



November 29, 1995

Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attn: Document Control Desk

Subject: Revision 13b of the Inservice Testing Program for Valves  
Byron Nuclear Power Station, Units 1 and 2  
Facility Operating License NPF-37 and NPF-66  
NRC Docket Nos. 50-454 and 50-455

References: 1. Generic Letter 89-04, Position 2, "Alternative to Full Flow Testing of Check Valves"  
2. NUREG-1482, "Guidance on Developing Acceptable Inservice Testing Programs"

Ladies and Gentlemen:

Commonwealth Edison Company (ComEd) Byron Nuclear Power Stations, Units 1 and 2, perform inservice testing (IST) in accordance with Section XI of the 1983 Edition of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code through the Summer 1983 Addenda (ASME Code), as required by Title 10, Code of Federal Regulations, Part 50, Section 55a, Paragraph f, Subparagraph 3 [10 CFR 50.55 a (f) (3)], except where alternatives have been authorized or relief has been requested and granted by the United States Nuclear Regulatory Commission (USNRC).

Attached for your review is Revision 13b of the IST Valve Program. Revision 13b consists of Relief Request VR-31, "Disassembly of Containment Spray Check Valves". The three major changes are discussed below.

Currently, the 1/2CS003A/B, 1/2CS008A/B, 1/2CS011A/B, and 1/2CS020A/B check valves are disassembled per GL 89-04, Position 2 (VR-2, VR-4 and VR-22). However, it is desirable for Byron Station to have the option to perform the 1/2 CS003A/B, 1/2CS011A/B, and 1/2 CS020A/B check valve disassemblies in any mode of operation, unrelated to an outage, in an eighteen month frequency. (The 1/2CS008A/B valves will remain on a refueling outage frequency due to their location inside containment.) Byron's refueling outages are performed on eighteen month frequencies. Since this maintenance activity may be performed on-line, it eliminates work generally performed during refueling outages. For this reason, the current relief requests for the above valves (VR-2, VR-4 and VR-22) have been combined into a single relief request, VR-31, which includes the proposal to perform the disassemblies of the 1/2CS003A/B, 1/2CS011A/B, and 1/2CS020A/B valves during any mode of operation.

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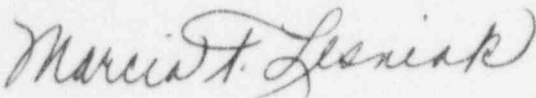
Additionally, it is requested credit is given for the full stroke test of the CS011A/B and CS020A/B valves performed at the Tech Spec frequency of at least once every five (5) years, in lieu of the disassembly program on those occasions that the flow test is performed. Please note it would be impractical to perform this flow test on a more frequent basis for the reasons listed in the relief request.

Finally, previous relief requests requested the opposite train check valve to be inspected if there was a failure on the initial inspection prior to the end of the refueling outage. In this new revision for valves tested during non-outage periods, it is proposed that 30 days be allowed to complete inspections on the opposite train check valve from the time the problem valve is returned to service. This would be comparable to an outage time period if the initial inspection was completed during an outage.

ComEd respectfully requests USNRC review and approval of Relief Request VR-31 no later than March 1, 1996, for planning purposes of U-1 Refueling Outage, B1R07. The current relief requests will be utilized in the interim.

Please address any comments or questions regarding this matter to this office.

Sincerely,



Marcia T. Lesniak  
Nuclear Licensing Administrator

Attachment (1)

cc: H. J. Miller, Regional Administrator - RIII  
G. F. Dick, Byron Project Manager - NRR  
H. Peterson, Senior Resident Inspector - Byron  
Office of Nuclear Safety - IDNS

RELIEF REQUEST VR-31

Title: Disassembly of Containment Spray Check Valves

<u>Component(s)</u>	<u>Function(s):</u>	<u>Class</u>	<u>Category</u>
1/2CS003A,B	*Open: Supply water to the spray nozzles (pump discharge check valve)	2	C
1/2CS008A,B	*Open: Provides flowpath to spray nozzles Closed: Containment Isolation	2	AC
1/2CS011A,B	*Open: Supplies NaOH to suction of the CS pump (Eductor Outlet)	2	C
1/2CS020A/B	*Open: Supplies NaOH to suction of the CS pump (Eductor Inlet) Closed: Prevents backflow to the spray additive tank	2	C

\*Indicates function which is the subject of this relief request

ASME Code Test Requirement(s):

Per IWV-3521, check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. Per IWV-3522, check valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation.

Basis For Relief:

General: Currently, full flow recirculation flow paths do not exist for the Containment Spray pumps. Extensive modifications to the existing plant design would be required to accommodate full flow testing of the 1/2CS003A,B and 1/2CS008A/B check valves, including the penetration of containment integrity. Additionally, NaOH in the spray additive tank limits the stroking of the 1/2CS011A,B and 1/2CS020A/B valves. Finally, the use of nonintrusive techniques, such as acoustic monitoring and magnetics, have not been successful in proving full stroking on this type of valve (dual disk).

The purpose of this relief is to establish a basis for performing disassemblies on these valves as established in Generic Letter 89-04, position 2, "Alternative to Full Flow Testing of Check Valves," but not necessarily on a refueling outage basis. It is desirable to perform the disassemblies on the 1/2CS003A,B, 1/2CS011A,B and 1/2CS020A,B valves during any mode (the 1/2CS008A/B valves will remain during outages due to their physical location in containment).

RELIEF REQUEST VR-31. (continued)

Per NUREG 1482, Appendix A, "Positions, Questions, Responses, and Current Considerations Regarding Generic Letter 89-04," Question Group 14 considers the question of disassembling valves during a non-refueling outage schedule. Under "Current Considerations" for this question group, it states that "If it is practical to disassemble and inspect the selected valves at a frequency not determined by refueling outages, the licensee may establish a schedule for these valves that does not conform to a refueling outage schedule. However, ....entry into an LCO to perform the activity may not be acceptable (See Section 3.1.2)." Byron Station feels that the entry into the Containment Spray LCO to perform these check valve inspections would not create a significant safety or equipment problem which would discourage this activity. Per Byron Technical Specifications 3.6.2.1 and 3.6.2.2, there is a 7 day LCO to restore an inoperable Containment Spray System. If this could not be met, then the shutdown process would begin. However, the work involved with these check valves is easily completed within the 7 day LCO. Additionally, having a Containment Spray Train inoperable is low in risk significance when considering Byron's PRA analysis. Byron Station feels that it would be practical to disassemble and inspect these valves during nonoutage time periods.

This proposal is predominantly based upon the results of previous inspections at Byron and Braidwood stations, in which there has been no evidence of degradation or physical impairment which would inhibit the valves from performing their safety function. These valves are not expected to experience degradation or impairment since the valves are infrequently actuated. A company wide check valve evaluation addressing the "EPRI Application guidelines for Check Valves in Nuclear Power Plants" revealed that the location, orientation and application of these valves are not conducive to the type of wear or degradation correlated with SOER 86-03 type problems. An 18 month frequency is being requested for the 1/2CS003A/B, 1/2CS011A/B, AND 1/2CS020A/B valves. This frequency is consistent with Byron's refueling outage frequency of 18 months.

Due to all the work involved with the isolation, draining, maintenance, inspections, and partial stroke testing, along with the superior results of past inspections, it is clearly impractical and burdensome to perform disassemblies as frequently as quarterly or during cold shutdowns. Additionally, it would not be consistent with Generic Letter 89-04.

Additional support for each set of valves is listed in parts A-D of this section.



RELIEF REQUEST VR-31. (continued)

- A. 1/2CS008A,B: With the existing plant configuration, these valves cannot be full flow or partial flow tested during unit operation, cold shutdown or refueling, as water from the CS pumps would be discharged through the CS ring headers, causing undesirable effects on system components inside containment. Additionally, it would be very impractical to erect temporary large bore piping from the CS line to the reactor cavity, during cold shutdowns or refueling outages, in order to perform a full stroke test on these valves. The filling of the cavity would require the removal of the reactor vessel head to preclude equipment damage from borated water and the construction of the temporary piping would take an estimated nine to twelve shifts (or longer) to complete. There would be even more time involved with the draining and removal of the piping from containment following the completion of the test.

Partial stroking of these valves using air during unit operation, cold shutdown, or refueling does not provide adequate assurance of valve operability and may be detrimental for the following reasons:

- a. There is no correlation between air flow and angle of disc movement.
  - b. Venting and draining the required portion of piping to perform this test may cause deposition of boric acid residue which could in turn promote binding of the check valve internals.
- B. 1/2CS003A,B: These valves cannot be full stroke tested due to the existing plant configurations, as previously discussed for the 1/2CS008A,B valves. However, these valves are partially stroked quarterly since they are in the flowpath of the respective Containment Spray pump runs.
- C. 1/2CS011A,B: These valves cannot be full stroke tested (130 gpm eductor flow plus 55 gpm NaOH flow) during unit operation or cold shutdown as NaOH from the spray additive tank would be discharged throughout the CS system causing undesirable chemical effects on the reactor makeup supply (RWST) and associated systems. Additionally, personnel safety would also be a factor. However, these valves are partially stroked quarterly during respective Containment Spray Pump runs in which the eductor flow passes through the valve, but the spray additive tank is isolated, eliminating the NaOH flow required for the full stroke.

Full flow testing of these valves (and the CS020A/B valves) is accomplished a minimum of once every 5 years through the use of a temporary test hook-up in which the flushing of the system is necessitated. Performing this testing on a more frequent basis is undesirable due to the accumulation of nearly two 55 gallon drums of potentially radioactive/toxic mixed waste that requires either recycling or disposal. Additionally, the handling of this material poses a significant hazard to personnel, resulting in eye damage and/or chemical burns if splashed or spilled. This testing, currently performed every five years per Technical Specification 4.6.2.2, would be impractical and burdensome to perform on a more frequent basis.

RELIEF REQUEST VR-31. (continued)

Non-intrusive techniques (acoustics and magnetics) have been attempted with unsuccessful results since the amount of flow required to full stroke the disks (critical velocity of 10 ft/sec) cannot be obtained based on current system design.

- D. 1/2CS020A,B: These valves cannot be full stroked or partial stroked during unit operation, or cold shutdowns, for the same reasons as stated for the full flow testing of the 1/2CS011A,B valves. The Spray Additive tank is isolated during pump runs, so no flow is passed through the 1/2CS020A/B valves during this testing.

Additionally, the Tech Spec full flow test, performed a minimum of once every five years, would apply to these check valves in addition to the 1/2CS011A/B valves. The hardship involved with the hazardous mixed waste disposal and handling caustic material with regards to personnel safety does not provide a compensated increase in safety of the CS system equipment (in regards to performing the test more than once every five years). The five year frequency on this Tech Spec test in conjunction with the disassemblies performed, will more than adequately ensure operability of these valves.

Proposed Alternative Testing:

Per Generic Letter 89-04, position 2, "...valve disassembly and inspection can be used as a positive means of determining that a valve's disk will full stroke exercise open..." The provisions of this position may be used in the case of the CS check valves for the open direction as follows:

The A and B train valves for each valve number are of the same design (manufacturer, size, model number, and materials construction) and have the same service conditions, including orientation, and, therefore, form sample disassembly groups.

Group 1 (U-1)	Group 2 (U-1)	Group 3 (U-1)	Group 4 (U-1)
1CS003A	1CS008A	1CS011A	1CS020A
1CS003B	1CS008B	1CS011B	1CS020B

Group 1 (U-2)	Group 2 (U-2)	Group 3 (U-2)	Group 4 (U-2)
2CS003A	2CS008A	2CS011A	2CS020A
2CS003B	2CS008B	2CS011B	2CS020B

RELIEF REQUEST VR-31. (continued)

Group numbers 1, 3, and 4: One valve from each group, on a per unit basis, will be disassembled on an eighteen month frequency during any plant mode. If the disassembled valve is not capable of being full-stroked exercised or if there is binding or failure of valve internals, the remaining valve on the affected unit will be inspected soon after the repair or replacement of the problem valve (within 30 days of the return to service date). Additionally, following re-installation, the 1/2CS003A,B and 1/2CS011A,B valves will be partial stroke tested using the CS pumps and the 1/2CS020A,B valves will be partial stroke tested using an alternate water source (Note: the 1/2CS020A,B test for the closed position is currently performed quarterly during the execution of the respective CS019 stroke time test). When the Technical Specification full stroke testing of the respective CS020 and CS011 valves is completed, it may be used to satisfy the full stroke testing in lieu of the disassembly plan (if within the 18 month frequency guidelines established).

Group number 2: One valve from each group, on a per unit basis, will be disassembled on a refueling outage frequency. If the disassembled valve is not capable of being full-stroke exercised or if there is binding or failure of valve internals, the remaining valve on the affected unit will be inspected prior to startup. This methodology is consistent with Generic Letter 89-04, position 2. Prior NRC approval is not required. Additionally, following re-installation, the 1/2CS008A/B valves will be leak tested per its Category A Appendix J leak rate test. In addition to the leak test to verify proper installation, the valve inspection procedure requires a post-installation visual examination of the check valves (as it does for all disassemblies), with dual verification, to insure that the pin is oriented properly and that the flow direction is correct. This will ensure the correct installation of the valve.

Status:

All testing was previously approved per VR-2, VR-4, and VR-25 of the first ten year interval Program. This relief request was submitted as revision 13b in November 1995, combining the three previous relief requests. The only technical changes involve revising the frequency of groups 1, 3, and 4 from refueling to every 18 months in any mode and allowing credit to be taken for the Tech Spec full flow test for the 1/2CS011A/B and 1/2CS020A,B check valves. NRC review requested prior to March 1, 1996, prior to refueling outage B1R07.

(Final)