

March 8, 2000

Mr. S. E. Scace - Director
Nuclear Oversight and Regulatory Affairs
c/o Mr. David A. Smith
Northeast Nuclear Energy Company
P. O. Box 128
Waterford, CT 06385-0128

SUBJECT: SAFETY EVALUATION OF RELIEF REQUESTS ASSOCIATED WITH THE
THIRD 10-YEAR INTERVAL OF THE INSERVICE TESTING PROGRAM FOR
PUMPS AND VALVES, MILLSTONE NUCLEAR POWER STATION, UNIT 2
(TAC NO. MA6524)

Dear Mr. Scace:

By letter dated March 5, 1999, as supplemented by letters dated November 16, 1999, and January 24, 2000, you submitted the third 10-year interval of the inservice testing (IST) program for pumps and valves for Millstone Nuclear Power Station, Unit 2. Northeast Nuclear Energy Company had determined that no relief request from the requirements of the 1989 Edition of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (Code) were required. The IST program contains five alternatives to the requirements of the Code for which the staff has determined deviates from Code requirements. These alternatives are contained in the Alternate Test Justification (ATJ) section of the IST program. These five ATJs were evaluated as relief requests pursuant to 10 CFR 50.55a.

The alternatives proposed in ATJ Numbers 009, 013, 035, 040, and 045 meet the requirements of the 1995 Edition of the *Code for Operation and Maintenance of Nuclear Power Plants* which has been incorporated by reference into 10 CFR 50.55a (64 FR 51370). Pursuant to 10 CFR 50.55a(f)(4)(iv), which allows the use of subsequent additions and addenda of the Code, these relief requests are approved.

Our detailed evaluation and conclusions are documented in the enclosed safety evaluation.

Sincerely,

/RA/

James W. Clifford, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-336

Enclosure: Safety Evaluation

cc w/encl: See next page

March 8, 2000

Mr. S. E. Scace - Director
Nuclear Oversight and Regulatory Affairs
c/o Mr. David A. Smith
Northeast Nuclear Energy Company
P. O. Box 128
Waterford, CT 06385-0128

SUBJECT: SAFETY EVALUATION OF RELIEF REQUESTS ASSOCIATED WITH THE
THIRD 10-YEAR INTERVAL OF THE INSERVICE TESTING PROGRAM FOR
PUMPS AND VALVES, MILLSTONE NUCLEAR POWER STATION, UNIT 2
(TAC NO. MA6524)

Dear Mr. Scace:

By letter dated March 5, 1999, as supplemented by letters dated November 16, 1999, and January 24, 2000, you submitted the third 10-year interval of the inservice testing (IST) program for pumps and valves for Millstone Nuclear Power Station, Unit 2. Northeast Nuclear Energy Company had determined that no relief request from the requirements of the 1989 Edition of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (Code) were required. The IST program contains five alternatives to the requirements of the Code for which the staff has determined deviates from Code requirements. These alternatives are contained in the Alternate Test Justification (ATJ) section of the IST program. These five ATJs were evaluated as relief requests pursuant to 10 CFR 50.55a.

The alternatives proposed in ATJ Numbers 009, 013, 035, 040, and 045 meet the requirements of the 1995 Edition of the *Code for Operation and Maintenance of Nuclear Power Plants* which has been incorporated by reference into 10 CFR 50.55a (64 FR 51370). Pursuant to 10 CFR 50.55a(f)(4)(iv), which allows the use of subsequent additions and addenda of the Code, these relief requests are approved.

Our detailed evaluation and conclusions are documented in the enclosed safety evaluation.

Sincerely,

/RA/

James W. Clifford, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-336

DISTRIBUTION: TClark D. Terao
File Center OGC G. Hill (2)
PUBLIC ACRS EAdensam (EGA1)
PDI-2 R/F JClifford JLinville, RI
JZimmerman M. Kotzalas DLew, RI

Enclosure: Safety Evaluation

cc w/encl: See next page

DOCUMENT NAME: C:\RELma6524.wpd *SE Input provided on 2/2/00 w/no major changes

To receive a copy of this document, indicate in the box: "C"= Copy w/o encl "E"= Copy w/encl "N"= No copy

OFFICE	PDI-2/PM	E	PDI-2/LA	EMEB	OGC	PDI-2/SC
NAME	JZimmerman	TClark	DTerao	NLO	JClifford	
DATE	2/23/00	2/23/00	2/2/00	3/3/00	3/8/00	

Official Record Copy

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO THE INSERVICE TESTING PROGRAM, THIRD 10-YEAR INTERVAL
NORTHEAST NUCLEAR ENERGY COMPANY ET AL.
MILLSTONE NUCLEAR POWER STATION, UNIT 2
DOCKET NO. 50-336

1.0 INTRODUCTION

Title 10 of the *Code of Federal Regulations*, Section 50.55a (10 CFR 50.55a), requires that inservice testing (IST) of certain American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME *Boiler and Pressure Vessel Code* (the Code) and applicable addenda, except where alternatives have been authorized or relief has been requested by the licensee and granted by the U.S. Nuclear Regulatory Commission (NRC) pursuant to paragraphs (a)(3)(i), (a)(3)(ii), or (f)(6)(i) of 10 CFR 50.55a. In proposing alternatives or requesting relief, the licensee must demonstrate that: (1) the proposed alternatives provide an acceptable level of quality and safety; (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety; or (3) conformance is impractical for its facility. Section 50.55a authorizes the Commission to approve alternatives and to grant relief from the Code requirements upon making the necessary findings. NRC guidance contained in Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," provides alternatives to the Code requirements which are acceptable. Further guidance is given in GL 89-04, Supplement 1, and NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants."

By letter dated March 5, 1999, and supplemented by letters dated November 16, 1999, and January 24, 2000, Northeast Nuclear Energy Company (NNECO) submitted the third 10-year interval of the IST program for pumps and valves for Millstone Nuclear Power Station, Unit 2 (MP2). MP2 is currently implementing its third 10-year IST interval which began on April 1, 1999, and is scheduled to end on March 31, 2009. The IST program was developed in accordance with the requirements of the 1989 Edition of the ASME Code by implementation of the 1987 ASME/ANSI *Operations and Maintenance (OM) Standards* Part 1, Part 6, and Part 10 (OM-1, OM-6, and OM-10) for IST of safety and relief devices, pumps, and valves.

Due to the MP2 being out of service continually for greater than 6 months on three occasions, the second 10-year interval was extended for a period equivalent to the outage, as permitted by IWA-2430(e). The second 10-year interval occurred between December 26, 1985, and March 31, 1999.

The NRC's findings with respect to authorizing alternatives and granting or denying the IST program relief requests are given below.

2.0 RELIEF REQUESTS

2.1 Alternate Test Justification ATJ 009

NNECO requests relief from the testing requirements of OM-10 paragraph 4.3.2.4(c). The Code requires that each check valve be disassembled every refueling outage. NNECO proposes a sample disassembly and inspection (D&I) program for the four safety injection tank check valves. NNECO has also requested a one-time extension of the interval frequency guidelines in GL 89-04 for valve 2-SI-245 based on extreme hardship.

This alternate test justification has been reviewed as a relief request because NNECO's proposed testing deviates from the Code requirements.

2.1.1 Licensee's Basis for Requesting Relief

NNECO states:

[The valves] cannot be full stroke or part stroke exercised during operation or cold shutdown since there is no discharge path capable of accepting the flow. [The valves] cannot be full stroke exercised during refueling since the tanks cannot be safely discharged with full nitrogen overpressure. At lower nitrogen pressures full design flow may not be achieved. One valve in the group will be disassembled each refueling. Disassembling all valves in the group each outage would be unduly burdensome, creating unwarranted [sic] personnel exposure and impacting outage work completion.

OM-10 permits verification of check valve operability by disassembly each refueling outage if obturator movement cannot be verified during operation, cold shutdown or refueling.

Generic Letter 89-04, NRC Staff Position 2, authorizes sample disassembly of check valves when the licensee determines that it is burdensome to disassemble and inspect all applicable valves each refueling.

Generic Letter 89-04 NRC Staff Position 2 authorizes extension of the valve disassembly/inspection interval to one every other refueling outage in cases of extreme hardship where the extension is supported by actual in-plant data from previous testing. The licensee should develop information to support the extension by:

- a. Disassemble and inspect each valve in the valve grouping and document in detail the condition of each valve's capability to be full stroked.
- b. A review of industry experience, for example, as documented in NPRDS [nuclear plant reliability data system], regarding the same type of valve used in similar service.
- c. A review of the installation of each valve addressing the "EPRI Applications Guidelines for Check Valves in Nuclear Power Plants" for problematic locations.

2.1.2 Alternative Testing

NNECO proposes:

The following alternate test plan avoids undue hardship and does not compromise component level of quality or safety.

Partial open test will be performed during refueling outages [in accordance with] IAW OM-10 and after any maintenance that could affect the full-stroke capability of the valve.

A selected valve in the group will be disassembled, inspected and manually full-stroked every refueling outage. All the valves in the group will be disassembled, inspected and manually full-stroked within 6 years except for 2-SI-245 on a one time basis. 2-SI-245 will be tested within 8 years and after will return to the 6 year frequency guidelines.

If the selected valve being disassembled, inspected and manually full-stroked is not capable of being full-stroke exercised or there is binding or failure of valve internals, the remaining valves in the group will be disassembled, inspected and manually full-stroke exercised during the same outage. In addition, if the cause of the valve failure is determined to be generic then one valve from another group (RCS Loop Non-Return Check Valves 2-SI-217/227/237/247) will be disassembled, inspected and manually full-stroke exercised during the same outage. The same D&I program guidelines will apply to the additional group. This plan provides additional information each outage on both group's check valve condition since they are from the same manufacturer, have the same inservice date, are the same size, have similar valve orientation, have similar service conditions, and are similar designs, the only difference being one group being soft seated and the other hard faced.

BASIS FOR DISASSEMBLY INTERVAL EXTENSION PLAN FOR 2-SE-245

The reason for the extension beyond 6 years is based on the extended cycle 13 outage and RFO 13 planned work activities. Extreme hardship exists for the 2-SI-245 valve and extension [is] warranted based on in-plant historical data, industry experience and manufacturer information. The following details are provided justifying the extension plan:

To disassemble the valves in the group requires the plant to operate at mid reactor coolant loops when fuel is in the reactor core. The RFO 13 outage schedule is limiting work activities to one loop while in mid loop operation. Disassembly and inspection of 2-SI-245 would require an additional loop to be taken out of service solely for 2-SI-245. It has been determined that the benefit of disassembling the valve this outage does not outweigh the safety benefit. The plan will be to [disassemble, inspect] and manually full-stroke 2-SI-225 which is in the same loop being isolated for planned work activities.

A different valve in both groups was [disassembled, inspected,] and manually full-stroke exercised each successive outage as described in NUREG-1482. (Refer to inspection summary)

A review of in-plant experience was performed and [it was] determined that the 12" Class 1, Atwood & Morrill, 1500#, outlet swing check valves in the SIT and RCS Loop systems have not experienced internal degradation since they were installed in 1972. Minor problems have been noted, [but were] limited to external leakage due to gasket degradation.

A review of industry experience was performed using the [Institute of Nuclear Power Operation] INPO Web Site (EPIX and historical NPRDS) and no similar type valve failures were identified.

A review of manufacturer's records was performed and there were no significant historical problems identified with the specific type valve. The vendor did identify a non applicable event that occurred at Beaver Valley. The boric acid service had degraded the nitrated stainless steel shaft bushing and a design change was necessary to prevent recurrence. The vendor stated that this problem is not applicable to MP2 valves since our valves have chrome [sic] plated type 316 bushings.

A review of the EPRI check valve program listed the SIT check valves as priority 3 valves since the valves only experience occasional flow for testing. Based on the limited service the valves undergo and the historical experience, the disassembly extension plan is justified.

Note: The dose contribution with performing the disassembly, inspection and manual full-stroke exercise is 50 mrem.

INSPECTION SUMMARY

2-SI-217

9/27/90	No worn or corroded internals and disk operated freely
4/15/97	No worn or corroded internals and disk operated freely

2-SI-227

11/4/92	No worn or corroded internals and disk operated freely
---------	--

10/24/97	No worn or corroded internals and disk operated freely
2-SI-237	
11/17/89	No worn or corroded internals and disk operated freely
1/15/95	No worn or corroded internals and disk operated freely
2-SI-247	
11/17/89	No worn or corroded internals and disk operated freely
5/28/97	No worn or corroded internals and disk operated freely
2-SI-215	
7/16/92	No worn or corroded internals and disk operated freely
3/13/97	No worn or corroded internals and disk operated freely
2-SI-225	
5/23/85	No worn or corroded internals and disk operated freely
5/23/90	No worn or corroded internals and disk operated freely
3/25/97	No worn or corroded internals and disk operated freely
2-SI-235	
3/14/97	No worn or corroded internals and disk operated freely
2-SI-245	
11/26/86	No worn or corroded internals and disk operated freely
1/20/95	No worn or corroded internals and disk operated

2.1.3 Evaluation

The check valves for which relief is requested, 2-SI-215, 2-SI-225, 2-SI-235, and 2-SI-245, open to provide borated water from the safety injection tank to the reactor vessel following reactor coolant system depressurization as a result of a loss of coolant accident. These valves provide the reactor coolant pressure boundary between the reactor coolant system and the safety injection tanks. OM-10 paragraph 4.3.2 requires that the check valves be exercised nominally every 3 months. As an alternative to demonstrating valve obturator movement, the Code allows disassembly every refueling outage to determine operability of the valves (OM-10 paragraph 4.3.2.4(c)). NNECO proposes to disassemble and inspect one valve in the group every refueling outage. However, due to an extended mid-cycle outage, valve 2-SI-245 will exceed the interval frequency guidelines stated in GL 89-04. NNECO has requested a one-time extension of the interval frequency based on extreme hardship.

Contrary to NNECO's statement in its basis for relief, staff Position 2 of GL 89-04 does not authorize extension of the disassembly and inspection interval to once every other refueling outage. Position 2 states that extension of the interval to one valve every other refueling outage or expansion of the group size above four valves should only be considered in cases of extreme hardship where the extension is supported by actual in-plant data. In order for licensees to extend the interval beyond the Code requirements, prior authorization from the NRC is necessary.

Position 2 of GL 89-04 allows for the employment of a sample D&I plan for groups of identical valves in similar applications. The sample disassembly and inspection plan involves grouping similar valves and testing one valve in each group during each refueling outage. Guidelines for this plan are stated in Appendix A of NUREG-1482. The sampling technique requires that each valve in the group be the same design and have the same service conditions including valve orientation. Additionally, at each disassembly, NNECO must verify that the disassembled valve is capable of full-stroking and that the internals of the valve are structurally sound. Also, if the disassembly is to verify the full-stroke capability of the valve, the disk should be manually exercised.

A different valve in the group is required to be disassembled, inspected, and manually full-stroke exercised at each successive refueling outage, until the entire group has been tested. The disassembly and inspection interval for each valve of a four-valve group should not be longer than once every 6 years for licensees on an 18-month refueling cycle. If the disassembled valve is not capable of being full-stroke exercised or there is binding or failure of valve internals, the remaining valves in that group must also be disassembled, inspected, and manually full-stroke exercised during the same outage. Once this is complete, the sequence of disassembly must be repeated. During the upcoming RFO 13, valve 2-SI-225 is scheduled to be disassembled and inspected since it is located in the loop (loop 1B) being isolated for planned outage work activities.

Because of the lengthy mid-cycle 13 outage, the time period between RFO 12 and RFO 13 was extended by over 3 years. This significantly affected the disassembly and inspection frequency schedule and therefore, valve 2-SI-245 will exceed the 6-year interval frequency guidelines in GL 89-04. NNECO has requested a one-time extension of the frequency guidelines based on extreme hardship citing the necessity to remove an additional reactor coolant loop from service solely to perform the disassembly and inspection. The last time this valve was inspected was January 20, 1995. NNECO stated that the total elapsed time between inspections for this valve will be 8 years. After this one-time extension, the interval frequency will return to 6 years.

The staff recently endorsed the 1995 Edition of the ASME Code with certain limitations and modifications. The 1995 Edition of the ASME OM Code, paragraph ISTC 4.5.4(c)(3), states that at least one valve from each group shall be disassembled and examined at each refueling outage; all valves in the sample group shall be disassembled and examined at least once every 8 years. NNECO's proposed alternative, including the one-time extended disassembly and inspection interval plan, is consistent with paragraph ISTC 4.5.4(c) which has been incorporated by reference into 10 CFR 50.55a (64 FR 51370).

2.1.4 Conclusion

This alternative meets the requirements of the 1995 OM Code paragraph ISTC 4.5.4(c) which has been incorporated by reference into 10 CFR 50.55a (64 FR 51370). Therefore, the proposed alternative to the requirements of OM-10 paragraph 4.3.2.4(c) is authorized pursuant to 10 CFR 50.55a(f)(4)(iv).

2.2 Alternate Test Justification ATJ 013

NNECO requests relief from the testing requirements of OM-10 paragraph 4.3.2.4(c). The Code requires that each check valve be disassembled every refueling outage. NNECO proposes a sample D&I program for the two auxiliary feedwater check valves.

This alternate test justification has been reviewed as a relief request because NNECO's proposed testing deviates from the Code requirements.

2.2.1 Licensee's Basis for Requesting Relief

NNECO states:

Valve [exercising] during reactor operation would require stopping feed flow to the steam generator with consequent plant shutdown. [The valves have] no part stroke capability. One valve in the group will be disassembled each refueling. Disassembling both valves each refueling would be unduly burdensome, creating unwarranted personnel exposure and impacting outage work completion.

OM-10 permits deferral of testing to cold shutdown if it is impractical to conduct testing quarterly during operation and to refueling if it is impractical to conduct testing quarterly while in operation or during cold shutdown.

OM-10 permits verification of check valve operability by disassembly each refueling outage if obturator movement cannot be verified during operation, cold shutdown or refueling.

Generic Letter 89-04, NRC Staff Position 2 authorizes sample disassembly of check valves when the licensee determines that it is burdensome to disassemble and inspect all applicable valves each refueling.

2.2.2 Alternative Testing

NNECO proposes to disassemble, inspect, and stroke test one valve each refueling.

2.2.3 Evaluation

The check valves for which relief is requested, 2-FW-5A and 2-FW-5B, are in the auxiliary feedwater system. They close to prevent diversion of auxiliary feedwater through the feedwater system and are normally open. OM-10 paragraph 4.3.2 requires that the check valves be exercised nominally every 3 months. As an alternative to demonstrating valve obturator movement, the Code allows disassembly every refueling outage to determine operability of the valves (OM-10 paragraph 4.3.2.4(c)). NNECO proposes to disassemble and inspect one valve each refueling outage.

The staff Position 2 of GL 89-04 allows for the employment of a sample D&I plan for groups of identical valves in similar applications. The sample D&I plan involves grouping similar valves and testing one valve in each group every refueling outage. Guidelines for this plan are stated in Appendix A of NUREG-1482. The sampling technique requires that each valve in the group be the same design and have the same service conditions including valve orientation. Additionally, at each disassembly NNECO must verify that the disassembled valve is capable of full-stroking and that the internals of the valve are structurally sound. Also, if the disassembly is to verify the full-stroke capability of the valve, the disk should be manually exercised.

A different valve in each group is required to be disassembled, inspected, and manually full-stroke exercised at each successive refueling outage, until the entire group has been tested. If the disassembled valve is not capable of being full-stroke exercised or there is binding or failure of valve internals, the remaining valve in the group must also be disassembled, inspected, and manually full-stroke exercised during the same outage. Once this is complete, the sequence of disassembly must be repeated.

The 1995 ASME OM Code, paragraph ISTC 4.5.4(c) allows for a sample disassembly examination program to be used to verify valve obturator movement. The sample disassembly examination program shall group check valves of similar design, application, and service condition and require a periodic examination of one valve from the group.

NNECO's proposed alternative is consistent with paragraph ISTC 4.5.4(c) and Position 2 of GL 89-04.

2.2.4 Conclusion

This alternative meets the requirements of the 1995 OM Code paragraph ISTC 4.5.4(c) which has been incorporated by reference into 10 CFR 50.55a (64 FR 51370). Therefore, the proposed alternative to the requirements of OM-10 paragraph 4.3.2(c) is authorized pursuant to 10 CFR 50.55a(f)(4)(iv).

2.3 Alternate Test Justification ATJ 035

NNECO requests relief from the testing requirements of OM-10 paragraph 4.3.2.4(c). The Code requires that each check valve be disassembled every refueling outage. NNECO proposes a sample D&I program for the two containment spray header check valves. NNECO has also requested a one-time extension of the interval frequency guidelines in GL 89-04 based on extreme hardship.

This alternate test justification has been reviewed as a relief request because NNECO's proposed testing deviates from the Code requirements.

2.3.1 Licensee's Basis for Requesting Relief

NNECO states:

[The valves] cannot be full stroke or part stroke exercised during reactor operation, cold shutdown or refueling since flowing water through the valve would cause wetting of containment. Disassembling all valves which cannot be stroke tested would be unduly burdensome, creating unwarranted personnel exposure and impacting outage work completion.

OM-10 permits deferral of testing to cold shutdown if it is impractical to conduct testing quarterly during operation and to refueling if it is impractical to conduct testing quarterly while in operation or during cold shutdown.

OM-10 permits verification of check valve operability by disassembly each refueling outage if obturator movement cannot be verified during operation, cold shutdown, or refueling.

Generic Letter 89-04 NRC Staff Position 2 authorizes sample disassembly of check valves when the licensee determines that it is burdensome to disassembl[e] and inspect all applicable valves each refueling.

Generic Letter 89-04 NRC Staff Position 2 authorizes extension of the valve disassembly/inspection interval to one every other refueling outage in cases of extreme hardship where the extension is supported by actual in-plant data from previous testing. The licensee should develop information to support the extension by:

- a. Disassemble and inspect each valve in the valve grouping and document in detail the condition of each valve's capability to be full stroked.
- b. A review of industry experience, for example, as documented in NPRDS, regarding the same type of valve used in similar service.
- c. A review of the installation of each valve addressing the "EPRI Applications Guidelines for Check Valves in Nuclear Power Plants" for problematic locations.

2.3.2 Alternative Testing

NNECO proposes:

The following alternate test plan avoids undue hardship and does not compromise component level of quality and safety.

A selected valve in the group will be [disassembled, inspected] and manually full-stroked every refueling outage. All valves in the group will be [disassembled, inspected] and manually full-stroked within 6 years except for 2-CS-5B on a one time basis. 2-CS-5B will be tested within 8 years and after will return to the 6 year frequency guidelines.

If the selected valve being [disassembled, inspected] and manually full-stroked is not capable of being full-stroke exercised or there is binding or failure of valve internals, the remaining valves in the group will be [disassembled, inspected] and manually full-stroke exercised during the same outage.

BASIS FOR DISASSEMBLY INTERVAL EXTENSION PLAN FOR 2-CS-5B

The reason for extending 2-CS-5B D&I frequency beyond 6 years is based on the extended mid-cycle 13 outage and RFO 13 planned work activities. The extended mid-cycle 13 outage extended the duration between RFO 12 and RFO 13 by over 3 years which significantly affected the D&I frequency schedule. The plan is to D&I and manually full-stroke 2-CS-5A during RFO 13, which was last D&I and manually full-stroked during RFO 12 on 1/5/95, thus maintaining compliance with the 6 year D&I guidelines. 2-CS-5B was last D&I and manually full-stroked on 5/11/95 and will exceed the 6 year D&I guidelines when performed during the RFO 14 which is currently planned for 4/1/2002. It should be noted that 2-CS-5B was rebuilt on 3/28/95 which provides added assurance that the valve will not degrade during the extended inspection period. Therefore, it has been determined that extreme hardship exists for the 2-CS-5B valve and extension [is] warranted on a one time basis, based on ALARA, in-plant historical data and industry experience. The following details are provided justifying the extension plan:

The dose [contributed to] performing the D&I and manual full-stroke exercise each valve is 40 mrem. The benefit of disassembling both valves in RFO 13 outage does not outweigh the safety benefit.

Both valves in the group were [disassembled, inspected] and manually full-stroke exercised each successive outage as described in NUREG-1482. (Refer to inspection summary)

A review of in-plant experience was performed and determined that the swing check valves have not experienced significant internal degradation since they were installed in 1972.

A review of industry experience was performed using the INPO Web Site (EPIX and historical NPRDS) and no similar type valve failures were identified.

A review of the EPRI check valve program listed the check valves as priority 2 valves since the valves only experience infrequent flow. Based on the limited service the valves undergo and the historical experience, the disassembly extension plan is justified.

INSPECTION SUMMARY

2-CS-5A

2/25/89	No worn or corroded internals and disk operated freely
10/4/90	No worn or corroded internals and disk operated freely
7/30/92	No worn or corroded internals and disk operated freely
1/5/95	No worn or corroded internals and disk operated freely

2-CS-5B

2/25/89	No worn or corroded internals and disk operated freely
7/24/92	No worn or corroded internals and disk operated freely
3/28/95	Valve rebuilt after finding disk stud bent. Valve had functioned. No worn or corroded internals identified.
5/11/95	Valve failed LLRT [local leak rate test]. Inspection required cleaning seating surface. No worn parts and disk operated freely.

2.3.3 Evaluation

The check valves for which relief is requested, 2-CS-5A and 2-CS-5B, open to provide refueling water storage tank or containment sump water to the containment spray header. The valves close to provide containment isolation. OM-10 paragraph 4.3.2 requires that the check valves be exercised nominally every 3 months. As an alternative to demonstrating valve obturator movement, the Code allows disassembly every refueling outage to determine operability of the valves (OM-10 paragraph 4.3.2.4(c)). NNECO proposes to disassemble and inspect one valve in the group every refueling outage. However, due to an extended mid-cycle outage, both valves will exceed the interval frequency guidelines stated in GL 89-04. NNECO has requested a one-time extension of the interval frequency based on extreme hardship.

Contrary to NNECO's statement in its basis for relief, staff Position 2 of GL 89-04 does not authorize extension of the D&I interval to once every other refueling outage. Position 2 states that extension of the interval to one valve every other refueling outage or expansion of the group size above four valves should only be considered in cases of extreme hardship where the extension is supported by actual in-plant data. In order for licensees to extend the interval beyond the Code requirements, prior authorization from the NRC is necessary.

Position 2 of GL 89-04 allows for the employment of a sample D&I plan for groups of identical valves in similar applications. The sample D&I plan involves grouping similar valves and testing one valve in each group during each refueling outage. Guidelines for this plan are stated in Appendix A of NUREG-1482. The sampling technique requires that each valve in the group be the same design and have the same service conditions including valve orientation. Additionally, at each disassembly, NNECO must verify that the disassembled valve is capable of full-stroking and that the internals of the valve are structurally sound. Also, if the disassembly is to verify the full-stroke capability of the valve, the disk should be manually exercised.

A different valve in the group is required to be disassembled, inspected, and manually full-stroke exercised at each successive refueling outage, until the entire group has been tested. The D&I interval for each valve of a four-valve group should not be longer than once every 6 years for licensees on an 18-month refueling cycle. For a two-valve group such as this, the interval for each valve should not be longer than once every 3 years. If the disassembled valve is not capable of being full-stroke exercised or there is binding or failure of valve internals, the remaining valves in that group must also be disassembled, inspected, and manually full-stroke exercised during the same outage. Once this is complete, the sequence of disassembly must be repeated. During the upcoming RFO 13, valve 2-CS-5A is scheduled to be disassembled and inspected.

Because of the lengthy mid-cycle 13 outage, the time period between RFO 12 and RFO 13 was extended by over 3 years. This significantly affected the D&I frequency schedule and therefore, valve 2-CS-5B will exceed the interval frequency guidelines in GL 89-04 by 4 years. NNECO has requested a one-time extension of the frequency guidelines based on extreme hardship citing concerns over personnel radiation exposure. As described in NNECO's submittal, the valve will be disassembled and inspected during RFO 14 which is currently planned for April 1, 2002. The last time the valve was inspected was May 11, 1995. The total elapsed time between inspections, if the valve is inspected during RFO 14 as planned, will be 7 years.

Valve 2-CS-5A will be disassembled and inspected during the upcoming RFO 13. This valve was last inspected January 5, 1995, and therefore has also exceeded the interval frequency guidelines in GL 89-04. The total elapsed time between inspections will be approximately 5 years.

The staff recently endorsed the 1995 Edition of the ASME Code with certain limitations and modifications. The 1995 Edition of the ASME OM Code, paragraph ISTC 4.5.4(c)(3), states that at least one valve from each group shall be disassembled and examined at each refueling outage; all valves in a sample group shall be disassembled and examined at least once every 8 years. NNECO's proposed alternative, including the one-time extended D&I interval plan, is consistent with paragraph ISTC 4.5.4(c) which has been incorporated by reference into 10 CFR 50.55a (64 FR 51370).

2.3.4 Conclusion

This alternative meets the requirements of the 1995 OM Code paragraph ISTC 4.5.4(c) which has been incorporated by reference into 10 CFR 50.55a (64 FR 51370). Therefore, the proposed alternative to the requirements of OM-10 paragraph 4.3.2.4(c) is authorized pursuant to 10 CFR 50.55a(f)(4)(iv).

2.4 Alternate Test Justification ATJ 040

NNECO requests relief from the testing requirements of OM-10 paragraph 4.3.2.4(c). The Code requires that each check valve be disassembled every refueling outage. NNECO proposes a sample D&I program for four safety injection system check valves. NNECO has

also requested a one-time extension of the interval frequency guidelines in GL 89-04 for valve 2-SI-237 based on extreme hardship.

This alternate test justification has been reviewed as a relief request because NNECO's proposed testing deviates from the Code requirements.

2.4.1 Licensee's Basis for Requesting Relief

NNECO states:

[The valves] cannot be full stroke or part stroke exercised during reactor operation since the large temperature difference between the safety injection system and the reactor coolant system (approximately 400 °F) would cause undue thermal stress of the safety injection nozzles.

During a unit shutdown, it is not practicable to establish adequate flow to exercise these valves to the full open position, thus D&I [is required]. Due to the scope of performing D&I, the personnel hazards involved and the system operating restrictions, it is not practicable to perform this testing on a cold shutdown frequency.

OM-10 permits deferral of testing to cold shutdown if it is not practicable to conduct testing quarterly during operation and to refueling if it is not practicable to conduct testing during cold shutdown.

OM-10 permits verification of check valve operability by disassembly each refueling outage.

Generic Letter 89-04 NRC Staff Position 2 authorizes sample disassembly of check valves when the licensee determines that it is burdensome to disassemble and inspect all applicable valves each refueling.

Generic Letter 89-04 NRC Staff Position 2 authorizes extension of the sample valve disassembly/inspection interval beyond each refueling outage in cases of extreme hardship where the extension is supported by actual in-plant data from previous testing. The licensee should develop information to support the extension by:

- a. Disassemble and inspect each valve in the valve grouping and document in detail the condition of each valve's capability to be full stroked.
- b. A review of industry experience, for example, as documented in NPRDS, regarding the same type of valve used in similar service.
- c. A review of the installation of each valve addressing the "EPRI Applications Guidelines for Check Valves in Nuclear Power Plants" for problematic locations.

2.4.2 Alternative Testing

NNECO proposes:

The following alternate test plan avoids undue hardship and does not compromise component level of quality or safety:

A valve closure test will be performed during cold shutdowns and refueling outages [in accordance with] IAW OM-10 by NIT or other positive method. Partial open test will be performed during cold shutdown and refueling outages IAW OM-10 and after any maintenance that could affect the full-stroke capability of the valve.

A selected valve in the group will be [disassembled, inspected] and manually full-stroked each refueling outage. All the valves in the group will be [disassembled, inspected] and manually full-stroked within 6 years except for 2-SI-237. On a one time only basis, 2-SI-237 will be tested within 8 years and will return to the 6 year frequency guidelines following the completion of the next scheduled D&I. This proposed plan will become effective starting in RFO 14.

If the selected valve being [disassembled, inspected] and manually full-stroked is not capable of being full-stroke exercised or there is binding or failure of valve internals, the remaining valves in the group will be [disassembled, inspected] and manually full-stroke exercised during the same outage.

BASIS FOR DISASSEMBLY INTERVAL PLAN

Extreme hardship exists for the valves in this group and extension [is] warranted based on ALARA, in-plant historical data, industry experience and manufacturer information. The following details are provided justifying the extension plan:

A different valve in both groups was [disassembled, inspected] and manually full-stroked exercised each successive outage as described in NUREG-1482. (Refer to inspection summary).

Each valve in the group was successfully [disassembled, inspected] and manually full-stroked exercised each successive outage as described in NUREG-1482. Three out of the four valves in the group were successfully disassembled and inspected during the recent mid-cycle 13 outage.

A review of in-plant experience was performed and determined that the 12" Class 1, Atwood & Morrill, 1500#, non-return swing check valves in the reactor loop system [...] have not experienced internal degradation since they were installed in 1972. Minor problems have been noted, limited to external leakage due to gasket degradation.

A review of industry experience was performed using the INPO Web Site (EPIX and historical NPRDS) and no similar type valve failures were identified.

A review of manufacturer's records was performed and there were no significant historical problems identified with the specific type valve. The vendor did identify a non applicable event that occurred at Beaver Valley. The boric acid service had degraded the nitrated stainless steel shaft bushing and a design change was necessary to prevent recurrence. The vendor stated that this problem is not applicable to MP2 valves since our valves have chrome plated type 316 bushings.

A review of the EPRI check valve program listed the valves as priority 2 valves that have flow velocity calculations outside the recommended range in one or more modes of operation, however, the valves only experience occasional flow (i.e., when shutdown cooling is in service). Based on the limited service the valves undergo and the historical experience, the disassembly extension plan is justified.

The dose associated with performing the D&I and manual full-stroke exercise was assessed and was determined to be unduly burdensome. Safety injection check valves 2-SI-217, -227, -237, [and] -247, each requires [sic] extensive scaffolding contributing 1000 mrem to access the valve to be inspected. The physical work to disassemble, inspect and reassemble each valve contributes to 1330 mrem with a shielded worksite. The total dose for each valve contributes to a total dose of approximately 2330 mrem. Shielding is provided (4-4' blankets) for each valve. The dose estimate does not fully account for shielding placed at the specific worksite or other shielding packages installed in the loops for other activities not associated with the valve inspection.

The plant configuration to perform the D&I and manual full-stroke exercise was assessed and determined that the benefit of disassembling 2-SI-237 during RFO 13 did not outweigh the safety benefit. To disassemble the valve the plant has to operate at mid reactor coolant loops when there is fuel in the reactor core. The current RFO 13 outage schedule has planned to take out loop 1B for valve repairs while 2-SI-237 is in loop 2A which is not scheduled to be taken out of service.

The weight of the valve cover is approximately 600 lb. requiring rigging and stud detensioners to remove the cover and due to repeated cover removal and installation the valve cover fit can degrade.

INSPECTION SUMMARY

2-SI-217	9/27/90	No worn or corroded internals and disk operated freely
	4/15/97	No worn or corroded internals and disk operated freely

2-SI-227	11/4/92	No worn or corroded internals and disk operated freely
	10/24/97	No worn or corroded internals and disk operated freely
2-SI-237	11/17/89	No worn or corroded internals and disk operated freely
	1/15/95	No worn or corroded internals and disk operated freely
2-SI-247	11/17/89	No worn or corroded internals and disk operated freely
	5/28/97	No worn or corroded internals and disk operated freely

2.4.3 Evaluation

The check valves for which relief is requested, 2-SI-217, 2-SI-227, 2-SI-237, and 2-SI-247, open to provide safety injection tank, high pressure safety injection, and low pressure safety injection flow paths to the reactor vessel. The valves close to provide a reactor coolant pressure boundary. OM-10 paragraph 4.3.2 requires that the check valves be exercised nominally every 3 months. As an alternative to demonstrating valve obturator movement, the Code allows disassembly every refueling outage to determine operability of the valves (OM-10 paragraph 4.3.2.4(c)). NNECO proposes to disassemble and inspect one valve in the group every refueling outage. However, due to an extended mid-cycle outage, valve 2-SI-237 will exceed the interval frequency guidelines stated in GL 89-04. NNECO has requested a one-time extension of the interval frequency based on extreme hardship.

Contrary to NNECO's statement in its basis for relief, staff Position 2 of GL 89-04 does not authorize extension of the D&I interval beyond each refueling outage. Position 2 states that extension of the interval to one valve every other refueling outage or expansion of the group size above four valves should only be considered in cases of extreme hardship where the extension is supported by actual in-plant data. In order for licensees to extend the interval beyond the Code requirements, prior authorization from the NRC is necessary.

Position 2 of GL 89-04 allows for the employment of a sample D&I plan for groups of identical valves in similar applications. The sample D&I plan involves grouping similar valves and testing one valve in each group during each refueling outage. Guidelines for this plan are stated in Appendix A of NUREG-1482. The sampling technique requires that each valve in the group be the same design and have the same service conditions including valve orientation. Additionally, at each disassembly NNECO must verify that the disassembled valve is capable of full-stroking and that the internals of the valve are structurally sound. Also, if the disassembly is to verify the full-stroke capability of the valve, the disk should be manually exercised.

A different valve in the group is required to be disassembled, inspected, and manually full-stroke exercised at each successive refueling outage, until the entire group has been tested. The D&I interval for each valve of a four-valve group should not be longer than once every 6 years for licensees on an 18-month refueling cycle. If the disassembled valve is not capable of being full-stroke exercised or there is binding or failure of valve internals, the remaining valves in that group must also be disassembled, inspected, and manually full-stroke exercised during the same outage. Once this is complete, the sequence of disassembly must be repeated.

Because of the lengthy mid-cycle 13 outage, the time period between RFO 12 and RFO 13 was extended by over 3 years. This significantly affected the D&I frequency schedule and therefore, valve 2-SI-237 will exceed the 6-year interval frequency guidelines in GL 89-04. NNECO has requested a one-time extension of the frequency guidelines based on extreme hardship citing the necessity to remove an additional reactor coolant loop (loop 2A) from service solely to perform the D&I. The last time the valve was inspected was January 15, 1995. NNECO stated that the total elapsed time between inspections for this valve will be within 8 years. After this one-time extension, the interval frequency will return to 6 years.

The staff recently endorsed the 1995 Edition of the ASME Code with certain limitations and modifications. The 1995 Edition of the ASME OM Code, paragraph ISTC 4.5.4(c)(3), states that at least one valve from each group shall be disassembled and examined at each refueling outage; all valves in a sample group shall be disassembled and examined at least once every 8 years. NNECO's proposed alternative, including the one-time extended D&I interval plan, is consistent with paragraph ISTC 4.5.4(c) which has been incorporated by reference into 10 CFR 50.55a (64 FR 51370).

2.4.4 Conclusion

The proposed alternative to the requirements of OM-10 paragraph 4.3.2.4(c) is authorized pursuant to 10 CFR 50.55a(f)(4)(iv). This alternative meets the requirements of the 1995 OM Code paragraph ISTC 4.5.4(c) which has been incorporated by reference into 10 CFR 50.55a (64 FR 51370).

2.5 Alternate Test Justification ATJ 045

NNECO requests relief from the testing requirements of OM-10 paragraph 4.3.2.4(c). The Code requires that each check valve be disassembled every refueling outage. NNECO proposes a sample D&I program for two containment sump check valves. NNECO has also requested a one-time extension of the interval frequency guidelines in GL 89-04 based on extreme hardship.

This alternate test justification has been reviewed as a relief request because NNECO's proposed testing deviates from the Code requirements.

2.5.1 Licensee's Basis for Requesting Relief

NNECO states:

[The valves] cannot be full [stroked] or part [stroked] during reactor operation, cold shutdown, or refueling since [the] system is not configured to allow full or partial flow through the valves. One valve in the group will be disassembled each refueling. Disassembling all valves in the group each outage would be unduly burdensome, creating unwarranted personnel exposure and impacting outage work completion.

OM-10 permits deferral of testing to cold shutdown if it is impractical to conduct testing quarterly during operation and to refueling if it is impractical to conduct testing quarterly while in operation or during cold shutdown.

OM-10 permits verification of check valve operability by disassembly each refueling outage if obturator movement cannot be verified during operation, cold shutdown or refueling.

Generic Letter 89-04, NRC Staff Position 2 authorizes sample disassembly of check valves when the licensee determines that it is burdensome to disassemble and inspect all applicable valves each refueling.

Generic Letter 89-04 NRC Staff Position 2 authorizes extension of the valve disassembly/inspection interval to [once] every other refueling outage in cases of extreme hardship where the extension is supported by actual in-plant data from previous testing. The licensee should develop information to support the extension by:

- a. Disassemble and inspect each valve in the valve grouping and document in detail the condition of each valve's capability to be full stroked.
- b. A review of industry experience, for example, as documented in NPRDS, regarding the same type of valve used in similar service.
- c. A review of the installation of each valve addressing the "EPRI Applications Guidelines for Check Valves in Nuclear Power Plants" for problematic locations.

2.5.2 Alternative Testing

NNECO proposes:

The following alternate test plan avoids undue hardship and does not compromise component level of quality and safety.

A selected valve in the group will be [disassembled, inspected] and manually full-stroked every refueling outage. All the valves in the group will be [disassembled, inspected] and manually full-stroked within 6 years except for 2-

CS-15B on a one time basis. 2-CS-15B will be tested within 8 years and after will return to the 6 year frequency guidelines.

If the selected valve being [disassembled, inspected] and manually full-stroked is not capable of being full-stroke exercised or there is binding or failure of valve internals, the remaining valves in the group will be [disassembled, inspected] and manually full-stroke exercised during the same outage.

BASIS FOR DISASSEMBLY INTERVAL EXTENSION PLAN FOR 2-CS-5B

The reason for extending 2-CS-15B D&I frequency beyond 6 years is based on the extended mid-cycle 13 outage and RFO 13 planned work activities. The mid-cycle 13 outage extended the duration between RFO 12 and RFO 13 by over 3 years which significantly affected the D&I frequency schedule. The plan is to disassemble and inspect and manually full-stroke 2-CS-15A during RFO 13, which was last [disassembled, inspected] and manually full-stroked during RFO 12 on 4/25/95, thus maintaining compliance with the 6 year D&I guidelines. 2-CS-15B was last [disassembled, inspected] and manually full-stroked on 3/16/95 and will exceed the 6 year D&I guidelines when performed during the RFO 14 which is currently planned for 4/1/2002.

It has been determined that extreme hardship exists for the 2-CS-15B valve and extension [is] warranted on a one time basis, based on RFO 13 planned work activities, in-plant historical data and industry experience. The following details are provided justifying the extension plan:

The dose contribution performing the D&I and manual full-stroke exercise each valve is 5 mrem and therefore, not significant, however the work activity can only be performed during certain outage evolutions since it becomes an open containment isolation penetration. This impacts the planned outage duration.

Both valves in the group were [disassembled, inspected] and manually full-stroked [sic] exercised each successive outage as described in NUREG-1482. (Refer to inspection summary)

A review of in-plant experience was performed and determined that the swing check valves have not experienced significant internal degradation since they were installed in 1972.

A review of industry experience was performed using the INPO Web Site (EPIX and historical NPRDS) and no similar type valve failures were identified.

A review of the EPRI check valve program listed the check valves as priority 2 valves since the valves only experience infrequent flow. Based on the limited service the valves undergo and the historical experience, the disassembly extension plan is justified.

INSPECTION SUMMARY

2-CS-15A

5/1/85	No worn or corroded internals and disk operated freely
10/16/86	No worn or corroded internals and disk operated freely
1/18/88	No worn or corroded internals and disk operated freely
2/24/89	Inspected for bolt cracking. No worn or corroded internals and disk operated freely
9/10/92	Discovered swing arm retaining block nuts rusted and replaced. No worn internals and disk operated freely
4/25/95	No worn or corroded internals and disk operated freely

2-CS-15B

3/30/85	No worn or corroded internals and disk operated freely
1/26/88	No worn or corroded internals and disk operated freely
10/17/90	Clapper Arm fasteners replaced per design change. No worn or corroded internals and disk operated freely
3/16/95	No worn or corroded internals and disk operated freely

2.5.3 Evaluation

The check valves for which relief is requested, 2-CS-15A and 2-CS-15B, open to provide cooling water from the containment sump to the high pressure safety injection and containment spray pumps. OM-10 paragraph 4.3.2 requires that the check valves be exercised nominally every 3 months. As an alternative to demonstrating valve obturator movement, the Code allows disassembly every refueling outage to determine operability of the valves (OM-10 paragraph 4.3.2.4(c)). NNECO proposes to disassemble and inspect one valve in the group every refueling outage. However, due to an extended mid-cycle outage, both valves will exceed the interval frequency guidelines stated in GL 89-04. NNECO has requested a one-time extension of the interval frequency based on extreme hardship.

Contrary to NNECO's statement in its basis for relief, staff Position 2 of GL 89-04 does not authorize extension of the D&I interval to once every other refueling outage. Position 2 states that extension of the interval to one valve every other refueling outage or expansion of the group size above four valves should only be considered in cases of extreme hardship where the extension is supported by actual in-plant data. In order for licensees to extend the interval beyond the Code requirements, prior authorization from the NRC is necessary.

Position 2 of GL 89-04 allows for the employment of a sample D&I plan for groups of identical valves in similar applications. The sample D&I plan involves grouping similar valves and testing one valve in each group during each refueling outage. Guidelines for this plan are stated in Appendix A of NUREG-1482. The sampling technique requires that each valve in the group be the same design and have the same service conditions including valve orientation. Additionally, at each disassembly NNECO must verify that the disassembled valve is capable of full-stroking and that the internals of the valve are structurally sound. Also, if the disassembly is to verify the full-stroke capability of the valve, the disk should be manually exercised.

A different valve in the group is required to be disassembled, inspected, and manually full-stroke exercised at each successive refueling outage, until the entire group has been tested. The D&I interval for each valve of a four-valve group should not be longer than once every 6 years for licensees on an 18-month refueling cycle. For a two-valve group such as this, the interval for each valve should not be longer than once every 3 years. If the disassembled valve is not capable of being full-stroke exercised or there is binding or failure of valve internals, the remaining valves in that group must also be disassembled, inspected and manually full-stroke exercised during the same outage. Once this is complete, the sequence of disassembly must be repeated. During the upcoming RFO 13, valve 2-CS-15A is scheduled to be disassembled and inspected.

Because of the lengthy mid-cycle 13 outage, the time period between RFO 12 and RFO 13 was extended by over 3 years. This significantly affected the D&I frequency schedule and therefore, valve 2-CS-15B will exceed the interval frequency guidelines in GL 89-04 by 4 years. NNECO has requested a one-time extension of the frequency guidelines based on extreme hardship stating that the work activity can only be performed during certain outage evolutions since it becomes an open containment isolation penetration. As described in NNECO's submittal, the valve will be disassembled and inspected during RFO 14 which is currently planned for April 1, 2002. The last time the valve was inspected was March 16, 1995. The total elapsed time between inspections, if the valve is inspected during RFO 14 as planned, will be 7 years.

Valve 2-CS-15A will be disassembled and inspected during the upcoming RFO 13. This valve was last inspected April 25, 1995, and therefore has also exceeded the interval frequency guidelines in GL 89-04. The total elapsed time between inspections will be approximately 5 years.

The staff recently endorsed the 1995 Edition of the ASME Code with certain limitations and modifications. The 1995 Edition of the ASME OM Code, paragraph ISTC 4.5.4(c)(3), states that at least one valve from each group shall be disassembled and examined at each refueling outage; all valves in a sample group shall be disassembled and examined at least once every 8 years. NNECO's proposed alternative, including the one-time extended D&I interval plan, is consistent with paragraph ISTC 4.5.4(c) which has been incorporated by reference into 10 CFR 50.55a (64 FR 51370).

2.5.4 Conclusion

This alternative meets the requirements of the 1995 OM Code paragraph ISTC 4.5.4(c) which has been incorporated by reference into 10 CFR 50.55a (64 FR 51370). Therefore, the proposed alternative to the requirements of OM-10 paragraph 4.3.2.4(c) is authorized pursuant to 10 CFR 50.55a(f)(4)(iv).

3.0 CONCLUSION

The alternatives to the requirements of OM-10 paragraph 4.3.2.4(c), as described in ATJ Numbers 009, 013, 035, 040, and 045, meet the requirements of the 1995 OM Code paragraph ISTC 4.5.4(c) which has been incorporated by reference into 10 CFR 50.55a (64 FR 51370). Therefore, the proposed alternatives to the requirements of OM-10 paragraph 4.3.2.4(c), as described in ATJ Numbers 009, 013, 035, 040, and 045, are authorized pursuant to 10 CFR 50.55a(f)(4)(iv).

Principal Contributor: M. Kotzalas

Date: March 8, 2000

Millstone Nuclear Power Station
Unit 2

cc:

Ms. L. M. Cuoco
Senior Nuclear Counsel
Northeast Utilities Service Company
P. O. Box 270
Hartford, CT 06141-0270

Edward L. Wilds, Jr., Ph.D.
Director, Division of Radiation
Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

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

First Selectmen
Town of Waterford
15 Rope Ferry Road
Waterford, CT 06385

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

Senior Resident Inspector
Millstone Nuclear Power Station
c/o U.S. Nuclear Regulatory Commission
P.O. Box 513
Niantic, CT 06357

Mr. F. C. Rothen
Vice President - Nuclear Operations
Northeast Nuclear Energy Company
P. O. Box 128
Waterford, CT 06385

Ernest C. Hadley, Esquire
1040 B Main Street
P.O. Box 549
West Wareham, MA 02576

Mr. J. T. Carlin
Vice President - Human Services - Nuclear
Northeast Nuclear Energy Company
P. O. Box 128
Waterford, CT 06385

Mr. Allan Johanson, Assistant Director
Office of Policy and Management
Policy Development and Planning
Division
450 Capitol Avenue - MS# 52ERN
P. O. Box 341441
Hartford, CT 06134-1441

Mr. M. H. Brothers
Vice President - Nuclear Operations
Northeast Nuclear Energy Company
P.O. Box 128
Waterford, CT 06385

Mr. L. J. Olivier
Senior Vice President and Chief
Nuclear Officer - Millstone
Northeast Nuclear Energy Company
P.O. Box 128
Waterford, CT 06385

Mr. C. J. Schwarz
Station Director
Northeast Nuclear Energy Company
P.O. Box 128
Waterford, CT 06385

Mr. B. D. Kenyon
President and CEO - NNECO
Northeast Nuclear Energy Company
P.O. Box 128
Waterford, CT 06385

Mr. R. P. Necci
Vice President - Nuclear Technical Services
Northeast Nuclear Energy Company
P. O. Box 128
Waterford, CT 06385

Millstone Nuclear Power Station
Unit 2

cc:

Citizens Regulatory Commission
ATTN: Ms. Geri Winslow
P. O. Box 199
Waterford, CT 06385

Deborah Katz, President
Citizens Awareness Network
P. O. Box 83
Shelburne Falls, MA 03170

Ms. Terry Concannon
Co-Chair
Nuclear Energy Advisory Council
415 Buckboard Lane
Marlboro, CT 06447

Mr. Evan W. Woollacott
Co-Chair
Nuclear Energy Advisory Council
128 Terry's Plain Road
Simsbury, CT 06070

Attorney Nicholas J. Scobbo, Jr.
Ferriter, Scobbo, Caruso, Rodophele, PC
75 State Street, 7th Floor
Boston, MA 02108-1807

Mr. D. B. Amerine
Vice President - Engineering Services
Northeast Nuclear Energy Company
P. O. Box 128
Waterford, CT 06385

Mr. D. A. Smith
Manager - Regulatory Affairs
Northeast Nuclear Energy Company
P. O. Box 128
Waterford, CT 06385

Ms. Nancy Burton
147 Cross Highway
Redding Ridge, CT 00870

Mr. G. D. Hicks
Director - Nuclear Training Services
Northeast Nuclear Energy Company
P.O. Box 128
Waterford, CT 06385