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BNL-NUREG-25496
INFORMAL REPORT

RECOMMENDATIONS TO THE STAFF

ON

ARKANSAS NUCLEAR ONE, UNIT 1

INSERVICE TESTING PROGRAM

T. RESTIVO, V. LETTIERI AND R.E. HALL
REACTOR ENGINEERING ANALYSIS

DATE PUBLISHED - DECEMBER 1978

DEPARTMENT OF NUCLEAR ENERGY BROOKHAVEN NATIONAL LABORATORY
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Prepared for the U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Contract No. EY-76-C-02-0016

NOTICE

INTERIM REPORT

Accession No._____

Contract Program or Project Title: Inservice Testing Program

Subject of this Document: Arkansas Nuclear One, Unit 1

Type of Document: Informal Report

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Date of Document: December 1978

Responsible NRC Individual and NRC Office or Division:
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Washington, D.C. 20555

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Associated Universities, Inc.
for the
U.S. Department of Energy

Prepared for
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555
Under Interagency Agreement EY-76-C-02-0016
NRC FIN No. A-3117

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Brookhaven National Laboratory
Recommendations to the NRC for
the Safety Evaluation Report of
Arkansas Nuclear One, Unit 1
Inservice Testing Program for the
Period Beginning April 1978

Executive Summary

Under contract to the Nuclear Regulatory Commission (NRC) the Reactor Engineering Analysis Group of Brookhaven National Laboratory (BNL) has conducted a review of the Arkansas Power and Light (AP&L) Company's Arkansas Nuclear One, Unit 1 (Docket No. 50-313) Inservice Testing Program (Pumps and Valves) sumbittal 1005.08, dated June 18, 1977.

The BNL review process culminated with the Safety Evaluation Review (SER) meeting held at the Arkansas Nuclear One site, Russelville, Arkansas on November 15 and 16, 1978. Attendees were personnel from AP&L, NRC, and BNL. Mr. T.J. Restivo, consultant to BNL (principal reviewer) and Mr. V. Lettieri of BNL represented BNL.

The recommendations made in this report are based on evaluations which considered: practicality within limitations of equipment design and geometry, requirements of Section XI of the 1974 Edition thru Summer of 1975 of the ASME Boiler and Pressure Vessel Code, 10CFR50.55a(g), NRC Staff Guidance Letters (November 1976 and January 1978), and topics of numerous NRC Staff/BNL briefings.

The licensee has requested code relief be granted against 2 pump items and 53 valves, and Cold Shutdown Testing be approved for 23 other valves.

This report recommends that code relief be granted for the 2 pump items and for 39 of the 53 valves, and that Cold Shutdown Testing be approved for all of the 23 valves. Code relief has been denied against 14 valves based on either insufficient information by licensee, or licensee's agreement to review the testing proposed for the valves.

1. PUMPS, INSERVICE TESTING PROGRAM

1.1 A review of the submitted IST program has shown that the Emergency Feedwater Pumps are not included in the program. The licensee states these pumps are on emergency power and are safety related, however, they are not considered class 1, 2, or 3 components. Since they are not class 1,2, or 3 components the licensee has chosen not to include them in the program. The staff believes that the licensee should consider including these pumps in future IST programs. The licensee stated the pumps are included in the Technical Specifications, were built to B31-1 specifications, and will be tested to code requirements. The licensee will review the pump testing procedures and will inform the staff if the requirements of the code cannot be met.

1.2 P4A, P4B, P4C Service Water Pump

1.2.1 Relief Request: Pump vibration to be measured at the lower driver bearing.

Code Requirement: At least one displacement vibration amplitude (peak-to-peak composite) shall be read during each inservice test. The direction of displacement shall be measured in a plane approximately perpendicular to the rotating shaft, and in the horizontal or vertical direction that has the largest deflection for the particular pump installation. The location shall generally be on a bearing housing, or its structural support, provided it is not separated from the pump by any resilient mounting. On a pump coupled to the driver, the measurement shall be taken on the bearing housing near the coupling; on close-coupled pumps, the measurement point shall be as close as possible to the inboard bearing. On reciprocating pumps, the location shall be on the bearing housing of the main pump drive shaft, approximately perpendicular to both the shaft and the line of plunger travel.

Licensee Basis for Request: The Service Water Pumps are submerged type.

Evaluation: The Service Water Pumps are submerged type and pump bearings are not accessible. We recommend relief be granted as requested.

1.2.2 Relief Request: Flow will not be measured directly during service water pump testing.

Code Requirement: The flowrate for a pump in variable resistance system should be measured.

Licensee Basis for Request: Flowmeters are not presently installed.

Evaluation: Venturies are scheduled for installation approximately March 1979 (3rd refueling). Interim testing uses pump differential pressure and performance curves as a means of determining flow. We recommend relief be granted until venturies installed.

2. VALVES, INSERVICE TESTING PROGRAM

2.1 General: The scope of this review is limited to those valves which perform a safety related function. Safety related valves, for the purpose of IST, have been defined as those valves that are necessary to function to safely shutdown the plant and/or mitigate the consequences of an accident. As a minimum, all valves that receive a containment isolation signal or a safety injection signal shall be included in the IST program.

The following guidelines were developed after review of some initial IST programs.

2.1.1 Leak Testing of Valves which Perform a Pressure Isolation Function

There are several safety systems connected to the reactor coolant pressure boundary that have design pressures that are below the reactor coolant system operating pressure. It is required that there be redundant isolation valves forming the interface between these high and low pressure system to prevent the low pressure systems from being subjected to pressures which exceeds their design limits. In this role the valves are performing a pressure isolation function.

The staff considers it necessary to provide assurance that the condition of each of these valves is adequate to maintain this redundant isolation and system integrity. For this reason it is believed that some method, such as a leak testing, should be used to assure their condition is sufficient to maintain this pressure isolation function.

In addition to valves at the junction of high and low pressure systems, there are valves which perform the same function between systems of equal operating pressure, but different ASME class construction. These should also be considered as performing a pressure isolation function since they prevent flow to a system or piping that is constructed and tested to a less stringent part of the ASME Code. Valves in this group should also be reviewed for possible inclusion in Category A.

In the event that leak testing is selected as the appropriate procedure for reaching this objective the staff believes that the following valves should be categorized as A or AC and leak tested in accordance with IWV-3420 of Section XI of the applicable edition of the ASME Code. These valves are:

a.	CF-1A, 1B	(M-230, RCS/CFT)
b.	DH-14A, 14B	(M-230, RCS/L.P. Injection)
c.	DH-13A, 13B	(M-230, RCS/L.P. Injection)
d.	MU-34A, B, C	(M-230, RCS/H.P. Injection)
e.	DH-17	(M-230, RCS/L.P.)
f.	DH-18	(M-230, RCS/L.P. Injection)
g.	CV-1228, 1227	(M-231, RCS/H.P. Injection)
h.	CV-1219, 1220	(M-231, RCS/H.P. Injection)
i.	CV-1050	(M-230, RCS/DHR)
j.	CV-1410	(M-232, RCS/DHR)
k.	DH-12, 16	(M-230, RCS/DHR)

We have discussed this matter with the NRC staff and identified the valves listed above to the licensee. The licensee has agreed to consider leak testing these valves in accordance with IWV-3420 of the applicable edition of the ASME Code and to categorize these valves with the appropriate designation. If after considering these valves for leak testing, the licensee finds that no leak testing is necessary, a detailed basis for the decision shall be provided to the NRC for evaluation.

2.1.2 Containment Isolation Valves

In our review, we have found deviations from the containment isolation criteria set forth in General Design Criteria (G.D.C.) and the requirements of Appendix J, particularly, the type C test. We have determined that it is not in the scope of the IST program to evaluate the licensee's Appendix J program or the containment isolation criteria set forth in G.D.C. The Appendix J review is a completely separate review, however, the determinations made by that review are directly applicable to the IST program. The present IST submittal should be acceptable, until the Appendix J review is completed, at that time, we will require the licensee to amend his IST program to reflect the conclusions of the Appendix J review for his plant.

In particular, the following valves are recommended for review and possible classification as containment isolation valves:

a.	CV-1818, 1814, 1816	(M-237, Sampling)
b.	N_2 32	(M-231, Make-up and Purification)
c.	ICW-26	(M-234, Intermediate Cooling)
d.	ICW-30	(M-234, Intermediate Cooling)
e.	ICW-114	(M-234, Intermediate Cooling)
f.	Valves in Sampling Lines	(M-236 & M-237)

2.1.3 Category A Valve Leak Check Requirements

The staff's present position is that all Category "A" valves shall be leak tested to Section XI requirements. The leak test requirements and exceptions for Category A valves are explicitly stated in ASME Section XI. In principle 10 CFR 50.55 a(g) is separate and different from the requirements of other valve testing requirements in the CFR such as Appendix J. The test requirements of 10 CFR 50.55 a(g) are to establish operational readiness at system function differential pressure. In general:

a. For Category A valves which communicate only with the containment atmosphere, i.e. containment purge, hydrogen purge, Appendix J leak testing results are sufficient for Section XI requirements.

b. For Category A valves which communicate with the primary coolant system, the licensee must perform the leak test at system function differential pressure. Relief to test at system function differential pressure are specified in Section XI and in those cases

tests at lower pressure, such as those established for Appendix J requirements, are acceptable provided the licensee can satisfy sub-paragraph IWV-3420 C5 of Section XI.

c. Those valves that perform both a pressure isolation and containment isolation function shall be leak tested to meet Section XI of the applicable edition of the ASME Code in addition to Appendix J of 10 CFR 50 requirements.

2.1.4 Valve Exercising Requirements

The ASME Code requirements for valve exercise tests for category A, B, and C valves allow certain deviations from the prescribed 3 month period if it is "impractical" to exercise the valves during plant operation. It is the staff position that these deviations must be reviewed in order to insure that proper and consistant criteria are used to determine impracticality (i.e., where the failure of a valve in the test position would decrease the availablity of a safety system). Accordingly, while there is no relief requested in these cases, a basis for the deviation and an evaluation will be included in this review, to document the criteria used to detemine impracticality. When a valve is not exercised at 3 month intervals, it must be exercised at cold shutdowns unless relief is granted. A guideline used by the staff to define the duration of a cold shutdown during which valve testing is required is as follows:

Valve testing should commence not later that 48 hours after shutdown (reactivity 0 or negative), and continue until complete or plant is ready to return to power. Completion of all valve testing is not a prerequisite to return to power. Any testing not completed at one cold shutdown should be performed during subsequent cold shutdowns to meet the Code specified testing frequency.

In the case of valves exercised less frequently than cold shutdown (i.e., refueling), relief from the Code requirement must be requested. These cases are treated as such in this review.

2.1.5 Category E Valves

Although IWV-1300 of the 1974 Edition of Section XI of the ASME Boiler and Pressure Vessel Code excludes valves used for operating convenience and maintenance only from testing requirements, it is the staff's opinion and recommendation that any such valve which is in the normal or alternate flow path of cooling water of engineered safety systems, from the source to the reactor coolant pressure boundary or containment atmosphere, should be included in the valve testing program. If the valve is normally locked open or closed, it should be reflected in the program and designated "Category E." This recommendation also applied to engineered safety systems which are designed to remove decay heat from the reactor core following a loss of coolant accident.

The licensee's category E valve list Enclosure 2A (5 pages) was reviewed and found to be satisfactory. Some additional valves will be

added to the list in the resubmittal as a result of the SER meeting. These valves are shown under their respective system sections in this SER.

2.1.6 Corrective Action for Inoperative Valves

ASME Section XI Paragraph IWV 3410 (g) and IWV 3520 (c) concerning corrective action required when a valve fails an exercise test, both state the following: "If the condition is not or cannot be corrected within 24 hours, the valve shall be declared inoperative. When corrective action is required as a result of tests made during cold shutdown, the condition shall be corrected before start-up. A retest showing acceptable operation shall be run following any required corrective action before the valve is returned to service."

It is understood, that constraints and limitations on plant start-up or continued operation with an inoperable valve depend on many specific plant design features and conditions, and that the limiting conditions for start-up and operation have been analyzed and are described in the technical specification. Therefore, the possibility exists that the tech. spec. requirements may differ from the above code requirements. The licensee should review this situation and if applicable, request relief in the resubmittal from this part of the code. The licensee's basis for the relief request should list at a minimum the sections/pages of the tech. spec. that apply to the limiting conditions of operation.

2.1.7 Valve Stroke Timing Comparison

Relief Request: IWV-3410 (c) (3) will be satisfied by comparison of valve stroke times to a set value arrived at from initial testing and testing following any maintenance pursuant to IWV-3200.

Code Requirement: The limiting value of full stroke time of each power operated valve shall be specified by the owner.

The stroke time of all power-operated valves shall be measured to the nearest second or 10% of the maximum allowable stroke time, whichever is less, whenever such a valve is full stroke tested.

If an increase in stroke time of 25% or more from the previous test for valves with stroke times greater than ten seconds or 50% or more for valves with stroke times less than or equal to ten seconds is observed, test frequency shall be increased to once each month until corrective action is taken, at which time the original test frequency shall be resumed. In any case, any abnormality or erratic action shall be reported.

Licensee Basis for Request: The requirement for comparison against the previous test stroke time is unconservative in that slow degradation of valves will not be flagged by this surveillance. The specified limit (25% or 50%) could be additive, each test resulting in reaching the limiting value of stroke time without previously identifying a problem or increasing the surveillance frequency.

Maintenance of a running file of previous test stroke times and the inclusion of such as revised criteria amount to an undue clerical burden for dubious benefits, and greatly increases chances of clerical error.

Evaluation: The licensee's approach to valve stroke timing comparisons is a more conservative approach than the code requirement. It is recommended that relief from the code requirement be granted as requested. However, in the interest of maintaining complete data, the granting of this relief request does not relieve the licensee from keeping a running record of valve stroke times from each test.

2.2 M-230 Reactor Coolant System

2.2.1 The following are valves in the IST submittal which the licensee intends to test to the applicable code requirement.

Valve	Category (following SER meeting)
PSV-1001	C
PSV-1002	C
CV-1054	A
CV-1053	A
CV-1052	A
CV-1065	A
CV-1845	A

2.2.2 The following are valves in the IST submittal that will be recategorized in the resubmittal as a result of the SER meeting.

Valve	From C?tegory	To Category
CF 1A	BC	C
CF 1B	AC	C
DH-13A	AC	C
DH-13B	AC	C
DH-17	AC	C
DH-18	AC	C
DH-14A	BC	C
DH-14B	BC	C
MU-34A	AC	C
MU-34B	AC	C
MU-34C	AC	C
MU-34D	AC	C

2.2.3 The following are valves that were not listed in the IST submittal and were agreed upon to be considered safety related and therefore will be added to the resubmittal as shown.

Valve	Category
CV-1050	B

2.2.4 The following are valves that were listed in the IST submittal and were agreed upon to be non-safety related (defined by "NRC Staff Guidance For Preparing Pump/Valve Testing...," dated January 13, 1978) and were deleted from the IST program.

Valve

PSV-1000

2.2.5 Category C Valves

2.2.5.1 Relief Request: CF-1A, CF-1B

The check valves will be part stroke exercised at refueling outages.

Code Requirement: Check valves shall be exercised at least once every 3 months, with the exceptions as shown in the following paragraph.

Check valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation the check valve shall be part stroke exercised during plant operation and full stroked during each cold shutdown. In case of frequent cold shutdowns these check valves need not be exercised more often than once every 3 months. Normally closed check valves that cannot be operated during normal plant operation shall be specifically identified by the Owner and shall be full stroke exercised during each cold shutdown. In case of frequent cold shutdowns these check valves need not be exercised more often than once every 3 months.

Licensee Basis for Request: CF-1A and CF-1B cannot be full or part stroke exercised every 3 months while the plant is in normal operation. These check valves are not designed to be manually stroked, and can only be exercised by flow. Flowing during normal plant operation from the CFT's is not possible due to the fact that the differential pressure between the RCS (approximately 2250 psig) and the CFTs (approximately 600 psig) acts to maintain check valves DH-14A and DH-14B closed. These check valves are in series with CF-1A and CF-1B respectively, therefore preventing flow thru CF-1A and CF-1B from the CFTs.

Evaluation: The Core Flood Discharge check valves CF-1A and CF-1B are valves that form part of a redundancy with check valves DH-14A and DH-14B respectively, whose function is to isolate the lower design pressure Core Flooding Tanks (CFTs) from the higher operating pressure Reactor Coolant System (RCS) during normal plant operation. These check valves automatically open during a large break LOCA when the (RCS) pressure drops below approximately 600 psig and allows water from the CFTs to flood the reactor core.

The licensee has indicated that a low flow test is conducted on these valves at refueling outages. The degree of valve stroking by this test was not readily apparent during the review meeting. The licensee was asked, and has agreed to review the testing performed and provide

information that would indicate the degree of valve exercising obtainable. Also, if the CVs cannot be full stroke exercised during cold shutdown or refueling outages, the licensee is to provide technical justification as to why full stroking is not practical.

Until this information is received and reviewed, it is recommended that any request for relief from full stroking these CVs at cold shutdown or refueling outages be denied.

2.2.6 Cold Shutdown Testing of Valves

The following are valves in this system that the licensee cannot exercise every 3 months and intends to full stroke exercise at cold shutdowns. The valves are normally closed and therefore satisfy the code requirement. The intent of this section is to satisfy the requirements of the NRC letter dated January 13, 1978, i.e., "NRC Staff Guidance For Preparing Pump and Valve Testing Program Descriptions and Associated Relief Requests Pursuant to 10 CFR 50.55 a (g)," specifically section 5, page 7.

2.2.6.1 Code Requirement (Category C check valves)

DH-13A, DH-13B, DH-17, DH-18 DH-14A, DH-14B, MU-34A, MU-34B, MU-34C, MU-34D

Check valves shall be exercised at least once every 3 months, with the exceptions as shown in the following paragraph.

Check valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation the check valve shall be part stroke exercised during plant operation and full stroked during each cold shutdown. In case of frequent cold shutdowns these check valves need not be exercised more often than once every 3 months. Normally closed check valves that cannot be operated during normal plant operation shall be specifically identified by the Owner and shall be full stroke exercised during each cold shutdown. In case of frequent cold shutdowns these check valves need not be exercised more often than once every 3 months.

Licensee Basis:

DH-13A, DH-13B, DH-17, DH-18

Valves cannot be exercised during normal plant operation due to RCS pressure maintaining other check valves in series and downstream of the subject check valves closed.

DH-14A, DH-14B

Valves cannot be exercised during normal plant operation due to RCS pressure differential acting to keep these check valves closed.

MU-34A, MU34B, MU-34C

Valves cannot be exercised during normal plant operation. Flow is required thru the check valves in order to exercise them. Test fluid would have to come from the Make-up Tank. This supply would thermally shock the HPI nozzles.

MU-34D

Valve cannot full stroke exercised during normal plant operation. Full stroking the valve requires high make-up flow which can cause problems in make-up/letdown control.

Evaluation: The Low Pressure Injection check valves DH-13A/DH-18 and DH-13B/DH-17 are valves that form part of a redundancy with check valves DH-14A and DH-14B respectively, whose function is to isolate the lower design pressure Decay Heat Removal System (Low Pressure Injection) from the higher operating pressure Reactor Coolant System (RCS) during normal plant operation. These check valves open during a large break LOCA when the Decay Heat Removal pumps are activated to operate in the low pressure injection mode.

DH-13A, DH-13B, DH-17 and DH-18 cannot be full or part stroke exercised every 3 months while the plant is in normal operation. These check valves are not designed to be manually stroked, and can only be exercised by flow. Flowing during normal plant operation is not possible, since the differential pressure between the RCS and the Decay Heat Removal System (even with the DHR pumps operating) is enough to keep check valves DH-14A and DH-14B closed. These check valves are in series with DH-13A/DH-18 and DH-13B/DH-17 respectively, thereby preventing flow thru DH-13A, DH-18, DH-13B and DH-17.

DH-13A, DH-18 DH-13B and DH-17 will be full stroke exercised during cold shutdowns when the Decay Heat Removal System is in operation. The licensee has the capability to control and monitor flowrate through these check valves while in the Decay Heat Removal mode, thereby assuring the valves are stroked to the position required to fullfill their safety function.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of part or full stroke exercising every 3 months, and full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code.

The Low Pressure Injection check valves DH-14A and DH-14B are valves that form part of a redundancy with check valves CF-1A/DH-13A and CF-1B/DH-13B respectively whose function is to isolate the lower design pressure Core Flooding Tanks/Decay Heat Removal System (Low Pressure Injection) from the higher operating pressure Reactor Cooling System (RCS) during normal plant operation. These check valves automatically open during a large break LOCA when the RCS pressure drops below approximately 600 psig and allows water from the CFT's to flood the reactor. They remain open when Low Pressure Injection (LPI) flow is initiated and the LPI (DHR) pumps head exceeds the RCS pressure.

DH-14A and DH-14B cannot be full or part stroke exercised every 3 months while the plant is in normal operation as the operating RCS pressure acts against them with a pressure differential of approximately 1600 psig to keep them closed. Both check valves will be full stroke exercised during Cold Shutdowns, when the Decay Heat Removal System is in operation. The licensee has the capability to control and monitor flowrate through the CVs while in the Decay Heat Removal mode thereby assuring the valves are stroked to the position required to fullfill their safety function.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of part or full stroke exercising every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code.

The High Pressure Injection check valves MU-34A, MU-34B and MU-34C form part of a redundancy with valves CV-1227, CV-1228 and CV-1219 respectively whose function is to isolate the HPI section from the Reactor Coolant System (RCS) during normal plant operation. The check valves open during a LOCA when the HPI mode is initiated and the discharge head from the HPI pumps (make-up pumps) exceeds the pressure in the RCS at the time.

MU-34A, MU34B and MU-34C cannot be full or part stroke exercised every 3 months while the plant is in normal operation. The only way to stroke these valves is by opening CV-1227, CV-1228 and CV-1219 and flowing water from the Make-up tank through the check valves. This would thermally shock the HPI nozzles as the Make-up water is approximately 150°F and the nozzles at approximately 550°F.

The 3 check valves will be full stroke exercised at cold shutdown by flowing through each check valve leg at its design HPI flowrate (minimum).

Based on the above, it is concluded that the licensee has demonstrated the impracticality of part or full stroke exercising every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code.

The High Pressure injection check valve MU-34D is in operation (i.e., part stroke exercising when the plant is in normal operation) as it is in the flowpath of the normal makeup flow. Full stroking the valve every 3 months during normal plant operation is not practical as approximately 250 GPM is required to pass through the valve when it operates in the HPI mode. This required flowrate exceeds the letdown control capability and could result in a high pressurizer level reactor trip.

MU-34D will be full stroke exercised at cold shutdown by flowing through its associated leg's design HPI flowrate (minimum).

Based on the above, it is concluded that the licensee has demonstrated the impracticality of full stroke exercising every 3 months

and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code.

2.2.6.2 Code Requirement (Category B Valves)

CV-1050 (Added to IST at SER meeting)

Category B valves shall be exercised at least once every 3 months with the exceptions as shown in the following paragraph.

Valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation the valve shall be part stroke exercised during plant operation and full stroked during each cold shut; in case of frequent cold shutdowns these valves need not be exercised more often than once every 3 months. Normally closed valves that cannot be operated during normal plant operation shall be specifically identified by the Owner and shall be full stroke exercised during each cold shutdown; in case of frequent cold shutdowns these valves need not be exercised more often than once every 3 months.

Licensee Basis: CV-1050

This valve is pressure interlocked with the RCS pressure.

Evaluation: CV-1050

The Decay Heat Dropline valve CV-1050 in conjunction with CV-1410 (Drawing M-232) isolates the lower design pressure Decay Heat Removal System (DHRS) from the higher operating pressure Reactor Coolant System (approximately 2250 psig) while the plant is in normal operation. The valve is opened when the DHRS is used during normal shutdown conditions.

CV-1050 is pressure interlocked with the RCS pressure and cannot be exercised open when the plant is in normal operation i.e. with the RCS at 2250 psig. The valve is full stroke exercised at cold shutdowns when the Decay Heat Removal system is in operation.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of part or full stroke exercising every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the code.

2.3 M-206 Steam Generator Secondary System

2.3.1 The following are valves in the IST submittal which the licensee intends to test to the applicable code requirements.

Valve	Category (Following SER meeting)	Valve	Category (Following SER meeting)
CV-2667	B	PSV-2690	C

CV-2666	B	PSV-2689	C
PSV-2692	C	PSV-2688	C
PSV-2693	C	PSV-2687	C
PSV-2694	C	PSV-2686	C
PSV-2695	C	PSV-2685	C
PSV-2696	C	PSV-2684	C
PSV-2697	C	PSV-2691	C
PSV-2698	C	CV-2617	B
PSV-2699	C	CV-2620	B
CV-2670	B	CV-2626	B
CV-2627	B		

2.3.2 The following are valves in the IST submittal that will be re-categorized in the resubmittal as a result of the SER meeting.

Valve	From Category	To Category
CV-2691	A	B
CV-2692	A	B
FW-13A	AC	C
FW-13B	AC	C
FW-7A	AC	C
FW-7B	AC	C
CV-2680	A	B
CV-2630	A	B

2.3.3 Category B

2.3.3.1 Relief Request: CV-2680, CV-2630

These valves will be full stroke exercised at cold shutdown.

Code Requirement: Category B valves shall be exercised at least once every 3 months with the exceptions as shown in the following paragraph.

Valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation the valve shall be part stroke exercised during plant operation and full stroked during each cold shutdown. In case of frequent cold shutdowns these valves need not be exercised more often than once every 3 months. Normally closed valves that cannot be operated during normal plant operation shall be specifically identified by the Owner and shall be full stroke exercised during each cold shutdown. In case of frequent cold shutdowns these valves need not be exercised more often than once every 3 months.

Licensee Basis for Request: Exercising CV-2680 and CV-2630 would interrupt main feedwater supply to the Steam Generators during normal plant operation.

Evaluation: The motor operated Main Feed Water Valves CV-2680 and CV-2630 are in the main feedwater lines and are open when the plant is in normal operation. Their emergency function is to close and form

part of containment.

CV-2680 and CV-2630 cannot be full or part stroke exercised every 3 months when the plant is in normal operation. Part stroking would interrupt feedwater flow, and affect steam generator water level which could result in a reactor trip.

Full stroke exercising to the required closed position would completely shutoff the main feedwater flow to the steam generators and result in a plant shutdown. Both valves will be full stroke exercised at cold shutdown.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising these valves every 3 months and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted as requested.

2.3.4 Category C

2.3.4.1 Relief Request: FW-7A and FW-7B

These check valves will be full stroke exercised at cold shutdowns.

Licensee Basis for Request: Exercising FW-7A and FW-7B would interrupt main feed water supply to the Steam Generators during normal plant operation.

Code Requirement: Check valves shall be exercised at least once every 3 months with the exceptions as shown in the following paragraph.

Check valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation the check valve shall be part stroke exercised during plant operation and full stroked during each cold shutdown. In case of frequent cold shutdowns these check valves need not be exercised more often than once every 3 months. Normally closed check valves that cannot be operated during normal plant operation shall be specifically identified by the Owner and shall be full stroke exercised during each cold shutdown. In case of frequent cold shutdowns these check valves need not be exercised more often than once every 3 months.

Evaluation: The Main Feedwater check valves FW-7A and FW-7B are in the main feed water lines and are open when the plant is normal operation. Their emergency function is to close and form part of containment.

FW-7A and FW-7B cannot be full stroke exercised closed every 3 months. Doing so would require shutdown of the main feedwater flow to the steam generators resulting in a plant shutdown. Both check valves will be full stroke exercised at cold shutdowns.

Based on the above, it is concluded that the licensee has demonstrated

the impracticality of exercising these check valves closed every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted as requested.

2.3.5 Cold Shutdown Testing of Valves

The following are valves in this system that the licensee cannot exercise every 3 months and intends to full stroke exercise at cold shutdowns. The valves are normally closed and therefore satisfy the code requirement. The intent of this section is to satisfy the requirements of the NRC letter dated January 13, 1978, i.e. "NRC Staff Guidance For Preparing Pump and Valve Testing Program Descriptions and Associated Relief Requests Pursuant to 10 CFR 50.55 a (g) Specifically section 5, page 7.

2.3.5.1 Code Requirement: (Category B type valves)

CV-2691 and CV-2692. See paragraph 2.2.6.2 Code Requirement

Licensee Basis for Request: Full stroke exercising CV-691 and CV-2692 during plant operation could result in plant shutdown.

Evaluation: The Main Steam Isolation valves CV-2691 and CV-2692 are open during normal plant operation and their function is to close to provide for containment isolation under certain emergency conditions.

CV-2691 and CV-2692 are part stroke exercised every 3 months as part of the plant's "Steam Line Break Instrument and Control Test." The valves cannot be full stroke exercised during normal plant operation. Doing so would shutoff the main steam supply and result in a reactor trip. The valves will be full stroked at cold shutdowns.

The testing conducted on these valves satisfies the code requirement. Based on the above, it is concluded that the licensee has demonstrated the impracticality of full stroke exercising every 3 months.

2.3.5.2 Code Requirement: (Category C type valve)

FW-13A and FW-13B. See paragraph 2.2.5.1 Code Requirement

Licensee Basis for Request: The testing of these valves could result in high water content in steam and/or reactor trip.

Evaluation: The Emergency Feedwater check valves FW-13A and FW-13B are in the closed position when the plant is in normal operation and open when the Emergency Feedwater Pumps are activated to provide emergency feedwater to the steam generator. FW-13A and FW-13B cannot be full or part stroke exercised every three months while the plant is in normal operation. The valves are not designed to be manually stroked and can only be exercised by flowing. Flowing them would require flow into the Steam Generators through the emergency feedwater lines thus

affecting Steam Generator water level. To high a level could result in excessive water in the steam or a high level steam generator reactor trip.

FW-13A and FW-13B will be full stroke exercised at cold shutdowns.

Based on the above, it is concluded that licensee has demonstrated the impracticality of part or full stroke exercising every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code.

2.4 M-231 Make-up and Purification System

2.4.1 The following are valves in the IST submittal which the licensee intends to test to the applicable code requirements.

Valve	Category (following SER meeting)
*CV-1219	B
*CV-1227	B
*CV-1228	B
MU-19A	C
MU-19B	C
MU-19C	C

*Note: Motor operated valves CV-1219, CV-1228 and CV-1227 are in the High Pressure Injection System (HPIS) between the RCS and HPI pumps. The valves are closed during normal plant operation and form part of a redundancy with check valves MU-34A, 34B, and 34C that isolates the HPIS from the RCS. The valves are opened during an emergency condition when HPI flow is required.

The licensee intends to full stroke exercise the subject valves every 3 months per code, and has agreed to have provisions that would enable him to determine the pressure conditions existing between them and their respective downstream check valves prior to exercising. In this case, the licensee would be in compliance with the NRC Staff Guidance concerning operation of powered valves upstream of check valves that interface with the RCS.

2.4.2 The following are valves in the IST submittal that will be recategorized in the resubmittal as a result of the SER meeting.

Valve	From Category	To Category
CV-1234	A	B
MU-19A	BC	C
BW-3	BC	C
MU-19B	BC	C
MU-19C	BC	C
BW-2	BC	C

2.4.3 Category A, AC, and AE

2.4.3.1 Relief Request: CV-1214, CV-1216, and CV-1221

These valves will be full stroke exercised at cold shutdown

CV-1273, CV-1272, CV-1271, CV-1270, and CV-1274

These valves will be full stroke exercised at cold shutdown

Code Requirement: Category A valves shall be exercised at least once every 3 months with the exceptions as shown in the following paragraph.

Valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation the valve shall be part stroke exercised during plant operation and full stroked during each cold shutdown. In case of frequent cold shutdowns these valves need not be exercised more often than once every 3 months. Normally closed valves that cannot be operated during normal plant operation shall be specifically identified by the Owner and shall be full stroke exercised during each cold shutdown. In case of frequent cold shutdowns these valves need not be exercised more often than once every 3 months.

Licensee Basis for Request: Exercising valves CV-1214, CV-1216, and CV-1221 can disrupt or shut down the letdown flow.

Exercising valves CV-1273, CV-1272, CV-1271, CV-1270, and CV-1274 can lead to damage of Reactor Coolant Pump Seals.

Evaluation: CV-1214, CV-1216, and CV-1221 are in the Letdown lines downstream of the Letdown Heat Exchangers. The valves are open during normal plant operation, and their emergency function is to close to form part of containment.

CV-1214, CV-1216, and CV-1221 cannot be full or part stroke exercised every 3 months while the plant is in normal operation. Exercising partially or full stroke disrupts or completely shuts off the letdown flow. This can have an affect on pressurizer level which could result in a reactor trip. These valves will be full stroke exercised at cold shutdowns.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted as requested.

Motor operated controlled bleed-off valves CV-1273, CV-1272, CV-1271, CV-1270, and CV-1274 are in the bleed-off lines from the reactor coolant pumps. The valves are open during normal plant operation, and their emergency function is to close to form part of containment.

The valves cannot be part stroke exercised at all due to their control logic. Full stroke exercising every 3 months during normal plant operation is impractical as this shuts off the bleed-off flow from the pump seals. This could cause pumps seal damage. The valves will be full stroke exercised at cold shutdowns.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfy the intent of the code. It is recommended that code relief be granted as requested.

2.4.4 Category B Valves

2.4.4.1 Relief Request: CV-1300, CV-1301

These valves will be full stroke exercised at cold shutdown.

CV-1234

This valve will be full stroke exercised at cold shutdown.

Code Requirement: See paragraph 2.2.6.2 Code Requirement

Licensee Basis for Request: Exercising valves CV-1300, CV-1301 to the code can cause damage to operating Make-up Pump.

Exercising valve CV-1234 to the code can affect water chemistry and reactor coolant inventory.

Evaluation: The motor operated valves CV-1300 and CV-1301 are in the recirculation line from the high pressure Make-up Pumps to the reactor coolant make-up tank. The valves are open during normal plant operation to allow the operating pumps to discharge sufficient flow to prevent pump damage. Both valves are closed during an emergency when high pressure injection (HPI) is required, to isolate the recirculation line and assure full (design) HPI flow is provided directly to the Reactor Coolant System.

The valves cannot be part stroke exercised due to their control logic. Full stroke exercising every 3 months during normal plant operation is impractical as full stroking shuts off the recirculation line and reduces the flowrate to levels that would lead to pump damage. CV-1300 and CV-1301 will be full stroke exercised at cold shutdowns.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted as requested.

The motor operated make-up supply valve CV-1234 is in the makeup line and is open during normal plant operation. Its emergency function is to close, and form part of containment.

CV-1234 cannot be part stroke exercised due to its control logic. Full stroke exercising every 3 months during normal plant operation is impractical as this shuts off makeup flow which is required for water chemistry purposes, and reactor coolant inventory i.e., the pressurizer level is affected, which can result in a reactor trip. The valve will be full stroke exercised at cold shutdowns.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted as requested.

2.4.5 Cold Shutdown Testing Of Valves

The following are valves in this system that the licensee cannot exercise every 3 months and intends to full stroke exercise at cold shutdowns. The valves are normally closed and therefore satisfy the code requirement. The intent of this section is to satisfy the requirements of the NRC letter dated January 13, 1978, i.e., "NRC Staff Guidance for Preparing Pump and Valve Testing Program Descriptions and Associated Relief Requests Pursuant to 10 CFR 50.55 a (g), Specifically section 5, page 7.

2.4.5.1 Code Requirement: (Category B) CV-1220

See paragraph 2.2.6.2 Code Requirement

Licensee Basis: Exercising CV-1220 to the code could disrupt makeup flow.

Evaluation: Motor operated valve CV-1220 is in the HPIS between the RCS and HPI pumps, and on a common header with the makeup flow. During normal plant operation, the valve is closed and isolates the HPI system from the makeup flow/pressure. The valve is opened during emergency conditions when HPI flow is required to the RCS.

Full or part stroke exercising the valve during normal plant operations could cause flow disruptions in the make-up flow possibly resulting in a reactor trip. CV-1220 will be full stroke exercised at cold shutdown.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code.

2.4.5.2 Code Requirement: (Category C) BW-2 and BW-3

See paragraph 2.2.5.1 Code Requirement

Licensee Basis: Exercising the check valves would require flowing water from the BWST to the makeup pump.

Evaluation: The Borated Water Storage Tank BWST to Makeup Pumps Check Valves BW-2 and BW-3 are closed during normal plant operations. Their function is to open in an emergency condition when water from the BWST is supplied to the makeup pumps in the HPI mode of operation.

BW-2 and BW-3 cannot be full or part stroke exercised every 3 months while the plant is in normal operation. The valves are not designed to be manually stroked and can only be exercised by flowing water supplied from the BWST. This highly borated water from the BWST would be supplied directly to the operating makeup pump and increase the boron concentration of the reactor coolant thereby affecting reactivity/power. Both check valves will be full stroke exercised at cold shutdowns.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code.

2.5 M-232 Decay Heat Removal System

2.5.1 The following are valves in the IST submittal which the licensee intends to test to the applicable code requirement.

Valve	Category (Following SER Meeting)
CV-1404	B
CV-1407	B
CV-1408	B
BW-4A	C
BW-4B	C
DH-2A	C
DH-2B	C
CV-1428	E
CV-1429	E

2.5.2 The following are valves in the IST submittal that will be re-categorized in the resubmittal as a result of the SER meeting.

Valve	From Category	To Category
CV-1410	A	B
BW-4A	BC	C
BW-4B	BC	C
CA-61	BC	C
CA-62	BC	C
DH-2A	BC	C
DH-2B	BC	C
CV-1428	B	E
CV-1429	B	E

2.5.3 Category B Valves

2.5.3.1 Relief Request: CV-1414 and CV-1415

No regularly scheduled testing is planned.

Code Requirement:

See paragraph 2.2.6.2 Code Requirement

Licensee Basis for Relief: The valves are open during normal plant operation and their emergency function is to be open.

Evaluation: The motor operated Sump Suction valves CV-1414 and CV-1415 are in the recirculation lines from the sump to the Decay Heat Removal System (DHRS) pumps, and are used during the long term recirculation phase of the Low Pressure Injection mode. CV-1414 and CV-1415 are open during normal plant operation and their function is to stay open during LOCA.

The NRC staff considers the subject valves as passive i.e, an open valve whose function is to remain open during an emergency condition. The staff has determined that the exercising requirement of Code Section XI provides no meaningful information for these passive valves, and relieves the licensee from the 3 month stroke and stroke timing requirement.

2.5.4 Category C Valves

2.5.4.1 Relief Request: CA-61 and CA-62

Valves will be part stroked only, every 3 months.

Code Requirement:

See paragraph 2.2.5.1 Code Requirement.

Licensee Basis for Request: System and test configuration used limit the flowrate through the valves during testing.

Evaluation: The NAOH Discharge check valves CA-61 and CA-62 are closed during normal plant operation. Their function is to open in an emergency condition when CV-1616 and CV-1617 are opened and NAOH is supplied to the Decay Heat Removal pumps (LPI mode)/Reactor Building Spray pumps inlets.

The licensee presently tests the valves every 3 months in what amounts to a part stroke exercise. Condensate water is pumped from a condensate transfer pump through the subject check valves to a test connection upstream of the Reactor Building Spray pumps. The line sizes and configuration of the existing test loop are such that only part stroking is practical at any time (i.e., 3 month intervals, cold shutdowns, or refueling). The licensee has also indicated that there

is no spec. time for the NAOH tank to drain and the draindown could continue over a long period of time (days) with no adverse effects.

The testing presently conducted to check the flowpath to the DHRS/RBS pumps is considered adequate in that flowrate requirement is not as important a factor as determining the integrity of the flowpath. The licensee has demonstrated the adequacy of part stroke exercising and the impracticality of full stroke exercising the check valves. Part stroke exercising is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted as requested.

2.5.5 Cold Shutdown Testing of Valves

The following are valves in this system that the licensee cannot exercise every 3 months and intends to full stroke exercise at cold shutdowns. The valves are normally closed and therefore satisfy the code requirement. The intent of this section is to satisfy the requirements of the NRC letter dated January 13, 1978, i.e., "NRC Staff Guidance for Preparing Pump and Valve Testing Program Descriptions and Associated Relief Requests Pursuant to 10 CFR 50.55 a (g), Specifically section 5, page 7.

2.5.5.1 Code Requirement: (Category B)

CV-1410
CV-1405 and CV-1406
CV-1400 and CV-1401
See paragraph 2.2.6.2 Code Requirement

Licensee Basis:

Valve CV-1410 is pressure interlocked during plant operation.

The sequence s) required for stroking valves CV-1405 and CV-1406can result in pump line air entrapment or potential loss of system function during plant operation.

There is no existing method available to determine the integrity of the check valves downstream of CV-1400 and CV-1401. There is a potential for intersystem LOCA if the subject valves are exercised during plant operation.

Evaluation: The Decay Heat Dropline valve CV-1410 in conjunction with CV-1050 (Drawing M-230) isolates the lower design pressure Decay Heat Removal System (DHRS) from the higher operating pressure Reactor Coolant System (approximately 2250 psig) while the plant is in normal operation. The valve is opened when the DHRS is used during normal shutdown conditions.

CV-1410/1050 are pressure interlocked with the RCS pressure and cannot be exercised open when the plant is in normal operation i.e., with the RCS at 2250 psig. The valve is full stroke exercised at cold shutdown when the Decay Heat Removal system is in operation.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of part or full stroke exercising every 3 months, and that full stroke exercising at cold shutdown is the practical alternative.

The motor operated Sump Suction Valves CV-1405 and CV-1406 are in the recirculation lines from the sump to the Decay Heat Removal System (DHRS) pumps, and are used during the long term recirculation phase of the Low Pressure Injection mode.

CV-1405 and CV-1406 are closed during normal plant operation and their function is to open at some time after the LOCA condition.

The licensee has explained that if CV-1405 (CV-1406) is exercised open every 3 months while the plant is in normal operation, CV-1414 (CV-1415) would have to be closed, or the lines from the sump to the DHRS pump inlets will drain out. Both lines are required to be primed or the DHRS pump operation can be affected when needed in the LPI mode. Re-priming the lines at this frequency is impractical and also, it is not know how long a time is required to effectively bleed the air from the lines.

Placing valves CV-1414 and CV-1415 in the closed position puts these valves in a nonconservative position if they fail closed, i.e., the respective recirculation lines' function is lost. The valves will be full stroke exercised at cold shutdowns.

Based on this, it is concluded that the licensee has deomonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code.

The licensee proposed to exercise the motor operated Decay Heat Pump Isolation valves CV-1400 and CV-1401 every 3 months per the Code. The staff asked if there was any means to determine the pressure level that existed between CV-1400 and CV-1401 and their respective downstream check valves (DH-13A/DH-17 and DH-13B/DH-18) prior to opening the subject valves. The licensee replied that no provisions existed nor could they be easily provided (Class-I pipe, inside containment etc.). Therefore, based on the Staff Guidance Letter, dated November 1976, the staff recommended that the valves be full stroke exercised at cold shutdowns instead of the 3 month interval. The licensee agreed to the recommendation, and will show the valve to be full stroked at cold shutdowns in the IST resubmittal.

2.6 M-233 Chemical Addition System

2.6.1 The following are valves in the IST submittal that the licensee intends to test to code.

Valve	Category
CV-1667	A

2.6.2 The following are valves that were not listed in the IST submittal and were agreed upon to be safety related and therefore will be added to the resubmittal as shown. The valves will be tested to code requirements.

Valves	Category
CV-1617	B
CV-1618	B
CA-49	E

2.7 M-234 Intermediate Cooling System

2.7.1 Category A, AC or AE Valves

Relief Request:

CV-2234 will be full stroke exercised at cold shutdown.

CV-2235 will be full stroke exercised at cold shutdown.

CV-2220 and CV-2221 will be full stroke exercised at cold shutdown.

CV-2233, CV-2215, and CV-2214 will be full stroke exercised at cold shutdown.

Code Requirement: Category A valves shall be exercised at least once every 3 months with the exceptions as shown in the following paragraph.

Valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation the valve shall be part-stroke exercised during plant operation and full stroked during each cold shutdown; in case of frequent cold shutdowns these valves need not be exercised more often than once every 3 months. Normally closed valves that cannot be operated during normal plant operation shall be specifically identified by the Owner and shall be full-stroke exercised during each cold shutdown; in case

of frequent cold shutdowns these valves need not be exercised more often than once every 3 months.

Licensee Basis for Request:

Exercising valve CV-2234, shuts off cooling water to equipment.

Exercising valve CV-2235, shuts off cooling water to equipment.

Exercising valves CV-2220 and CV-2221, shuts off cooling water to equipment.

Exercising valves CV-2233 and CV-2214, shuts off cooling water to equipment.

Evaluation: The air operated valve CV-2234 is in the cooling water line from the chillers to the RC pump motor air and lube oil coolers. The valve is open during normal plant operation, and is required to close during an emergency condition to form part of containment. The valve is a full open/full close type only.

CV-2234 cannot be full stroke exercised closed every 3 months during normal plant operation. Closing the valve shuts off the cooling water supply to the RC pump motor air and lube oil coolers. This could result in pump motor damage and plant shutdown. CV-2234 will be full stroke exercised during cold shutdowns.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted as requested.

The motor operated valve CV-2235 is in the cooling water line from the Control Rod Drive Cooling Water pumps to the Control Rod Drive cooling coils. The valve is open during normal plant operation, and is required to close during an emergency condition to form part of containment. The valve can only be full stroke exercised due to its control logic.

CV-2235 cannot be full stroke exercised closed every 3 months during normal plant operation. Closing the valve shuts off the cooling water supply to the Control Rod Drive Cooling coils. This could result in damage to the control rod drives due to overheating. CV-2235 will be full stroke exercised at cold shutdowns.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted as requested.

The motor operated valves CV-2220 & CV-2221 are in series in the cooling water outlet lines from the RC pump motor air and lube oil coolers, and the control Rod Drive cooling coils. Both valves are open when the plant is in normal operation, and are required to close during an emergency condition to form part of containment. The valves can only be full stroke exercised due to their control logic.

CV-2220 and CV-2221 cannot be full stroke exercised closed every 3 months during normal plant operation. Closing either valve stops the cooling water supply to the RC pump motor air and lube oil coolers, and the Control Rod Drive Cooling Coils. This could result in damage to the equipment.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted as requested.

CV-2233, CV-2215, and CV-2214 are air operated valves that are only capable of being full stroke exercised. CV-2233 is located upstream of the Letdown Coolers, and CV-2214 and CV-2215 are in series downstream of the Letdown Colers and RC Pump Seal Heat Exchangers. The valves are open during normal plant operation when cooling water is required by the equipment mentioned. All three valves are required to close during an emergency condition to form part of containment.

The subject valves cannot be full stroke exercised closed while the plant is in normal operation. Closing either CV-2233, CV-2215, and CV-2214 stops cooling water through the Letdown Coolers. This could result in a temperature increase in the letdown, possibly causing damage to the purification demineralizers, or can result in an overtemperature shutdown of the letdown leg. Closing either CV-2215 or CV-2214 stops cooling water from flowing through the RC Pump Seal Heat Exchangers which could result in pump seal damage. The valves will be full stroke exercised at cold shutdowns.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns is actical alternative that satisfies the intent of the code. It is mended that code relief be granted as requested.

2.8 M-236 Reactor Building Spray and Core Flooding Systems

2.8.1 The following are valves in the IST submittal that the licensee intends to test to the applicable code requirements.

Valve	Category
BW-6A	C
BW-6B	C
CV-2410	B
CV-2411	B
CV-2400	B
CV-2401	B

2.8.2 The following are valves in the IST submittal that will be re-categorized in the resubmittal as a result of the SER meeting.

Valve	From Category	To Category
BW-6A	BC	C
BW-6B	BC	C
CA-90A	BC	C
CA-90B	BC	C
BS-4A	BC	C
BS-4B	BC	C

2.8.3 Category B Valves

2.8.3.1 Relief Request: CV-2415 and CV-2419

No regularly scheduled stroke testing is planned.

Code Requirement:

See paragraph 2.2.6.2 Code Requirement

Licensee Basis for Request: Exercising valve closed could cause loss of CFT function.

Evaluation: The motor operated Core Flood Tank (CFT) outlet valves CV-2415 and CV-2419 are open during normal and emergency plant conditions. Exercising the valves (close-open) every 3 months during normal plant operation places the valves in a non-conservative position i.e. closed. If a failed closed condition occurred during testing, the availability of a CFT would be lost and the reactor would eventually have to be shutdown until corrective action is taken. The valves are closed during the process of cold shutdowns and refuelings as a normal procedure.

Based on the above, it is recommended that code relief be granted as requested.

NOTE: The NRC staff will review CV-2415 and CV-2419 for possible recategorization to E, and notify the licensee if it is recommended that the valves be recategorized. Until notified of a change, the valves will remain Category B, with the justification for not exercising every 3 months as presented.

2.8.4 Category C Check Valves

2.8.4.1 Relief Request: CA-90A and CA-90B will be part stroke exercised only every 3 months.

BS-4A and BS-4B will be air flow tested every five years.

Code Requirement:

See paragraph 2.2.5.1 Code Requirement

Licensee Basis for Request:

Systems and test configuration used limit the flowrate through check valves CA-90A and CA-90B during testing.

BS-4A and BS-4B will be tested when air flow tests are conducted on Reactor Building spray headers.

Evaluation: The Sodium Thiosulfate Tank (STT) outlet check valves CA-90A and CA-90B are closed during normal plant operation. Their function is to open in an emergency condition when CV-2410 and CV-2411 are opened and sodium thiosulfate is supplied to the Reactor Building Spray (RBS) pumps inlets.

The licensee presently tests the subject valves every 3 months in what amounts to a part stroke exercise. The sodium thiosulfate is gravity drained from the tank through CA-90A and CA-90B to a test connection upstream of RBS pumps. The system configuration is such that the only way to full stroke the check valves at any time (3 months, cold shutdowns, refueling) is to pump through the RBS pumps thereby spraying containment. The licensee has also indicated that there is no specific time for the STT to drain, and the draindown could continue over a long period of time (days) with no adverse effects.

The testing presently conducted to check the sodium thiosulfate flowpath to the RBS pumps is considered adequate in that the flowrate requirement is not as important a factor as determining the integrity of the flowpath. The licensee has demonstrated the adequacy of part stroke exercising, and impracticality of full stroke exercising the

check valves. Part stroke exercising is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted as requested.

The Reactor Building Spray (RBS) Pump Discharge check valves BS-4A and BS-4B are closed during normal plant operation, and are opened by the discharge head of the RBS pumps when the pumps are activated during the emergency condition.

The licensee presently proposes to air flow test these valves every 5 years when the RB spray headers are air flow checked. The check valves are 8.0 inch size, and the staff questioned the proposed air test as to the possibility of seat leakage around a stuck closed valve leading to the belief that the valve was part stroke opened.

The licensee was asked and has agreed to review the testing on the subject valves and provide reasons for not satisfying the code. This should include technical information as necessary to support the planned testing if it does not satisfy the code.

Until this information is received and reviewed, it is recommended that any request for relief from the code exercising requirements be denied at this time.

2.9 M-261 Heating, Ventilating and Air Conditioning - Reactor Building

2.9.1 The following are valves in the IST submittal which the licensee intends to test to the applicable code requirement.

Valve	Category
CV-7443	A
CV-7444	A
CV-7445	A
CV-7446	A
CV-7447	A
CV-7448	A
CV-7449	A
CV-7450	A
CV-7453	A
CV-7454	A

2.9.2 Category A, AC, AE Valves

2.9.2.1 Relief Request: CV-7401, CV-7402, CV-7403 and CV-7404

No regularly scheduled stroke testing is planned for these valves.

Code Requirement:

See paragraph 2.4.3.1 Code Requirement

Licensee Basis for Request: The valves are normally closed and their emergency position is also closed.

Evaluation: The Purge Air valves CV-7401 and CV-7402, CV-7403 and CV-7407 are in the Purge Air System. The valves are closed during normal plant operation, and their emergency function is to stay closed.

The NRC staff considers the subject valves as passive, i.e. a closed valve whose function is to remain closed during the emergency condition. The staff has determined that the exercising requirement of Code Section XI provides no meaningful information for these passive valves, and relieves the licensee from the 3 month stroke and stroke timing requirements.

2.10 M-209 and M-210 Service Water

2.10.1 The following are valves in the IST submittal which the licensee intends to test to the applicable Code Requirements.

Valve	Category
CV-3800 thru CV-3810	B
CV-3821	B
CV-3822	B
CV-3840	B
CV-3841	B
CV-3812 thru CV-3815	B

2.10.2 The following are valves in the IST submittal that will be re-categorized in the resubmittal as a result of the SER meeting.

Valve	From Category	To Category
CV-3823	B	E
CV-3824	B	E

NOTE: Testing will meet applicable code requirement.

2.10.3 Category B Valves

2.10.3.1 Relief Request: CV-3640 thru CV-3646, CV-3811, CV-3820, CV-3900, CV-3902, CV-3903, and CV-3905.

The valves will be full stroke exercised at cold shutdown.

Code Requirement:

See paragraph 2.2.6.2 Code Requirement

Licensee Basis for Request: This information is still required, and will be provided by the licensee.

Evaluation: The licensee has agreed to provide the rational for full stroke exercising the subject valves at cold shutdown intervals. Until this information is received and reviewed, it is recommended that the request for relief be denied at this time.

2.11 M-222 Chilled Water

2.11.1 The following are valves in the IST submittal that will be recategorized in the resubmittal as a result of the SER meeting.

Valve	From Category	To Category
CV-6202	B	A
CV-6203	B	A
CV-6205	B	A

2.11.2 Category B Valves

2.11.2.1 Relief Request: CV-6202, CV-6203, CV-6205

The valves will be full stroke exercised at cold shutdowns.

Code Requirement:

See paragraph 2.2.6.2 Code Requirement

Licensee Basis for Request: Exercising the valves shuts off cooling water to RB chilled water cooling coils.

Evaluation: The air operated Chilled Water Isolation valves CV-6202, CV-6203, and CV-6205 are open during normal plant operation. Their function during the emergency condition is to close and form part of containment. The valves can only be exercised full stroke due to their control logic.

Exercising the valves closed every 3 months during normal plant operations stops the coolant water to the Reactor Building Chilled Water Cooling Coils and could result in the chillers triping off. The valves will be full stroke exercised at cold shutdowns.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted as requested.

2.12 M-213 Drains and Vents

2.12.1 The following are valves in the IST submittal which the licensee intends to test to the applicable code requirement.

Valve	Category
CV-5611	A
CV-5612	A

2.12.2 Category A, AC, and AE Valves

2.12.2.1 Relief Request: CV-4400, CV-4446, CV-4803, and CV-4804

No regularly scheduled stroke testing is planned.

Code Requirement:

See paragraph 2.4.3.1 Code Requirement

Licensee Basis for Request: Valves are typically closed during normal plant operation and their emergency position is closed.

Evaluation: CV-4400 (R.B. Sump Drain), CV-4446 (R.B. Sump Drain), CV-4803 (R.B. Vent to Gaseous Waste), and CV-4804 (R.B. Vent to Gaseous Waste) are valves that are intermittantly opened to perform drain and vent functions (then closed) when the plant is in normal operation. The valves are containment isolation valves (CIVs) and are normally closed. Their safety related position is closed.

The NRC staff considers the subject CIVs as passive, i.e., a closed valve whose function is to close. The staff has determined that the exercising requirements of code Section XI provides no meaningful information for passive valves and relieves the licensee from the 3 month stroke and stroke timing requirements.

2.13 M-237 Sampling

2.13.1 Valves CV-1814 and CV-1816 are listed in the submittal as Category A. The licensee has indicated that these valves are not leak checked per code. If they are not to be leak tested to code, it is recommended that the valves be recategorized to B.

2.13.2 Category A, AC, AE

2.13.2.1 Relief Request: CV-1814 and CV-1816

The valves will not be individually leak tested. Also, no regularly scheduled stroke testing is planned.

Code Requirement:

See paragraph 2.4.3.1 Code Requirement

Licensee Basis for Request: Integrated Appendix j leak testing is conducted.

Valves are typically closed during normal plant operation, and their emergency position is closed.

Evaluation: CV-1814 and CV-1816 are valves that are intermittantly opened for samplings (then closed) when the plant is in normal operation. The valves are containment isolation valves and are normally closed. Their position in the emergency mode is also closed.

The NRC staff considers the subject CIVs as passive, i.e. a closed valve whose function is to close. The staff has determined that the exercising requirements of code Section XI provides no meaningful information for passive valves, and relieves the licensee from the 3 month stroke and stroke timing requirements.

Conclusion

The Inservice Testing Program submitted by the Arkansas Power & Light Company for the Arkansas Nuclear One, Unit 1, and modified by this evaluation report is in compliance with the requirements of Section XI of the 1974 Edition and Addenda through the Summer of 1975 of the ASME Boiler and Pressure Vessel Code as required by 10 CFR 50.55 a(g), and NRC Staff guidance letters and briefings. Those items not found to be in compliance with the above, will be addressed in the AP&L response to the SER meeting and evaluated further. AP&L has agreed to attempt to provide a complete response to the IST items by approximately February 15, 1979.

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