Dominion Nuclear Connecticut, Inc.
Millstone Power Station
Rope Ferry Road
Waterford, CT 06385

Dominion

November 6, 2003

RE: 10 CFR 140.8
10 CFR 140.11

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Serial No.: 03-542
B19005
NL&OS/PRW Rev 0
Docket No.: 50-245
License No.: DPR-21

DOMINION NUCLEAR CONNECTICUT, INC. (DNC)
MILLSTONE POWER STATION UNIT 1
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING REQUEST FOR EXEMPTION FROM THE FINANCIAL PROTECTION REQUIREMENTS OF 10 CFR 140.11

In a letter dated September 28, 1999, Northeast Nuclear Energy Company (NNECO), the former licensee of the Millstone Power Station Unit 1, requested an exemption pursuant to 10 CFR 140.8 from the financial protection requirements of 10 CFR 140.11. The requested exemption specifically addressed the requirement to maintain secondary financial protection beyond the primary layer of $200 million in offsite financial protection for Millstone Unit 1. Millstone Unit 1 permanently ceased operations on July 21, 1998.

In a letter dated January 19, 2000, the NRC requested additional information from NNECO regarding the potential for a zirconium fire following a postulated beyond design basis event resulting in the complete loss of the spent fuel pool water inventory at Millstone Unit 1. The requested information was provided by NNECO in a letter dated March 2, 2000.

The purpose of this letter is to respond to a recent NRC request for additional information which occurred during a telephone conversation of October 18, 2003. The NRC requested Dominion Nuclear Connecticut, Inc., the current licensee, to provide a copy of the procedure used for replenishment of inventory in the Millstone Unit 1 spent fuel pool. Enclosure 1 to this letter is a copy of Unit 1 Decommissioning Document ONP 532, Revision 005-01, "Loss of Spent Fuel Pool Cooling."

There are no regulatory commitments made by this letter.

If you should have any questions regarding this submittal, please contact Mr. Paul R. Willoughby at (804) 273-3572.

Very truly yours,

Eugene S. Grecheck
Vice President – Nuclear Support Services

M004

cc: U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

U. S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406-1415

Mr. D. G. Holland
Project Manager
U. S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Mail Stop 7E1
Rockville, MD 20852-2738

Mr. J. R. Wray, NRC Region I Inspector
NRC Inspector
U. S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406-1415

Enclosure 1

Millstone Power Station, Unit 1
Decommissioning Document
ONP 532, Revision 005-01
Loss of Spent Fuel Pool Cooling

Off Normal Procedure

Unit 1 Decommissioning Document

Loss of Spent Fuel Pool Cooling

ONP 532

Rev. 005-01

Approval Date: 2-13-02

Effective Date: 2/20/02

Responsible Individual:

Manager, Operations

Level of Use: General

STOP THINK ACT REVIEW

1. **IMMEDIATE ACTIONS**

1.1. None

2. **SUBSEQUENT ACTIONS**

2.1. Initial Assessment

2.1.1. ASSESS nature of loss of Spent Fuel Pool cooling.

2.1.2. Refer To OP 327I, "SFPI Ventilation and Radiation Monitoring Systems," and VERIFY SFPI ventilation system in service. [1]

2.1.3. Refer To the following table and IMPLEMENT appropriate actions:

Cause	Compensatory Actions
Fuel Pool Cooling System Piping/Component Failure	Step 2.2
Loss of Fuel Pool Cooling Pumps	Step 2.3
Fuel Pool Liner Integrity Failure	Step 2.4
Loss of Decay Heat Removal (DHR) System	Step 2.5

2.1.4. Refer To MP-26-EPI-FAP06, "Classification and PARs," and IMPLEMENT procedure.

2.1.5. Refer To Section 2.6 and MAINTAIN Spent Fuel Pool level greater than 33 feet. [2]

NOTE

Establishing convection cooling will limit Fuel Pool and Reactor Building temperatures as follows:

- With Railway personnel doors open: Fuel Pool - 169°F, Rx Bldg - 120°F
- With Railway Access doors open: Fuel Pool - 162°F, Rx Bldg - 108°F

The personnel access doors are preferred as it is easier to control and minimize animal intrusion into the Reactor Building.

2.1.6. IF SFPI Ventilation can *not* be placed in service AND Fuel Pool temperature approaches 160°F, ESTABLISH convection cooling as follows: [3]

a. OPEN one (1) set of the following:

- Reactor Building Railway personnel access doors
- Reactor Building Railway Access Inner and Outer Doors

b. OPEN SFPI barrier doors across 3rd floor craneway.

c. Using hand crank, OPEN Reactor Building Roof dampers (RB Roof).

d. REQUEST HP monitor Railway Access and Roof openings.

2.2. **Fuel Pool Cooling System Piping/Component Failure**

NOTE

A leak in the Fuel Pool Cooling system should not significantly lower Spent Fuel Pool level and would be limited to the volume in the Fuel Pool Skimmer Surge Tanks and system piping. If the pool inlet check valves fail, the Fuel Pool level may drop as low as the anti-siphon holes on the discharge elbows.

2.2.1. VERIFY Fuel Pool Cooling pumps tripped.[4]

A L A R A

Reactor Building access may be limited by high levels of contamination and airborne activity.

2.2.2. EVACUATE unnecessary personnel from Reactor Building

2.2.3. Refer To OP 327, "Balance of Plant Ventilation," and VERIFY Reactor Building ventilation system in service.

2.2.4. REQUEST Health Physics to evaluate and monitor Reactor Building radiological conditions.

2.2.5. IF accessible, CLOSE 1-FP-1, "SURGE TKS TO FUEL POOL PUMPS STOP."

2.2.6. INVESTIGATE cause and INITIATE repair efforts.

2.2.7. WHEN system can be restored, VERIFY open 1-FP-1, "SURGE TKS TO FUEL POOL PUMPS STOP."

2.2.8. Refer To OP 310, "Spent Fuel Pool Cooling" and RESTORE cooling.

2.2.9. IF convection cooling was established using Reactor Building Roof Dampers, PERFORM the following:

a. Using hand crank, CLOSE Reactor Building Roof dampers (RB Roof).

b. VERIFY closed the following:

- Reactor Building Railway personnel access doors
- Reactor Building Railway Access Inner and Outer Doors

c. CLOSE SFPI barrier doors across 3rd floor craneway.

d. NOTIFY HP that monitoring of Railway Access and Roof openings can be terminated.

2.2.10. EXIT this procedure.

2.3. **Loss of Fuel Pool Cooling Pumps**

2.3.1. INVESTIGATE cause and INITIATE repair efforts as needed.

2.3.2. REQUEST Health Physics to evaluate and monitor the Reactor Building radiological conditions to determine if access can be maintained.

2.3.3. WHEN either Fuel Pool Cooling pump is available, Refer to OP 310, "Spent Fuel Pool Cooling" and RESTORE cooling.

2.3.4. IF convection cooling was established using Reactor Building Roof Dampers, PERFORM the following:

a. Using hand crank, CLOSE Reactor Building Roof dampers (RB Roof).

b. VERIFY closed the following:

- Reactor Building Railway personnel access doors
- Reactor Building Railway Access Inner and Outer Doors

c. CLOSE SFPI barrier doors across 3rd floor craneway.

d. NOTIFY HP that monitoring of Railway Access and Roof openings can be terminated.

2.3.5. EXIT this procedure.

2.4. **Loss of Spent Fuel Pool Liner Integrity**

 A L A R A 

Reactor Building access may be limited by high levels of contamination and airborne activity.

NOTE

A failure of the fuel pool liner should be indicated by the fuel pool liner leak detection system. Closing the associated isolation valve should eventually isolate or minimize the leakage by isolating the flow path. P&ID series 25202-26007 identifies the leak detector paths.

2.4.1. EVACUATE unnecessary personnel from Reactor Building

2.4.2. Refer To OP 327, "Balance of Plant Ventilation," and VERIFY Reactor Building ventilation system in service.

2.4.3. REQUEST Health Physics to evaluate and monitor Reactor Building radiological conditions.

2.4.4. ATTEMPT to locate failure.

2.4.5. ISOLATE leak detector path.

2.4.6. IF Fuel Pool Skimmer Surge Tank level falls to 0%, TRIP running Fuel Pool Cooling pump. [5]

2.4.7. WHEN Spent Fuel Pool integrity has been restored, PERFORM the following:

a. Refer To Section 2.6, "Fuel Pool Makeup", and FILL Spent Fuel Pool until Fuel Pool Level restored to skimmer weirs. [6]

b. Refer To OP 310, "Spent Fuel Pool Cooling" and RESTORE cooling.

2.4.8. IF convection cooling was established using Reactor Building Roof Dampers, PERFORM the following:

a. Using hand crank, CLOSE Reactor Building Roof dampers (RB Roof).

b. VERIFY closed the following:

- Reactor Building Railway personnel access doors
- Reactor Building Railway Access Inner and Outer Doors

c. CLOSE SFPI barrier doors across 3rd floor craneway.

d. NOTIFY HP that monitoring of Railway Access and Roof openings can be terminated.

2.4.9. EXIT this procedure.

2.5. **Loss of Decay Heat Removal System**

2.5.1. INVESTIGATE cause and INITIATE repair efforts as needed.

2.5.2. REQUEST Health Physics to evaluate and monitor the Reactor Building radiological conditions to determine if access can be maintained.

2.5.3. WHEN DHR system can be restored, Refer To OP 310, "Spent Fuel Pool Cooling" and RESTORE cooling.

2.5.4. IF convection cooling was established using Reactor Building Roof Dampers, PERFORM the following:

a. Using hand crank, CLOSE Reactor Building Roof dampers (RB Roof).

b. VERIFY closed the following:

- Reactor Building Railway personnel access doors
- Reactor Building Railway Access Inner and Outer Doors

c. CLOSE SFPI barrier doors across 3rd floor craneway.

d. NOTIFY HP that monitoring of Railway Access and Roof openings can be terminated.

2.5.5. EXIT this procedure.

2.6. **Fuel Pool Makeup**

2.6.1. IF using Demineralized Water system to remotely fill fuel pool, PERFORM the following:

a. NOTIFY Unit 2 that filling Unit 1 Fuel Pool may cause low PMW header pressure alarm.

b. OPEN one (1) of the following valves

- 1-DM-2, "SFPI MAKEUP WATER SUPPLY SOLENOID" (PLC)
- 1-DM-4, "SFPI MAKEUP WATER SUPPLY SOLENOID BYPASS" (RB 14'6" North wall, under stairs)

c. WHEN desired fuel pool level is reached, CLOSE valve opened in step above.

d. NOTIFY Unit 2 that fill evolution is complete.

2.6.2. IF using Demineralized Water system hose to locally fill fuel pool, PERFORM the following:

a. VERIFY hose connected to 1-DW-80, "108' LEVEL SUPPLY (108' N.E.)."

C A U T I O N

The open end of the hose must *not* be underwater. [7]

b. DIRECT hose open end into Fuel Pool and RESTRAIN to prevent movement.

c. NOTIFY Unit 2 that filling Unit 1 Fuel Pool may cause low PMW header pressure alarm.

d. OPEN 1-DW-80.

e. WHEN desired fuel pool level is reached, CLOSE 1-DW-80.

f. IF desired, STORE hose.

2.6.3. IF using the Reactor Building Railway Access hose connection to fill fuel pool, PERFORM the following:

a. CLOSE 1-DM-24, "SFPI MAKEUP WATER BACKFLOW PREVENTER OUTLET."

CAUTION

The water source should utilize a centrifugal pump, or a pump with an internal bypass relief valve to prevent damaging system and hoses.

b. CONNECT water source to hose connection at 1-DM-6, "SFPI MAKEUP WATER TRUCK CONNECTION ISOLATION."

c. PRESSURIZE water source to between 45 and 150 psig. [8]

d. OPEN 1-DM-6, "SFPI MAKEUP WATER TRUCK CONNECTION ISOLATION."

e. WHEN desired fuel pool level is reached, CLOSE 1-DM-6.

f. DEPRESSURIZE water source.

g. DISCONNECT water source from hose connection at 1-DM-6, "SFPI MAKEUP WATER TRUCK CONNECTION ISOLATION."

h. OPEN 1-DM-24, "SFPI MAKEUP WATER BACKFLOW PREVENTER OUTLET."

2.6.4. IF using SFPI Makeup Water Storage Tank to fill fuel pool, PERFORM the following:

a. CLOSE 1-DM-24, "SFPI MAKEUP WATER BACKFLOW PREVENTER OUTLET."

b. START SFPI Makeup Water Pump M15-2C (MCC SFPI-M1).

c. THROTTLE open 1-DM-10, "SFPI MAKEUP WATER PUMP M15-2C DISCHARGE ISOLATION," to obtain at least 25 psig on PI-SFPI-14. [9]

d. WHEN desired fuel pool level is reached, CLOSE 1-DM-10.

e. STOP SFPI Makeup Water Pump M15-2C (MCC SFPI-M1).

f. OPEN 1-DM-24, "SFPI MAKEUP WATER BACKFLOW PREVENTER OUTLET."

2.6.5. IF *no* other makeup source is available, PERFORM the following:

CAUTION

1. Firewater should only be used as a last resort method to maintain Spent Fuel Pool level above the Technical Specification limit of 33' or as needed to control radiation levels from the Spent Fuel Pool.
2. The open end of the hose must *not* be under water. (01)

a. REMOVE nozzle from available fire hose station.

b. DIRECT hose open end into Fuel Pool and RESTRAIN to prevent movement.

c. NOTIFY Unit 3 and Site Fire Protection that a fire pump will be started. (01)

d. START a fire pump (remotely or locally).

e. OPEN 1-FIRE-37, "YARD LOOP HDR TO TURB BLDG SUPP."

f. OPEN fire hose station valve.

g. WHEN desired fuel pool level is reached, CLOSE fire hose station valve.

h. CLOSE 1-FIRE-37, "YARD LOOP HDR TO TURB BLDG SUPP."

i. SHUTDOWN fire pumps not needed to fight a fire. (01)

j. NOTIFY Unit 3 and Site Fire Protection that fire pumps are shutdown.

k. DRAIN Unit 1 fire header piping.

l. RERACK hose onto hose station and REPLACE nozzle.

3. **AUTOMATIC ACTIONS**

3.1. Fuel Pool Pump trip on low suction pressure.

4. **SYMPTOMS**

Low Fuel Pool level

Low Fuel Pool skimmer surge tank level

High Fuel Pool temperature

High Fuel Pool Heat Exchanger outlet temperature

5. **PURPOSE**

5.1. Objective

This procedure provides guidance in the event of a loss of Spent Fuel Pool Cooling.

5.2. Discussion

A loss of Spent Fuel Pool Cooling may occur from one or more of the following causes:

- Loss of both Spent Fuel Pool Cooling Pumps
- Fuel Pool Cooling system piping or component failure
- Loss of Spent Fuel Pool liner integrity
- Loss of Decay Heat Removal system

Depending on the failure mechanism, actions will be implemented to maintain the spent fuel covered and cooled to minimize boiling. To achieve this, alternate cooling methods and makeup flowpaths will be used.

6. **REFERENCES**

6.1. Millstone Unit 1 Defueled Safety Analysis Report

6.2. OP 310, "Spent Fuel Pool Cooling"

6.3. 25202-26007 series (Fuel Pool Cooling)

6.4. RCD record RCR-10708

6.5. RCD record RCR-35761

6.6. Calculation 99-ENG-01906M1, "Transient and Steady State Temperature of MP1 SFP & RB with No Active SFP Cooling"

6.7. OP 327I, "SFPI Ventilation and Radiation Monitoring Systems"

6.8. 25202-26067 Sheet 1, "P&ID SFPI Make-Up Water System"

6.9. OP 327, "Balance of Plant Ventilation"

7. **SUMMARY OF CHANGES**

The following are Revision 005-00 changes:

- Added new Fuel Pool makeup source using new Makeup Water Storage Tank.
- Clarified point to establish convection cooling.
- Added references to OP 327 for BOP ventilation.

The following are Revision 005-01 changes:

- Added notification of Unit 3 and Site Fire Protection that a fire pump is started/stopped .
- Starting a fire pump prior to fire header use, can minimize flow and pressure fluctuations on the system.
- Request from Unit 2 to start their fire pump is not needed. Unit 2 is direct control for water makeup.
- Added a caution to keep hose end out of pool water to prevent siphoning and contamination.

Attachment 1
Supplemental/Basis Information

(Sheet 1 of 1)

[1] Calculation 99-ENG-01906M1 showed that with a loss of active Spent Fuel Pool cooling and ventilation in service, the maximum Fuel Pool temperature would be 162°F and the maximum Reactor Building temperature would be 105°F.

[2] Technical Specification 3.1.1 requires a minimum of 33 feet in the spent fuel pool.

[3] The lowest temperature with convection cooling is 162. Establishing convection cooling before 160 will not limit temperature rise in the fuel pool.

[4] The Fuel Pool pumps should trip on low suction pressure when the volume in the skimmer surge tanks is lost.

[5] With the loss of skimmer surge tank level, the NPSH for the pumps is reduced.

[6] Filling the Fuel Pool to the skimmer surge tank weirs will provide adequate surge tank volume to fill any voids in the Fuel Pool Cooling system piping.

[7] Prevents possible siphoning action if water source pressure is lost.

[8] DCP M1-99012. 150 psig is the design pressure of the SFPI Makeup Water system. At least 45 psig is needed to go from the 14' 6" level to the 108' level.

[9] Test data for pump indicated runout at 18 psig discharge pressure. 25 psig ensures adequate flow and margin to runout.