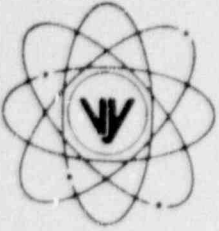


VERMONT YANKEE NUCLEAR POWER CORPORATION



Ferry Road, Brattleboro, VT 05301-7002

REPLY TO
ENGINEERING OFFICE
580 MAIN STREET
BOLTON, MA 01740
(508) 779-6711

December 19, 1996
BVY 96-163

United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

References: See Attachment A

Subject: Vermont Yankee Inservice Test Program Plan - Revision 18

With this letter Vermont Yankee is providing the following documents:

- (1) Revision 18 of the Vermont Yankee Inservice Test Program Plan (Attachment B)
- (2) Relief Requests RR-V12 Rev 1, RR-V13 Rev 0 and RR-V14 Rev 0 (Attachment C)

Vermont Yankee is providing Revision 18 of the Inservice Test (IST) Program Plan for your information. It is a complete program re-write which incorporates scope additions and deletions based upon: Vermont Yankee's IST self assessment, recent NRC inspections, plant design changes, NUREG-1482 recommendations and correction of typographical errors.

Vermont Yankee is seeking NRC review and approval for Relief Requests RR-V12, RR-V13 and RR-V14. We are currently performing quarterly radiography and outage disassembly on these components and will only use these proposed alternative tests after receipt of your approval. Once approved, these alternative tests will be incorporated into our IST Program Plan as Revision 19. We request your evaluation of Relief Requests RR-V12, RR-V13 and RR-V14 by August 1997.

Relief Request RR-V12 Revision 0, was originally submitted with Revision 17 of the IST Program Plan per Reference (p). NRC provided a Safety Evaluation (Reference m) for

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Relief Request RR-V12 which requested that Vermont Yankee expand the basis in this request to clearly show that closure verification of each valve is impractical during refueling outages, and address the possible use of non-intrusive testing methods. Relief Request RR-V12 has been revised to expand on the basis for this relief and to include the use of non-intrusive testing methods on a sampling basis during refueling outages.

We trust that the information provided is acceptable; however, should you have any questions or desire additional information, please contact this office.

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION



Robert E. Sojka
Operations Support Manager

Attachments

cc: USNRC Director, Office of Nuclear Reactor Regulation
USNRC Regional Administrator, Region 1
USNRC Project Manager, VYNPS
USNRC Resident Inspector, VYNPS

Attachment A

References

- (a) License No. DPR-28 (Docket No. 50-271)
- (b) Code of Federal Regulations, Title 10 Chapter 1, Part 50, Section 50.55a, 56 Fed. Reg. 4666, dated 8/6/92
- (c) ASME Boiler and Pressure Vessel Code, Section XI, 1980 Edition, "Rules for Inservice Inspection of Nuclear Power Plant Components"
- (d) ASME Boiler and Pressure Vessel Code, Section XI, 1989 Edition, "Rules for Inservice Inspection of Nuclear Power Plant Components"
- (e) ASME/ANSI Standard OMa-1988 Addenda to ASME/ANSI OM-1987, "Operation and Maintenance of Nuclear Power Plants"
- (f) Letter, USNRC to VYNPC, "Vermont Yankee Nuclear Power Station, Approval of the Use of ASME/ANSI Standard OMa-1988 With Clarification", NVEY 92-161, dated 9/2/92
- (g) Letter, VYNPC to USNRC, "Vermont Yankee Nuclear Power Corporation Inservice Testing Program Update", BVY 92-98, dated 8/13/92
- (h) Letter, USNRC to VYNPC, "Safety Evaluation - Inservice Testing (IST) Program Relief Requests - Vermont Yankee Nuclear Power Corporation, Vermont Yankee Nuclear Power Station (TAC No. M82229)", NVEY 92-79, dated 5/13/92
- (i) Letter, VYNPC to USNRC, "Response to USNRC Generic Letter 89-04: Guidance on Developing Acceptable Inservice Testing Programs", BVY 89-90, dated 10/3/89
- (j) Letter, USNRC to All Holders of Light Water Reactor Operating Licenses and Construction Permits, "Guidance on Developing Acceptable Inservice Testing Programs (Generic Letter 89-04)", NVEY 89-75, dated 4/3/89
- (k) Letter, USNRC to VYNPC, "Safety Evaluation of the Inservice Test Program Relief Requests for Pumps and Valves, Vermont Yankee Nuclear Power Station (TAC No. M85067)", NVEY 93-151, dated 9/3/93
- (l) Letter, USNRC to VYNPC, "Safety Evaluation of Relief Requests and Action Item Responses for the Third Interval Pump and Valve Inservice Testing Program - Vermont Yankee Nuclear Power Station (TAC No. M91450)", NVEY 95-88, dated 6/12/95
- (m) Letter, USNRC to VYNPC, "Safety Evaluation of Relief Request RR-V12 for the Third Interval Pump and Valve Inservice Testing Program - Vermont Yankee Nuclear Power Station (TAC No. M92018)", NVEY 95-100, dated 7/27/95
- (n) USNRC NUREG-1482, "Guidelines for IST at Nuclear Power Plants", dated April 1995
- (o) USNRC NUREG/CR-6396, "Examples, Clarifications, and Guidance on Preparing Requests for Relief from Pump and Valve Inservice Testing Requirements", dated February 1996
- (p) Letter, VYNPC to USNRC, "Vermont Yankee Inservice Test Program Plan Revision 17", BVY 95-40, dated 3/31/95

Attachment B

Inservice Testing Program Plan
Revision 18

Attachment C

Proposed Alternate Test Methods

RR-V12, Rev.1	Alternate Cooling Check Valve V70-43A,B testing
RR-V13, Rev.0	Keepfill check valve testing
RR-V14, Rev.0	Core Spray/Condensate transfer check valve testing

RELIEF REQUEST

Number: RR-V12, Revision 1 (Sheet 1 of 3)

SYSTEM: Service Water System**COMPONENTS:**

Valve Number	OM Cat.	Safety Class	Drawing Number	Dwg. Coord.
V70-43A	C	3	G-191159 Sh 1	J-12
V70-43B	C	3	G-191159 Sh 1	B-12

These valves are the Service Water System header discharge check valves. These valves have a safety function to close to prevent the backflow of RHRSW pump discharge to the suction of the pumps when operating in the Alternate Cooling mode of operation.

EXAM OR TEST CATEGORY:

Category C

CODE REQUIREMENT: Part 10

Para. 4.3.2.1 "Exercising Tests for Check Valves"

"Check valves shall be exercised nominally every 3 months, except as provided by paras. 4.3.2.2, 4.3.2.3, 4.3.2.4 and 4.3.2.5.

REQUEST FOR RELIEF:

Relief is requested on the basis that compliance with the Code requirements is impracticable and that the proposed alternatives would provide an acceptable level of quality and safety.

It is impracticable to full or part-stroke exercise these valves in the closed direction on a quarterly, cold shutdown or refueling outage basis unless the Service Water System is operated in the Alternate Cooling mode of operation.

RELIEF REQUEST

Number: RR-V12, Revision 1 (Sheet 2 of 3)

REQUEST FOR RELIEF(CONT.):

Closure testing of these valves utilizing the Residual Heat Removal Service Water Pump (RHRSW) with the Service Water system configured in its normal alignment is not practical. The RHRSW pumps rely on the operation of the Service Water pumps to supply the required suction while in the normal SW alignment. Closure verification of these valves is not practical since RHRSW pump pressure is reduced by throttling RHR Heat Exchanger outlet valve V10-89A(B) to maintain sufficient differential pressure across the heat exchanger to support RHR system operation and to limit RHRSW pump flow. Since RHRSW pump discharge pressure is throttled to support system operating requirements, the differential pressure across V70-43A(B) is low and gross leakage past the valve could be masked by the constant upstream pressure supplied by the Service Water Pumps. Therefore, this method of verifying valve closure for V70-43A(B) would not be technically valid under any conditions where Service Water Pump flow is provided to support RHRSW pump operation.

The flow path through PCV-69A is not available for use during normal system operation. This flow path is used only during the Alternate Cooling mode of operation to supply cooling water to the emergency diesel generator heat exchangers. This flow path is administratively controlled by the closure of V70-42A during normal system operation to prevent the overpressurization of the emergency diesel generator heat exchangers. Therefore, this method of testing V70-43A(B) is not practical under any conditions.

Closure verification of these valves would require that the Service Water System be aligned in the Alternate Cooling mode of operation. The Alternate Cooling mode of operation is designed as an alternate means of providing service water to safety systems in the event (1) a fire in the Intake Structure, (2) loss of the Vernon Dam coincident with a loss of site electrical power and (3) flooding of the Service Water Intake Structure. Swap over of the Service Water System to the Alternate Cooling mode of operation requires that each of the Service Water pumps in their individual trains be shutdown, the Service Water system be manually re-aligned to take suction off of the cooling tower deep basin and an Residual Heat Removal Service Water Pump be started to verify proper valve closure.

RELIEF REQUEST**Number: RR-V12, Revision 1 (Sheet 3 of 3)****REQUEST FOR RELIEF(CONT.):**

In accordance with station procedures, some the actions that are required before the Alternate Cooling Subsystem can be started are as follows:

- 1) The reactor must be manually scrammed or be shutdown.
- 2) The operating Control Rod Drive Pump must be secured. (during power operations)
- 3) All Residual Heat Removal Pumps must be placed in the Pull-to-Lock position.
- 4) All Service Water Pumps in the subject train must be secured. (during power operations)

There has been no specific frequency for placing the alternate cooling system into service due to the heat exchanger capability testing requirements of USNRC Generic Letter 89-13 "Service Water System Problems Affecting Safety Related Equipment". Therefore, periodic verification of valve closure utilizing RHRSW pump pressure in the Alternate Cooling flow mode of operation is not practical on a quarterly, cold shutdown or every refueling outage basis.

ALTERNATE TEST METHOD:

As identified in Vermont Yankee SER dated 07/27/95 (NVY 95-100), it is practical to verify the condition of these valves by the use of non-intrusive techniques (radiography). Since these valves are 8 inch swing check valves of the same design, manufacturer, size, model, materials of construction and are both oriented in the horizontal position and see similar service conditions, the closure capability of these valves shall be verified utilizing either a non-intrusive technique (preferable if practical) or disassembly on a sampling basis (one valve in each train) during refueling outages. If indications are found which affect the operational readiness of the sample valve, the subject valve shall be disassembled, inspected, and (if necessary) repaired and the sample size will be expanded to include examination of the other valve utilizing either a non-intrusive technique (preferable if practical) or disassembly.

These valves are partial-stroke opened during quarterly DG testing. When non-intrusive techniques are used, both full open and full close verification will be performed.

The commitment made by Vermont Yankee in LER 89-017 in corrective action #2 to exclusively disassemble and inspect one valve each refueling will be superseded upon approval of this relief request.

USNRC EVALUATION STATUS

Relief was granted in the July, 1995 SER [Reference (m)] for Relief Request RR-V12, Revision 0. Revision 1 incorporated NRC comments from this SER.

RELIEF REQUEST

Number: RR-V13, Revision 0 (Sheet 1 of 3)

SYSTEM: Residual Heat Removal
Core Spray System
RCIC
HPCI

COMPONENTS:

Valve Number	OM Cat.	Safety Class	Drawing Number	Dwg. Coord.
V10-36A	C	2	G-191172	J-03
V10-36B	C	2	G-191172	J-14
V14-33A	C	2	G-191168	H-11
V14-33B	C	2	G-191168	H-15
V23-20B	C	2	G-191169 Sh 1	G-07
V13-20B	C	2	G-191174 Sh 1	G-11

These valves are the RHR, Core Spray, RCIC and HPCI system Keep-Fill Check Valves. The safety function of these valves is to close to prevent back-flow of water into the lower pressure non-safety grade condensate transfer system.

EXAM OR TEST CATEGORY:

Category C

CODE REQUIREMENT: Part 10

Para. 4.3.2.1 "Exercising Test Frequency"

"Check valves shall be exercised nominally every 3 months, except as provided by paras. 4.3.2.2, 4.3.2.3, 4.3.2.4 and 4.3.2.5.

REQUEST FOR RELIEF:

It is impracticable to individually verify a full-stroke exercise of these valves in the closed direction on 3 month, cold shutdown or refueling outage basis in accordance with the requirements of Paragraph 4.3.2.1 of the Code.

RELIEF REQUEST**Number: RR-V13, Revision 0 (Sheet 2 of 3)****REQUEST FOR RELIEF(CONT.):**

These valves are one inch lift check valves in the keep-fill pressurization lines for the residual heat removal, core spray, high pressure coolant injection and reactor core isolation cooling systems. These valves are each arranged in series with a non-nuclear safety (NNS) check valve (V64-20) with no test connections or test taps. The lack of test connections or test taps does not enable each of the subject valves to be individually verified closed using flow.

The safety function of these check valves is to close to isolate Safety Class 2 Core Spray, RHR, RCIC or HPCI piping from NNS Condensate Transfer System piping in the event of a system actuation. The Vermont Yankee plant design also incorporates the use of one NNS check valve (V64-20) upstream of each of these valves. The Vermont Yankee safety analysis does not rely on the upstream check valve V64-20 to perform a safety related function to support the operation of the core spray, RHR, HPCI or RCIC systems. However, since these valves are in parallel to each other with a common NNS check valve upstream, the testing of these valves as a series pair as suggested in NUREG-1482, subsection 4.1.1 ("Closure Verification for Series Check Valves without Intermediate Test Connections") would not provide positive verification of closure for either the subject valve or V64-20.

In order to verify individual valve closure capability on an interim basis, the subject valves have been non-intrusively tested quarterly, using radiography. Indication of valve closure has been conclusive. However, continued testing more than once per cycle of the subject valves has proven to be impracticable and burdensome due to the potential hazards to plant personnel, and potential for unexpected challenges to plant safety systems due to high radiation actuations associated with this test method. From an ALARA standpoint, it is most desirable to perform RTs when a minimum number of people are within the impacted area, and a minimum number of activities are ongoing. This configuration typically occurs off shift during the operating cycle, but sometimes occurs during certain outage windows.

Vermont Yankee has investigated the possible use of other non-intrusive techniques such as acoustics. However, due to valve size, valve type and low flow rates through the keep-fill lines, it is not expected that this method would provide conclusive indication of valve closure.

Additionally, Vermont Yankee has investigated the potential use of performing sample non-intrusive testing with flow as described in NUREG-1482, subsection 4.1.2 ("Exercising Check Valves with Flow and Nonintrusive Techniques") for the subject valves but has determined that it is not applicable for these valves since safety function of these valves is to close on cessation or reversal of flow.

RELIEF REQUEST

Number: RR-V13, Revision 0 (Sheet 3 of 3)

REQUEST FOR RELIEF(CONT.):

Vermont Yankee has also investigated the use of performing a disassembly and inspection of each of these valves on a refueling outage basis in accordance with subsection 4.3.2.4(c) of Part 10 of the Code. However, in recent NRC guidance identified in Appendix A of NUREG 1482 (question group 15) and in a previously resolved Vermont Yankee IST Program Safety Evaluation anomaly, the NRC discouraged the use of the disassembly and inspection technique on the basis that disassembly is not a true substitute for an operability test using flow.

ALTERNATE TEST METHOD:

Since subject valves are of simple design and operate in mild service conditions and since a review of the maintenance history of these valves indicates that the valves have not been susceptible to service induced failures or significant wear, Vermont Yankee proposes to implement a sample non-intrusive testing plan for these valves.

Based on the valve size, model number and function, it is proposed that two groups of valves be formed.

<u>Group #1</u>	<u>Group #2</u>
V10-36A	V23-20B
V10-36B	V13-20B
V14-33A	
V14-33B	

It is proposed that one valve in each group be tested each operating cycle on a rotating basis utilizing a non-intrusive test method. In the event that the sampled valve fails to meet its closure criteria, all of the remaining valves in the respective group will be tested.

USNRC EVALUATION STATUS

RELIEF REQUEST

Number: RR-V14, Revision 0 (Sheet 1 of 3)

SYSTEM: Core Spray System**COMPONENTS:**

Valve Number	OM Cat.	Safety Class	Drawing Number	Dwg. Coord.
V14-22A	C	2	G-191168	I-09
V14-22B	C	2	G-191168	C-10
V14-23A	C	2	G-191168	I-09
V14-23B	C	2	G-191168	C-10

These valves are the Core Spray System Flushing Line Check Valves. The safety function of these valves is to close to prevent back-flow of water into the lower pressure non-safety grade condensate transfer system.

EXAM OR TEST CATEGORY:

Category C

CODE REQUIREMENT: Part 10

Para. 4.3.2.1 "Exercising Test Frequency"

"Check valves shall be exercised nominally every 3 months, except as provided by paras. 4.3.2.2, 4.3.2.3, 4.3.2.4 and 4.3.2.5.

REQUEST FOR RELIEF:

It is impracticable to individually verify a full-stroke exercise of these valves in the closed direction on 3 month, cold shutdown or refueling outage basis in accordance with the requirements of Paragraph 4.3.2.1 of the Code.

These valves are two inch lift check valves in the flushing lines for the core spray system. V14-23A and V14-22A are located downstream of normally closed valve V14-21A. V14-23B and V14-22B are located downstream of normally closed valve V14-21B. These valves are each arranged in series with no test connections or test taps. The lack of test connections or test taps does not enable each of the subject valves to be individually verified closed using flow.

RELIEF REQUEST

Number: RR-V14, Revision 0 (Sheet 2 of 3)

REQUEST FOR RELIEF(CONT.):

The safety function of these check valves is to close to isolate Safety Class 2 Core Spray from NNS Condensate Transfer System piping in the event of a system actuation. Since each of these valves is Safety Class 2 both of these valves are relied upon to perform their safety function. Since both valves are relied upon to perform a safety function, the ability to test these valves as a series pair as described in subsection 4.1.1 ("Closure Verification for Series Check Valves without Intermediate Test Connections") is not applicable.

In order to verify individual valve closure capability on an interim basis, the subject valves have been non-intrusively tested quarterly, using radiography. Indication of valve closure has been conclusive. However, continued testing more than once per cycle of the subject valves has proven to be impracticable and burdensome due to the potential hazards to plant personnel, and potential for unexpected challenges to plant safety systems due to high radiation actuations associated with this test method. From an ALARA standpoint, it is most desirable to perform RTs when a minimum number of people are within the impacted area, and a minimum number of activities are ongoing. This configuration typically occurs off shift during the operating cycle, but sometimes occurs during certain outage windows.

Vermont Yankee has investigated the possible use of other non-intrusive techniques such as acoustics. However, due to valve size, valve type and low flow rates through these lines, it is not expected that this method would provide conclusive indication of valve closure.

Additionally, Vermont Yankee has investigated the potential use of performing sample non-intrusive testing with flow as described in subsection 4.1.2 ("Exercising Check Valves with Flow and Nonintrusive Techniques") for the subject valves but has determined that it is not applicable for these valves since the safety function of these valves is to close on cessation or reversal of flow.

Vermont Yankee has also investigated the use of performing a disassembly and inspection of each of these valves on a refueling outage basis in accordance with subsection 4.3.2.4(c) of Part 10 of the Code. However, in recent NRC guidance identified in Appendix A of NUREG 1482 (question group 15) and in a previously resolved Vermont Yankee IST Program Safety Evaluation anomaly, the NRC discouraged the use of the disassembly and inspection technique on the basis that disassembly is not a true substitute for an operability test using flow.

RELIEF REQUEST

Number: RR-V14, Revision 0 (Sheet 3 of 3)

ALTERNATE TEST METHOD:

The subject valves are of simple design, operate in mild service conditions, are not subject to flow induced wear since the flushing line is normally isolated during plant operation. Additionally, since a review of the maintenance history of these valves indicates that the valves have not been susceptible to service induced failures or significant wear, Vermont Yankee proposes to implement a sample non-intrusive testing plan for these valves.

Based on the fact that these valves are identical in size, model number and function, it is proposed that all four valves be classified in one sampling group.

It is proposed that one valve in the sampling group be tested each operating cycle on a rotating basis utilizing a non-intrusive test method. In the event that the sampled valve fails to meet its closure criteria, all of the remaining valves in the sampling group will be tested.

USNRC EVALUATION STATUS