR-65

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Northeast Nuclear Energy Company, et al. (the licensee) dated January 30, 1992, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations 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-65 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 161, are hereby incorporated in 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, to be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



John F. Stolz, Director  
Project Directorate I-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: July 24, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 161

FACILITY OPERATING LICENSE NO. DPR-65

DOCKET NO. 50-336

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change.

Remove

3/4 5-5

Insert

3/4 5-5

# EMERGENCY CORE COOLING SYSTEMS

## SURVEILLANCE REQUIREMENTS (Continued)

10. Verifying that the following valves are in the indicated position with power to the valve operator removed:

<u>Valve Number</u>	<u>Valve Function</u>	<u>Valve Position</u>
2-SI-306	Shutdown Cooling Flow Control	Open
2-SI-659	SRAS Recirc.	Open*
2-SI-660	SRAS Recirc.	Open*
2-CH-434	Thermal Bypass	Closed**

- b. By a visual inspection which verifies that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the containment sump and cause restriction of the pump suction during LOCA conditions. This visual inspection shall be performed:
1. For all accessible areas of the containment prior to establishing CONTAINMENT INTEGRITY, and
  2. Of the areas affected within containment at the completion of containment entry when CONTAINMENT INTEGRITY is established.
- c. At least once per 18 months by:
1. Verifying automatic interlock action of the shutdown cooling system from the reactor coolant system by ensuring that with a simulated reactor coolant system pressure signal greater than or equal to 300 psia the interlock prevents the shutdown cooling system suction valves from being opened.
  2. A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion.
  3. Verifying that a minimum total of 110 cubic feet of trisodium phosphate dodecahydrate (TSP) is contained within the TSP storage baskets.
  4. Verifying that when a representative sample of  $0.35 \pm 0.05$  lbs of TSP from a TSP storage basket is submerged, without agitation, in  $50 \pm 5$  gallons of  $180 \pm 10^\circ\text{F}$  borated water from the RWST, the pH of the mixed solution is raised to  $\geq 6$  within 4 hours.

\*To be closed prior to recirculation following LOCA.  
\*\*2-CH-434, a manual valve, shall be locked closed.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 161

TO FACILITY OPERATING LICENSE NO. DPR-65

NORTHEAST NUCLEAR ENERGY COMPANY, ET AL.

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2

DOCKET NO. 50-336

1.0 INTRODUCTION

By letter dated January 30, 1992, Northeast Nuclear Energy Company (NNECO or the licensee) submitted a proposal to change the Technical Specifications for Millstone Nuclear Power Station, Unit No. 2. The change concerns the deletion of the autoclosure interlock (ACI) from the shutdown cooling system (SDCS) suction valves. Currently the design includes an autoclosure interlock (ACI) and an open permissive interlock (OPI) on each of the isolation valves to reduce the probability of inadvertent connection of the reactor coolant system (RCS) to the Shutdown Cooling System (SDCS) when the RCS pressure is above 280 psia. The licensee proposed to remove the ACI and add an alarm on these valves to warn the operators whenever a SDCS suction isolation valve is open and the RCS pressure is greater than 280 psia. The OPI feature would remain and is unaffected by this change.

2.0 BACKGROUND

The SDCS is designed to achieve and maintain cold shutdown condition by removing residual heat from the RCS and the reactor core. The RCS has a design pressure of 2500 psia and the SDCS has a design pressure of 500 psig. To avoid overpressurization of the SDCS with the potential for loss of primary coolant outside the containment, it is necessary to isolate the SDCS from the RCS piping when the RCS is operated at high pressure. The isolation of SDCS is achieved by two isolation valves in series. The SDCS pressure boundary is protected against postulated pressurization transients by relief valve 2-SI-468 located on the SDCS suction line. However, it is not designed to mitigate the overpressurization due to the inadvertent exposure of the full RCS pressure during power operation.

To guard against overpressurization and failure of the SDCS, alarms and two instrumentation interlocks are in place as described in the Reactor Systems Branch Technical Position (BTP) 5-1. The first interlock is designed to prevent opening the SDCS isolation valves when the RCS pressure is above the SDCS design pressure. This is an OPI and the

proposed design modification does not involve a change to this interlock. The second interlock automatically provides a close signal to the isolation valves when RCS pressure exceeds 280 psia. Removal of this feature is proposed as a way to decrease the probability of a loss of shutdown cooling.

The two valves in series guard against a single failure causing a complete loss in the pressure boundary. The barrier is established by the operator closing both valves when going from SDCS operation to steam generator cooling during plant heatup. Failure to establish this double barrier is possible due to a mechanical failure or operator error. The ACI and alarms are intended to guard against this failure.

When the SDCS is required, the suction valves are required to remain open. Failures resulting in valve closure are a safety concern due to the loss of decay heat removal. In the converse when ACI is required, failures leaving the valves open adversely impact safety by overpressurizing the SDCS. Since ACI has been a significant contributor to loss of SDCS events at other plants, NNECO proposes the removal at Millstone Unit 2.

### 3.0 EVALUATION

The licensee evaluated the impact of removing the ACI from the SDCS based on the guidelines recommended by the NRC (Reference 2) as discussed below. The guidelines include:

- Means Available to Prevent a LOCA Outside of Containment
- Alarms to Notify the Operator that SDCS Suction Valves are Mispositioned
- Verification of the Adequacy of Relief Valve Capacity
- Means Other than ACI to Ensure Both Isolation Valves are Closed
- Assurance that the OPI is not Affected by ACI Removal
- Assurance that Valve Position Indication Will Remain Available in the Control Room After ACI Removal
- Assessment of the Effect of ACI Removal on SDCS Availability and Low-Temperature Overpressure Protection

#### 3.1 Means Available to Prevent a LOCA Outside of Containment

Millstone Unit 2 is designed with a double barrier between the RCS and the SDCS (two isolation valves in series 2-SI-651 and 2-SI-652) providing a high probability that at least one barrier can be established and maintained under a postulated break. Procedural controls, training, alarms, and OPI function minimize the potential that the operator will fail to achieve double isolation during normal heatup and pressurization of the RCS.

#### 3.2 Alarms to Notify the Operator that SDCS Suction Valves are Mispositioned

The licensee will install visual and audible alarms (annunciator type) in the main control room to inform the operator if either of the SDCS suction valves is not fully closed when RCS pressure is above 280 psia. The alarm is designed to alert the operator of alarm circuit failure and the alarm setpoints will be tested at least every 18 months.

### 3.3 Verification of the Adequacy of Relief Valve Capacity

During the design of the original system, Combustion Engineering completed calculations to ensure that the relief valve in the SDCS suction line had adequate capacity to prevent overpressurization of the SDCS. These calculations were reviewed to verify that ACI was not credited in the selection of limiting events or mitigation of the resulting transients. The calculations remain applicable with the ACI removed.

The SDCS relief valve remains applicable in all events except for the overpressure transient where one or more safety injection (SI) pumps may actuate. These events are mitigated by the low temperature overpressure protection system (LTOPs).

### 3.4 Means Other than ACI to Ensure Both Isolation Valves are Closed

The proposed modifications include alarms, position indication, procedures, and training to ensure that the double barrier is established upon heatup.

### 3.5 Assurance that the OPI is not Affected by ACI Removal

The OPI function will be maintained in its present form, and this interlock will be tested at least once every 18 months to verify operability.

### 3.6 Assurance that Valve Position Indication Will Remain Available in the Control Room After ACI Removal

Valve position is indicated on the main control board and on the computer display located in the main control room. The indication will be present even when valve operation is locked-out during power operation. Another indication that the valve is closed is by the lack of alarm when the pressure exceeds the alarm set point.

### 3.7 Assessment of the Effect of ACI Removal on SDCS Availability and Low-Temperature Overpressure Event

A plant specific risk-based analysis was completed to determine the impact of removing the ACI from the Millstone Unit 2 SDCS suction valves 2-SI-651 and 2-SI-652. The analysis is based on a safety assessment of the effect of ACI removal on SDCS availability, LTOP, and interfacing system LOCA (ISLOCA) potential.

Based on industry experience, under normal plant operating procedures the removal of the ACI reduces the frequency of loss of SDCS by 28%. At Millstone Unit 2 the SDCS isolation valves are de-energized in the OPEN position during midloop operation to preclude an inadvertent automatic closure.

The plant specific analysis also determined that LTOP plays a significant role in overpressure transient mitigation. In the case of an inadvertent SI actuation without ACI, there is an increased potential for overpressurizing the SDCS should the alarm and operator intervention fail. However, the overall risk remains low because Millstone 2 has two independent trains to mitigate LTOP events that may occur during SDC operations.

Based on the licensee's plant specific analysis the removal of the ACI has a negligible impact on ISLOCA frequency. This is because the open permissive interlock is not affected by the removal of the ACI and an alarm will be installed in place of the ACI to alert the operator that the suction valves are not closed when the RCS pressure is above the alarm set point.

The licensee has adequately addressed the staff's guidelines outlined in reference 2. They have shown that the removal of the autoclosure interlock will not appreciably effect ISLOCA frequency or the mitigation capability of the LTOP system. In light of this, the staff finds the licensee's proposal to remove the ACI and take compensatory actions to be acceptable.

### 3.0 STATE CONSULTATION

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

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes surveillance requirements. 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 (57 FR 9446). 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.

## 5.0 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.

## 6.0 REFERENCE

1. Letter from J.F. Opeka, Northeast Nuclear Energy Company to the NRC, "Millstone Nuclear Power Station, Unit 2 Shutdown Cooling System Autoclosure Interlock Deletion," January 30, 1992.
2. "NRC Safety Evaluation Relating to Removal of Autoclosure Interlock Function at Diablo Canyon," February 17, 1988, Docket Nos. 50-275 and 50-323.

Principal Contributor: S. Brewer

Date: July 24, 1992