VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

October 18, 1995

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

Serial No. 95-514
NL&OS/EJW
Docket Nos. 50-338
50-339
License Nos. NPF-4
License No. NPF-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT NOS. 1 AND 2
INSERVICE TESTING PROGRAM ANOMALIES

The NRC safety evaluation report for North Anna Power Station's ASME Section XI Inservice Testing (IST) Program was received by letter dated October 18, 1994. Appendix A to this report identified 10 anomalies in the program. Responses for each anomaly are provided in Attachment 1.

As a result of the anomalies identified in the NRC safety evaluation report, certain IST program changes have been made. IST program changes have also resulted from incorporating a sampling plan for nonintrusive testing of Safety Injection check valves and from system configuration changes. These changes and the revised program pages are included in Attachments 2 and 3, for North Anna Units 1 and 2, respectively. These changes have been approved by the Station Nuclear Safety and Operating Committee.

If you have any questions concerning our response or IST program changes, please contact us.

Very truly yours,

James P. O'Hanlon

James P. O'Hanlon
Senior Vice President - Nuclear

Attachments

A047
1/1

cc: U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, N.W.
Suite 2900
Atlanta, Georgia 30323

Mr. R. D. McWhorter
NRC Senior Resident Inspector
North Anna Power Station

ATTACHMENT 1

NRC SAFETY EVALUATION OF NORTH ANNA UNITS 1 AND 2 INSERVICE TESTING PROGRAMS REVISION 7

RESPONSES TO IST PROGRAM ANOMALIES

RESPONSE TO
IST PROGRAM ANOMALIES

1. SER Anomaly In TER section 2.1.1.1 Pump Relief Request P-13, the licensee requests relief from the flow rate and discharge pressure instrument accuracy requirements of Section XI, Paragraph IWP-4110, for pumps 1(2)-CH-P-1A, -1B, and -1C, 1(2)-CC-P-1A and -1B, and 1(2)-SW-P-1A, -1B, and -4. The service water pumps are the subject of other relief requests in this submittal; P-9, P-10, and P-12. Taken together, the reviewer does not have adequate information to fully assess the impact of the combination. We recommend that the proposed alternate be authorized pursuant to 10CFR50.55a(a)(3)(ii) with the following provision. The licensee should perform a complete assessment of the impact of the combination of this relief request and requests P-9, P-10, and P-12 as to their ability to assess the operational readiness of these pumps. The results of that assessment should be available for inspection at the facility.

   Virginia Power Response The assessment has been performed with the conclusion that the operational readiness of pumps 1(2)-CH-P-1A, -1B, and -1C, 1(2)-CC-P-1A and -1B, and 1(2)-SW-P-4 can be assessed given the relaxation of instrument accuracies requested by P-13 in combination with P-10 and P-12. The use of Code acceptable discharge pressure gauges has been implemented for pumps 1(2)-SW-P-1A and B and these pumps were removed from P-13. However, an assessment on the impact of combining relief requests P-9 and P-12 was performed for pumps 1(2)-SW-P-1A and B in a manner similar for the other pumps in P-13.

   The assessment for determining operational readiness included a review of normalized test data for each pump. North Anna has the ability to normalize the test data and trend the data from test to test. By knowing the polynomial equation that describes the reference pump curve discussed in P-12, a reference value can be calculated for the dependent variable using the value of the independent variable. The actual test result is divided by the reference value to yield a normalized test result which can then be used to trend the performance of the pump. This review showed that the test results were trendable and provide the ability to assess the operational readiness of these pumps.

2. SER Anomaly In TER section 2.2.1.1, Pump Relief Request P-5, the licensee requests relief from the test frequency requirements of Section XI, Paragraphs

IWP-3400(a)and -3500(a) for the RHR pumps. The licensee proposes to test them during refueling outages. However, the flow loop is equipped to measure individual pump inlet and discharge pressure, and combined system flow rate. This configuration should be conducive to the gathering of some meaningful test data during pump operation. It may not be prudent to arbitrarily extend the test interval to refueling outages if meaningful testing is practicable during cold shutdowns. We recommend that relief be granted pursuant to 10CFR50.55a(f)(6)(i) provided the licensee tests these pumps according to the Code test method requirements during cold shutdowns when heat loads are low and individual testing is practicable, and the licensee considers testing methods and acceptance criteria for assessing the operational readiness of these pumps during cold shutdowns when they can only be operated in parallel.

Virginia Power Response The test frequency is being changed from every reactor refueling to every cold shutdown (but not more frequently than once every three months) for the RHR pumps.

As a result of industry experience and NRC guidance (Generic Letter 88-17) concerning the loss of decay heat removal capability, North Anna Power Station practices a policy of minimizing perturbations to RHR pump flow and system configuration when decay heat must be removed during cold shutdowns and reactor refueling outages.

Therefore, to permit RHR pump testing and to minimize system perturbations during cold shutdown testing, the RHR pumps will be tested in a range of flows from approximately 2500 gpm to 4000 gpm (depending on the system flow at the time of the test), and the results will be compared to acceptance criteria based on that portion of the pump curve described above and the hydraulic acceptance criteria given in OM Part 6. The guidelines set forth in NUREG 1482, Section 5.2, "Use of Variable Reference Values for Flow Rate and Differential Pressure During Pump Testing," will be followed.

If vibration is found to vary significantly over the range of flow rates, flow rate versus vibration velocity data for at least five points will be taken, and a curve fit for these data points will be determined. Using the fitted curve and the acceptance criteria for vibration testing in OM Part 6, acceptance criteria dependent on flow rate will be determined.

3. SER Anomaly In TER sections 2.3.1.1 and 2.3.1.2, Pump Relief Requests P-9 and P-10, the licensee requests relief from measuring pump inlet and d/p for service water pumps 1(2)-SW-P-1A -1B, and -4 as required by Section XI, Paragraph IWP-3100.

The licensee proposes to monitor pump discharge pressure and use it in place of d/p to monitor for pump degradation. Inlet pressure will not be measured for these pumps. These pumps are the subject of other relief requests in this submittal; P-12 and P-13. The reviewer does not have adequate information to fully assess the impact of the combination of these requests. We recommend that the alternative be approved pursuant with 10CFR50.55a(a)(3)(ii) with the following provision. The licensee should perform a complete assessment of the impact of the combination of this relief request and requests P-12 and P-13 as to their ability to assess the operational readiness of these pumps. The results of that assessment should be available for inspection at the facility.

Virginia Power Response The assessment described for Anomaly 1 applies to Anomaly 3. Refer to the response for Anomaly 1.

4. SER Anomaly In TER section 2.4.1.1, Pump Relief Request P-12, the licensee requests relief from establishing fixed set(s) of reference values for component cooling water and service water pumps as required by Section XI, Paragraphs IWP-3100 and -3110. The licensee proposes to test these pumps in their as-found condition of flow rate and d/p and to compare the results to acceptance criteria based on a reference pump curve that is generated mathematically from the results of test data taken at least five points of operation. The service water pumps, 1(2)SW-P-1A, -1B, and -4 are also the subject of other relief requests in this submittal; P-9, P-10, and P-13. The reviewer does not have adequate information to fully assess the impact of the combination. Relief should be granted from this Code requirement pursuant to 10CFRS0.55a(f)(6)(i) with the following provisions. The licensee should follow the seven guidelines identified in section 2.4.1.1 for using reference curves, if practicable. Where it is not practicable to follow these guidelines, the licensee should identify the specifics of their alternative and justify the deviations and show the adequacy of their proposed testing. Also, for the service water pumps, the licensee should perform a complete assessment of the impact of the combination of this relief request and requests P-9, P-10, and P-13 as to their ability to assess the operational readiness of these pumps. The results of that assessment should be available for inspection at the facility.

Virginia Power Response The assessment described for Anomaly 1 applies to Anomaly 4. Refer to the response for Anomaly 1.

5. SER Anomaly In Relief Request V-59 (see TER section 3.1.1.1), the licensee requests relief from assigning individual leakage rates to various valves as required by Section XI, Paragraph IWV-3426, and proposes to leak rate test these valves in groups. Leak rate testing in groups can be acceptable provided this testing does not

permit excessive leak through an individual valve in the group without taking appropriate corrective action. Therefore, the leakage limit for the group should be conservative considering the number and size of the valves in the group so that excessive leakage through any particular valve in the group results in appropriate corrective action.

Virginia Power Response The acceptance criteria are based on the diameter of the largest valve in the group. The groups are given below.

Group 1	Valve Size	Ratio	Group 2	Valve Size	Ratio
1-SI-MOV-1867C	3"	1	1-CH-402	0.75"	4
1-SI-MOV-1867D	3"		1-CH-MOV-1380	3"	

Group 3	Valve Size	Ratio	Group 4	Valve Size	Ratio
1-SI-MOV-1890C	10"	1	1-HV-MOV-100B	36"	2
1-SI-MOV-1890D	10"		1-HV-MOV-102	18"	

Group 5	Valve Size	Ratio
1-HV-MOV-100D	36"	4.5
1-HV-MOV-101	8"	

Although this method is not as conservative as basing the entire penetration leakage criterion on the smallest valve in the group, it still is adequately conservative to identify leakage from the smallest valve because the ratios between the largest and smallest valves are not that large. The largest ratio of 4.5 is for Group 5. The methodology is documented and available for NRC inspection.

6. SER Anomaly In Relief Request V-42 (V-43), the licensee requests relief from the test frequency requirements of Section XI and proposes to exercise the accumulator discharge and cold leg injection check valves by performing a low pressure discharge of the accumulator each refueling outage and to verify a full-stroke using nonintrusive techniques on one valve from each group on a sampling basis. Use of nonintrusive techniques can be a positive means of verifying a full-stroke exercise as allowed by the Code, however, to use this technique on a sampling basis, the guidelines listed in the TER evaluation should be followed (see TER Section 3.2.2.3.3). The licensee's proposed alternate testing appears to comply with most of these guidelines, however, it is unclear from the submittal if all of these conditions are met. The licensee should verify that the testing of the subject valves complies with all of these guidelines. The

proposed grouping in this request does not appear to comply with the GL 89-04 requirement that group valves have the same service conditions. Valve 1-SI-127 (2-SI-153) is the second check valve (closer to the RCS) in the injection line from the accumulator to the RCS while the other three group valves are the first check valves (closer to the accumulators). Differences in service conditions may affect the corrosion, erosion, wear, etc. for this valve such that it is not representative of the other valves in the proposed group. The licensee should justify the proposed grouping or bring it into compliance with the grouping criteria of GL 89-04.

Virginia Power Response Anomaly 6 questions the placement of the check valve 1-SI-127 (2-SI-153) on the A loop in the same group as the three accumulator discharge check valves closest to the accumulator. It is assumed in the discussion that the valve closest to the RCS is the valve that normally seats against RCS pressure (i.e., valve 1-SI-127 (2-SI-153)), and is normally subject to RCS pressure, water chemistry, and possibly elevated temperatures, while the other valves in the group do not normally experience these conditions.

Valve 1-SI-127 (2-SI-153) in the A loop was originally placed with the valves closest to the accumulators because the valves closest to the RCS on B and C loops experience RHR flow during shutdowns, whereas the valve on the A loop does not. Therefore, it was concluded that valve 1-SI-127 (2-SI-153) was subject to different service conditions.

However, if only normal operating conditions are considered, valve 1-SI-127 (2-SI-153) should be placed in the group with the other two valves closest to the RCS. The other two valves 1-SI-144 and 161 (2-SI-170 and 187) experience RHR flow only during shutdowns, which accounts for a small percentage of the total operating time.

The other alternative would be to place 1-SI-127 (2-SI-153) in it's own group, which would require acoustic monitoring every outage. Numerous disassembly and inspections show that these check valves show virtually no degradation. Therefore, the difference in service conditions due to RHR flow during outages produces no additional detectable degradation in the valves in B and C loops. Given the lack of degradation observed in the valves during the disassembly and inspections, the added burden of acoustically monitoring valve 1-SI-127 (2-SI-153) every outage is not justified. Therefore, this valve will be placed in the same group as valves 1-SI-144 and 161 (2-SI-170 and 187). The testing of these valves complies with the provisions of GL 89-04, Position 2.

7. SER Anomaly Several of the licensee's relief requests are approved by GL 89 04 and are not evaluated in this TER. The licensee indicates compliance with GL 89-04, but

does not specifically address all aspects of the Generic Letter provisions in the requests. In these cases, it is assumed that the licensee is complying with all of the requirements of the applicable GL 89-04 positions. Relief is not granted for the above relief requests for testing that deviates from that prescribed in GL 89-04. Whether the licensee complies with the provisions of GL 89-04 is subject to NRC inspection. If the licensee intends to deviate from a GL 89-04 position, a revised relief request specifically stating the deviation from GL 89-04 guidance must be submitted for review and approval prior to implementing the testing.

Virginia Power Response Unless noted in the relief requests, North Anna complies with the provisions in GL 89-04.

8. SER Anomaly Valve relief requests V-33, 42 (-43), and -73 (-74) are for check valves that may not be practically verified closed using system pressure or flow or full stroke exercised open with flow per GL 89-04, Position 1. The licensee proposes to full-stroke exercise these valves by sample disassembly, inspection, and a manual exercise. The NRC considers valve disassembly and inspection to be a maintenance procedure and not a test equivalent to the exercising produced by fluid flow. This procedure has some risk, which make its routine use as a substitute for testing undesirable when some method of testing is possible. Disassembly and inspection, to verify the full-stroke open or closure capability of check valves is not a recommended option when exercising can be practically performed by system pressure, flow, or other positive means. Check valve disassembly is a valuable maintenance tool that can provide much information about a valve's internal condition and as such should be performed under the maintenance program at a frequency commensurate with the valve type and service.

Some test method may be feasible to full-stroke exercise these valves. The licensee should consider methods such as using nonintrusive techniques (e.g., acoustics, ultrasonics, magnetics, radiography, and thermography) to verify a full-stoke exercise of the subject check valves. This testing may only be practical at cold shutdowns or refueling outages. The licensee should perform their investigation and if a test method is found to be practicable, the IST requirements of the applicable valves should be satisfied by testing instead of disassembly and inspection. If testing is not practicable and disassembly and inspection is used, it must be performed in accordance with GL 89-04, Position 2. The licensee should respond to this concern.

Virginia Power Response Relief request V-33 contains the casing cooling pump discharge check valves. These valves are downstream from the casing cooling pump test loop and do not experience flow when the pumps are tested. The casing cooling pump discharge lines connect to the suction lines of the outside recirculation spray

pumps at a point between the containment sump and the suction line motor operated isolation valve. Directing flow to the pump discharge valves would flood the containment sump and create a significant amount of contaminated water for disposal. Therefore, the only practical means of lifting the valve disks is to disassemble the valves and manually lift the disks.

Nonintrusive techniques are being evaluated for testing the SI accumulator discharge check valves in relief request V-42 (43). The auxiliary service water pump discharge check valve in relief request V-73 (74) has a double disk design with springs that force the disks to the seat. An attempt was made to acoustically detect when the disks strike the back seats. However, a strike could only be detected for one disk. The acceleration of the water when the pump was started was insufficient to force both disks to the back seats and create a detectable impact. Therefore, the test was inconclusive. Full flow testing of the check valves is not practical as described in the relief request. Therefore, the only practical means of exercising the valve disks is to disassemble the valves and manually exercise the disks. The testing of the valves in relief requests V-33, 42 (-43), and -73 (-74) complies with the provisions of GL 89-04, Position 2.

9. SER Anomaly V-69 (V-70) requests relief from the leak rate corrective action requirements of Section XI for all CIVs in the IST program and proposes to allow an evaluation of leakage rates above the allowable limits instead of repair or replacement as long as the overall containment leakage is less than $0.6L_a$. The licensee did not provide details about the evaluation that would be performed. The evaluations should be performed in a manner that provides a high level of assurance that delaying the repair or replacement of valves with high leakage rates will not result in exceeding the 0.6La limit before the next leakage rate tests. The licensee should document in the program plan how these evaluations will be performed and what will be included (see Section 3.1.2.1).

Virginia Power Response An evaluation that returns a valve to service if it exceeds it's permissible leakage rate would typically include a determination of the cause for the leakage. The evaluation would also address the effect of the degradation mechanism for the valve on the ability of the containment to maintain overall leakage below $0.6L_a$ during the subsequent 24 month interval. Evaluations are documented in the plant records and are available for review.

10. SER Anomaly V-75 (V-76) requests relief from the leak rate corrective action requirements of Section XI for the RWST isolation valves and proposes to allow an evaluation of leakage rates above the allowable limits instead of repair or replacement as long as the overall containment leakage is less than the overall RWST leakage

limit. The licensee did not provide details about the evaluation that would be performed. The evaluations should be performed in a manner that provides a high level of assurance that delaying the repair or replacement of valves with high leakage rates will not result in exceeding the overall RWST limit before the next leakage rate tests. The licensee should document in the program plan how these evaluations will be performed and what will be included (see Section 3.1.3.1).

Virginia Power Response An evaluation that returns a valve to service if it exceeds it's permissible leakage rate would typically include a determination of the cause for the leakage. The evaluation would also address the effect of the degradation mechanism for the valve on the ability of the valve group to maintain overall leakage to the RWST below the overall allowable leakage rate during the subsequent 24 month interval. Evaluations are documented in the plant records and are available for review.

As a point of clarification, the NRC discussion given above refers to the overall containment leakage being less than the overall RWST leakage. Relief request V-75 (V-76) does not refer to overall containment being less than the overall RWST leakage but to the summed leakages of the RWST isolation valves being less than the overall RWST leakage.

ATTACHMENT 2

SUMMARY OF CHANGES TO NORTH ANNA UNIT 1

IST PROGRAM REVISION 7

SUMMARY OF CHANGES TO NORTH ANNA UNIT 1
IST PROGRAM, REVISION 7

The following summary describes the changes to Revision 7 of the North Anna Unit 1 Inservice Testing (IST) Program Plan.

2.2.5 PUMP INSERVICE TESTING TABLE

UNIT 1 PUMP NUMBER	COMMENT/PROGRAM CHANGE
1-RH-P-1A 1-RH-P-1B	Program change: Test frequency was changed from every reactor refueling to every cold shutdown. Refer to relief request P-5.

2.2.6 PUMP INSERVICE TESTING RELIEF REQUESTS

UNIT 1 RELIEF REQUEST	COMMENT/STATUS
P-5	The test frequency for the RHR pumps was changed from every reactor refueling to every cold shutdown but not more frequently then every three months. Also, the hydraulic acceptance criteria will be based on a portion of the pump curve instead of a specific reference value. This change resulted from our response to Anomaly 2 in the NRC Safety Evaluation Report.
P-13	Service water pumps 1-SW-P-1A and B were deleted from this relief request. The discharge pressures are measured using gauges that meet Section XI accuracy requirements.

SUMMARY OF CHANGES TO NORTH ANNA UNIT 1
IST PROGRAM, REVISION 7

2.3.4 VALVE INSERVICE TESTING TABLE

Valves marked with an * are being added to the IST Program.

UNIT 1 VALVE NUMBER	COMMENT/PROGRAM CHANGE
1-CH-649*	This check valve was installed on the header from the charging pump recirculation lines and the RCP seal water return line in response to the Westinghouse Nuclear Service Advisory Letter (NSAL) 92-012. This advisory identified the potential for leakage of contaminated sump water outside the containment via the RCP seal water heat exchanger relief valve to the volume control tank. Program change: The valve was added to the IST program to be leak tested and tested closed every reactor refueling (refer to Relief Request V-72), and to be tested open every cold shutdown (refer to Cold Shutdown Justification CSV-38).
1-CH-MOV-1115B 1-CH-MOV-1115D 1-SI-47 1-SI-MOV-1885A 1-SI-MOV-1885B 1-SI-MOV-1885C 1-SI-MOV-1885D	Relief Request V-75 was added for the RWST isolation valves to allow for the use of an evaluation instead of repair or replacement as corrective action if a valve exceeds it's permissible leakage limit. The relief request was submitted to the NRC by letter dated April 26, 1994. Approval was granted by the NRC in the Safety Evaluation Report for the IST program dated October 18, 1994. Program change: Relief request V-75 was added.
1-GN-229	Program change: The valve number was changed from 1-GN-451 to 1-GN-229.
1-HC-5	This non-Code class check valve is on the discharge line for the containment purge blower. The primary means of containment

	hydrogen control is by operation of the recombiners. Therefore, operation of the purge blowers is not critical to accident mitigation or recovery. This valve was carried in the IST program because of a Technical Specification surveillance requirement that could be interpreted as requiring the testing of the blower. This requirement has since been clarified. There is no Technical Specification surveillance requirement. Program change: The valve was removed from the IST program.
1-HC-62	This hydrogen analyzer discharge check valve was removed from the system along with the analyzer. Program change: The valve was removed from the IST program.
1-MS-19 1-MS-58 1-MS-96	These decay heat release stop check isolation valves are now maintained closed with the stem on the disk. In this configuration, the valve disk does not have to change position to fulfill it's isolation function. Therefore, the Code does not require the valves to be tested. Program change: The valves were removed from the IST program.
1-QS-MOV-102A 1-QS-MOV-102B	Testing valves quarterly presents a significant personnel hazard due to exposure to sodium hydroxide. Program change: These valves will be tested on a cold shutdown frequency instead of quarterly. Refer to Cold Shutdown Justification CSV-44.
1-RH-7 1-RH-15	Program change: The test frequency for these RHR pump discharge check valves was changed from every reactor refueling to every cold shutdown but not more frequently then every three months. Relief Request V-74 was

	replaced by Cold Shutdown Justification CSV-46.
1-RH-FCV-1605 1-RH-HCV-1758	An engineering evaluation concluded that the simultaneous failure of the RHR heat exchanger bypass and discharge valves to go to their fail-safe positions on loss of instrument air will not create a safety concern for achieving safe shutdown. Therefore, these valves need not be included in the IST program. Program change: The valves were removed from the IST Program.
1-SI-83 1-SI-86 1-SI-89 1-SI-195 1-SI-197 1-SI-199	Program change: Reference to using nonintrusive techniques and a sampling plan for verifying full-stroke of the cold leg safety injection check valves was added to Relief Request V-41.
1-SI-95 1-SI-99 1-SI-103 1-SI-209 1-SI-211 1-SI-213	Program change: Reference to using nonintrusive techniques and a sampling plan for verifying full-stroke of the hot leg safety injection check valves was added to Relief Request V-43.
1-SI-125 1-SI-127 1-SI-142 1-SI-144 1-SI-159 1-SI-161	Program change: Reference to using a sampling plan with nonintrusive techniques for verifying full-stroke of the safety injection accumulator discharge check valves was added to Relief Request V-42. Also, the grouping of the valves was changed.
1-SI-MOV-1863B	Program change: The drawing reference was changed to 11715-CBM-096A.
1-SW-252 1-SW-255	Further evaluation has shown that these service water header check valves can be full flow tested every three months. Program change: Cold shutdown Justification CSV-39 is being withdrawn and these check valves will be full flow tested every three months.

1-SW-1067*	These manual valves are normally open and are closed to isolate the service water chemical addition system from the service water system. A recent service water system review identified these valves as having to close to prevent loss of service water and recommended that they be included in the IST program.
1-SW-1070*	
1-SW-1139*	
	Program change: The valves were added to the IST Program to be tested to the full closed position every cold shutdown. Refer to Cold Shutdown Justification CSV-45.
1-SW-MOV-102A	Further evaluation resulting from the recent service water system review revealed that closing these service water cross-tie isolation valves is the preferred method for isolating an inoperable header.
1-SW-MOV-102B	
1-SW-MOV-106A	
1-SW-MOV-106B	
	Program change: Closure testing was added to the IST program.
1-SW-MOV-108A	These isolation valves are located in series on the service water supply to the component cooling heat exchangers. Testing them every quarter creates a reduced flow condition for the service water pumps which in turn causes the pumps to experience harmful high-magnitude vibrations.
1-SW-MOV-108B	
	Program change: These valves will be tested on a cold shutdown frequency instead of quarterly. Refer to Cold Shutdown Justification CSV-43.

2.3.5 VALVE INSERVICE TESTING PROGRAM RELIEF REQUESTS

UNIT 1 RELIEF REQUEST	COMMENT/STATUS
V-38	The basis for relief was revised to indicate that the low head safety injection system must be isolated to perform closure testing on the check valves.

SUMMARY OF CHANGES TO NORTH ANNA UNIT 1
IST PROGRAM, REVISION 7

V-41

Reference to using nonintrusive techniques and a sampling plan for verifying full-stroke of the cold leg safety injection check valves was added. The alternative method described for using nonintrusive techniques described in NUREG 1482 will be followed.

According to NUREG 1482, "Relief is not required because this test method is considered an acceptable 'other positive means,' even if used on a rotating basis. However, if the recommended alternative methods of this section are implemented, the licensee must describe the implementation of this section in the IST program document." Even though relief is not required, use of the sampling plan is described in this relief request to satisfy the documentation requirement described above.

V-42

Reference to using a sampling plan with nonintrusive techniques for verifying full-stroke of the safety injection accumulator discharge check valves was added. Also, the grouping of the valves was changed from valves 1-SI-144 and 161 in one group, and 1-SI-125, 127, 142 and 159 in the other group, to 1-SI-125, 144 and 161 in one group, and 1-SI-127, 142 and 159 in the other group. This change resulted from our response to Anomaly 6 in the NRC Safety Evaluation Report. The explanation for why the grouping was changed is included in our response. As described in the discussion for V-41, relief is not required for using the sampling plan.

V-43

Reference to using nonintrusive techniques and a sampling plan for verifying full-stroke of the hot leg safety injection check valves was added. As described in the discussion for V-41, relief is not required for using the sampling plan.

V-50

Relief request is being withdrawn. The only valve (1-HC-5) in this relief request was removed from the IST program.

SUMMARY OF CHANGES TO NORTH ANNA UNIT 1
IST PROGRAM, REVISION 7

V-72

Check valve 1-CH-649 was installed on the header from the charging pump recirculation lines and the RCP seal water return line in response to the Westinghouse Nuclear Service Advisory Letter (NSAL) 92-012 and was added to this relief request for testing to the closed position. During normal operation, this valve cannot be isolated to perform a back pressure test because normal letdown and charging flow, and reactor coolant pump seal flow would be interrupted. Also, if the valve was isolated during normal operation, the charging pumps would have to be secured.

This valve is also subject to leak testing, which is performed every reactor refueling. Verification of closure will be performed during the leak test every reactor refueling instead of every cold shutdown because the small increase in safety gained by testing during cold shutdown does not justify the burden of performing a leak rate test.

V-74

Relief request is being replaced by Cold Shutdown Justification CSV-46.

V-75

This relief request was added to the IST program and applies to the RWST isolation valves. In addition to replacement or repair as corrective actions, an evaluation can be performed which demonstrates that even if a valve has exceeded its permissible leakage rate, the overall leakage rate to the RWST will be maintained below the overall allowable RWST leakage rate. No repair or replacement is necessary if the evaluation is performed. The relief request was submitted to the NRC by letter dated April 26, 1994. Approval was granted by the NRC in the Safety Evaluation Report for the IST program dated October 18, 1994.

SUMMARY OF CHANGES TO NORTH ANNA UNIT 1
IST PROGRAM, REVISION 7

2.3.6 VALVE INSERVICE TESTING PROGRAM COLD SHUTDOWN JUSTIFICATIONS

UNIT 1 COLD SHUTDOWN JUSTIFICATION	COMMENT/STATUS
CSV-20	Justification is being withdrawn because valves 1-RH-FCV-1605 and 1-RH-HCV-1758 were deleted from the IST Program.
CSV-38	Check valve 1-CH-649 was installed on the header from the charging pump recirculation lines and the RCP seal water return line in response to the Westinghouse Nuclear Service Advisory Letter (NSAL) 92-012 and was added to this cold shutdown justification for testing to the open position. Full flow conditions have to be measured by using temporary ultrasonic flow instrumentation which is very labor intensive. Also, reference to removing the ultrasonic flow instrumentation from the field after testing each valve was deleted. All four valves would be normally tested before the equipment is removed.
CSV-39	Justification is being withdrawn. Further evaluation has shown that the service water header check valves 1-SW-252 and 255 can be full flow tested every three months.
CSV-43	Justification is being added to the IST program. Valves 1-SW-MOV-108A and B are located in series on the service water supply to the component cooling heat exchangers. The component cooling heat exchangers carry a majority of the heat load for the service water system. When the heat exchangers are isolated, service water flow decreases to less than 10% of normal flow. Due to the design of the service water pumps, the pumps experience harmful high-magnitude vibrations as the service water flow decreases through a range from 7000 gpm to 6000 gpm. These pumps cannot be stopped during the valve exercise

test because they provide service water to other plant heat loads. Therefore, performing the valve exercise test as frequently as once every three months should be avoided due to the harmful affects that the testing has on the service water pumps.

The valve controllers do not allow for a partial-stroke exercise test. To reduce the harmful affects of high-magnitude vibrations on the service water pumps, the isolation valves will be full-stroke exercised on a cold shutdown frequency.

CSV-44

Justification is being added to the IST program. The normally closed six inch motor operated isolation valves 1-QS-MOV-102A and B are located in parallel flow paths from the refueling water chemical addition tank to the reactor water storage tank (RWST). The piping between the isolation valves and the chemical addition tank contains high concentrations of sodium hydroxide. To exercise the motor operated valves, downstream manual isolation valves must be closed to prevent the sodium hydroxide from entering the quench spray system and chemically contaminating the boric acid solution in the RWST.

After the motor operated isolation valves are stroked open and closed, the piping between the motor operated valves and the downstream manual isolation valves must be drained of sodium hydroxide. Approximately five gallons of highly caustic fluid are drained into a plastic container after each valve test. Draining the piping presents a significant personnel hazard. Sodium hydroxide causes severe burns if it comes in contact with the skin. The test personnel must wear rubber gloves, boots and face shields.

The drains are located outdoors and are near to the ground, which makes collection difficult. Any soil that is contaminated with sodium hydroxide must be neutralized by

the test personnel. Partial stroke testing of these valves presents the same hazards as full stroke testing.

To reduce the number of times that test personnel are exposed to sodium hydroxide, the motor operated isolation valves will be tested on a cold shutdown frequency.

CSV-45

Justification is being added to the IST program. The normally open manual 1 inch (1-SW-1067 and 1070) and 1.5 inch (1-SW-1139) valves are closed within 24 hours of the accident as required by the abnormal operating procedures to prevent loss of service water in the event that the connected non-seismic pipe fails. These valves are located in an expansion joint vault outside the service water pump house. The vault is defined as a confined space due to possible consumption resulting from an expansion joint failure. Entry into this confined space requires an entry permit, an air meter and two operators (buddy system). Also, special tools are required to remove the manhole cover which weighs in excess of 300 lbs and is a missile barrier. Closing these valves would require securing the service water addition system which could adversely affect the biological agent concentration in the service water.

These manual valves remain in the open position during normal operation and are not subject to wear. Closing these valves every three months to fulfill quarterly testing requirements creates an undue burden with no compensating benefit to quality and safety. Exercising these valves on a cold shutdown test frequency (but not more frequently then once every three months), is adequate to demonstrate that the valves can be closed in the case where service water isolation is required.

CSV-46	Justification is being added to the IST program. The RHR pump discharge check valves can only be partial-stroke or full-stroke exercised to the open position and verified closed when the RHR pumps 1-RH-P-1A and 1-RH-P-1B are running. The low pressure pumps take suction from and discharge to the reactor coolant system which operates at 2235 psig. This pressure is well above the operating pressure of the pumps, therefore, partial-stroke or full-stroke testing during normal operation is not practical.

2.3.7 ALTERNATIVE TESTING FOR NON-CODE VALVES

UNIT 1 NON-CODE ALTERNATIVE TESTING	COMMENT/STATUS
VNC-1	Valve number for 1-GN-229 was changed from 1-GN-451.

REPLACEMENT PAGES TO

NORTH ANNA UNIT 1

IST PROGRAM
REVISION 7

PUMP INSERVICE TESTING TABLE

Pump Ident	ASME Class	System Resist	(1) Speed	Inlet Pressure	Differential Pressure	Flow Rate	Vibration	Lube Oil	Bear Temp.	Relief Request (P-)
1-FW-P-2	3	VAR.	Q	Q	Q	Q	Q	Q	N/A	1,16
1-FW-P-3A	3	VAR.	N/A	Q	Q	Q	Q	Q	N/A	1,16
1-FW-P-3B	3	VAR.	N/A	Q	Q	Q	Q	Q	N/A	1,16
1-QS-P-1A	2	FIXED	N/A	Q	Q	Q	Q	Q	N/A	1,16
1-QS-P-1B	2	FIXED	N/A	Q	Q	Q	Q	Q	N/A	1,16
1-RH-P-1A	2	VAR.	N/A	CS	CS	CS	CS	CS	N/A	1,5,16
1-RH-P-1B	2	VAR.	N/A	CS	CS	CS	CS	CS	N/A	1,5,16
1-RS-P-1A	2	VAR.	N/A	RR	RR	RR	RR	N/A	N/A	1
1-RS-P-1B	2	VAR.	N/A	RR	RR	RR	RR	N/A	N/A	1
1-RS-P-2A	2	VAR.	N/A	2Y	2Y	2Y	2Y	N/A	N/A	1
1-RS-P-2B	2	VAR.	N/A	2Y	2Y	2Y	2Y	N/A	N/A	1
1-RS-P-3A	3	VAR.	N/A	Q	Q	Q	Q	Q	N/A	1,16
1-RS-P-3B	3	VAR.	N/A	Q	Q	Q	Q	Q	N/A	1,16

RELIEF REQUEST P-5

I. IDENTIFICATION OF COMPONENTS

System : Residual Heat Removal

Pump(s): 1-RH-P-1A
1-RH-P-1B

Class : 2

II. IMPRACTICAL CODE REQUIREMENTS

Frequency of Pump Test.

III. BASIS FOR RELIEF

The low pressure pumps take suction from and discharge to the Reactor Coolant System (RCS)which operates at 2235 psig. This pressure is well above the operating pressure of the pumps; therefore, testing during normal operation is not possible. Also, the pumps are located inside containment and are inaccessible during normal operation.

As a result of industry experience and NRC guidance (Generic Letter 88-17) concerning the loss of decay heat removal capability, North Anna Power Station practices a policy of minimizing perturbations to RHR pump flow and system configuration when decay heat must be removed during cold shutdowns and reactor refueling outages.

Therefore, to permit RHR pump testing and to minimize system perturbations during cold shutdown testing, the RHR pumps will be tested in a range of flows from approximately 2500 gpm to 4000 gpm (depending on the system flow at the time of the test), and the results will be compared to acceptance criteria based on that portion of the pump curve described above and the hydraulic acceptance criteria given in OM Part 6. The guidelines set forth in NUREG 1482, Section 5.2, "Use of Variable Reference Values for Flow Rate and Differential Pressure During Pump Testing," will be followed.

If vibration is found to vary significantly over the range of flow rates, flow rate versus vibration velocity data for at least five points will be taken, and a curve fit for these data points will be determined. Using the fitted curve and the acceptance criteria for vibration testing in OM Part 6, acceptance criteria dependent on flow rate will be determined.

IV. ALTERNATE TESTING

These pumps will be tested every cold shutdown but not more frequently than once every three months. Acceptance criteria will be based on a portion of the pump curve and not on discreet reference values.

RELIEF REQUEST P-13

I. IDENTIFICATION OF COMPONENTS

System : Component Cooling
Chemical and Volume Control
Service Water

Pump(s): 1-CH-P-1A 1-CC-P-1A
1-CH-P-1B 1-CC-P-1B
1-CH-P-1C 1-SW-P-4

Class : Class 2 for CH and Class 3 for CC and SW

II. IMPRACTICAL CODE REQUIREMENTS

Instrument Error

III. BASIS FOR REQUEST

Instruments used to measure certain pump parameters receive their signal at the equipment, which is transmitted to a process rack and then to a control room indicator. The sensor and rack accuracy can be affected by drift, temperature, and calibration accuracy. The indicator has a limit of accuracy. The total loop accuracy is found by the root sum of the squares. The only variables in this formula are the sensor calibration accuracy and the indicator accuracy. Installing new sensors and indicators to reduce the accuracy by one percent is not warranted by the increase in safety obtained.

The following instrument loops exceed the ±2% tolerance listed in Table IWP 4110-1.

Instrument	Component	Parameter	Accuracy
FI-1122	1-CH-P-1A,B,C	Flow	2.34%
FI-CC-100A	1-CC-P-1A	Flow	2.69%
FI-CC-100B	1-CC-P-1B	Flow	2.69%
PI-SW-110	1-SW-P-4	Discharge Pressure	2.61%

IV. ALTERNATE TESTING

None

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-CH-279	11715-CBM-095B	2 OF 2	D6	CHECK VALVE	3.000	2	C		CV	C	47		
										O	47		
	"C" CHARGING PUMP DISCHARGE CHECK VALVE												
1-CH-322	11715-CBM-095C	1 OF 2	D4	CHECK VALVE	3.000	2	AC	CIV	CV	C	10		
									LT	C			
	MAIN CHARGING SUPPLY HEADER, INSIDE CONTAINMENT ISOLATION CHECK VALVE												
1-CH-330	11715-CBM-095C	1 OF 2	A6	CHECK VALVE	2.000	1	AC	CIV	CV	C	10		
									LT	C			
	CHARGING SUPPLY TO LOOP FILL HEADER, INSIDE CONTAINMENT ISOLATION CHECK VALVE												
1-CH-336	11715-CBM-095C	2 OF 2	B8	CHECK VALVE	2.000	1	C		CV	C	10		
	"A" RC PUMP SEAL WATER SUPPLY, INSIDE CONTAINMENT ISOLATION CHECK VALVE												
1-CH-358	11715-CBM-095C	2 OF 2	B7	CHECK VALVE	2.000	1	C		CV	C	10		
	"B" RC PUMP SEAL WATER SUPPLY, INSIDE CONTAINMENT ISOLATION CHECK VALVE												
1-CH-380	11715-CBM-095C	2 OF 2	B5	CHECK VALVE	2.000	1	C		CV	C	10		
	"C" RC PUMP SEAL WATER SUPPLY, INSIDE CONTAINMENT ISOLATION CHECK VALVE												
1-CH-402	11715-CBM-095C	2 OF 2	F4	CHECK VALVE	.750	2	AC	CIV	CV	C	10		
									LT	C	59		
	RC PUMP SEAL WATER RETURN, INSIDE CONTAINMENT ISOLATION CHECK VALVE												
1-CH-649	11715-CBM-095B	1 OF 2	B6	CHECK VALVE	2.000	2	AC		CV	C	72		
										O		38	
									LT	C			
	CHARGING PUMP RECIRC AND RCP SEAL WATER RETURN LINE ISOLATION CHECK VALVE												
1-CH-FCV-1113A	11715-CBM-095B	1 OF 2	C3	AO GATE	1.000	3	B		EV	O			
									FS	O			
									ST	O			
									VP	OC			
	ALTERNATE EMERGENCY BORATION LINE FLOW CONTROL VALVE												
1-CH-FCV-1114A	11715-CBM-095B	1 OF 2	D4	AO GLOBE	1.000	3	B		EV	C			
									FS	C			
									ST	C			
									VP	OC			
	PRIMARY GRADE WATER FLOW CONTROL VALVE												
1-CH-FCV-1160	11715-CBM-095C	1 OF 2	A4	AO GLOBE	2.000	2	AE	CIV	LT	C			
									VP	OC			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	CHARGING FLOW CONTROL TO LOOP FILL HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-CH-LCV-1460A	11715-CBM-095C	1 OF 2	F7	AO GLOBE	2.000	1	B		EV	C		5	
									FS	C		5	
									ST	C			
									VP	OC			
	LETDOWN ISOLATION VALVE												
1-CH-LCV-1460B	11715-CBM-095C	1 OF 2	F7	AO GLOBE	2.000	1	B		EV	C		5	
									FS	C		5	
									ST	C			
									VP	OC			
	LETDOWN ISOLATION VALVE												
1-CH-MOV-1115B	11715-CBM-095B	2 OF 2	B8	MO GATE	8.000	2	A		EV	C		6	
										O		6	
									LT	C	75		
									ST	C		6	
										O		6	
									VP	OC			
	CHARGING PUMP SUPPLY ISOLATION VALVE FROM REFUELING WATER STORAGE TANK												
1-CH-MOV-1115C	11715-CBM-095B	1 OF 2	C6	MO GATE	4.000	2	B		EV	C		6	
									ST	C		6	
									VP	OC			
	CHARGING PUMP SUPPLY ISOLATION FROM VOLUME CONTROL TANK												
1-CH-MOV-1115D	11715-CBM-095B	2 OF 2	B8	MO GATE	8.000	2	A		EV	C		6	
										O		6	
									LT	C	75		
									ST	C		6	
										O		6	
									VP	OC			
	CHARGING PUMP SUPPLY ISOLATION VALVE FROM REFUELING WATER STORAGE TANK												
1-CH-MOV-1115E	11715-CBM-095B	1 OF 2	C6	MO GATE	4.000	2	B		EV	C		6	
									ST	C		6	
									VP	OC			
	CHARGING PUMP SUPPLY ISOLATION VALVE FROM VOLUME CONTROL TANK												
1-CH-MOV-1267A	11715-CBM-095B	2 OF 2	C7	MO GATE	6.000	2	E		VP	OC			
	"A" CHARGING PUMP SUCTION ISOLATION FROM RWST AND VCT												
1-CH-MOV-1267B	11715-CBM-095B	2 OF 2	C7	MO GATE	6.000	2	E		VP	OC			
	"A" CHARGING PUMP SUCTION ISOLATION FROM LHSI												

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-CH-MOV-1269A	11715-CBM-095B	2 OF 2	C5	MO GATE	6.000	2	E		VP	OC			
	"B" CHARGING PUMP SUCTION ISOLATION FROM RWST AND VCT												
1-CH-MOV-1269B	11715-CBM-095B	2 OF 2	C5	MO GATE	6.000	2	E		VP	OC			
	"B" CHARGING PUMP SUCTION ISOLATION FROM LHSI												
1-CH-MOV-1270A	11715-CBM-095B	2 OF 2	C3	MO GATE	6.000	2	E		VP	OC			
	"C" CHARGING PUMP SUCTION ISOLATION FROM RWST AND VCT												
1-CH-MOV-1270B	11715-CBM-095B	2 OF 2	C3	MO GATE	6.000	2	E		VP	OC			
	"C" CHARGING PUMP SUCTION ISOLATION FROM LHSI												
1-CH-MOV-1275A	11715-CBM-095B	2 OF 2	D7	MO GATE	2.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"A" CHARGING PUMP MINIMUM RECIRCULATION ISOLATION VALVE												
1-CH-MOV-1275B	11715-CBM-095B	2 OF 2	D5	MO GATE	2.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"B" CHARGING PUMP MINIMUM RECIRCULATION ISOLATION VALVE												
1-CH-MOV-1275C	11715-CBM-095B	2 OF 2	D4	MO GATE	2.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"C" CHARGING PUMP MINIMUM RECIRCULATION ISOLATION VALVE												
1 CH-MOV-1286A	11715-CBM-095B	2 OF 2	E7	MO GATE	3.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"A" CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE												
1-CH-MOV-1286B	11715-CBM-095B	2 OF 2	E6	MO GATE	3.000	2	B		EV	C O			
									ST	C O			
									VP	OC			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	"B" CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE												
1-CH-MOV-1286C	11715-CBM-095B	2 OF 2	E4	MO GATE	3.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"C" CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE												
1-CH-MOV-1287A	11715-CBM-095B	2 OF 2	D7	MO GATE	3.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"A" CHARGING PUMP ALTERNATE AND LOOP FILL DISCHARGE ISOLATION VALVE												
1-CH-MOV-1287B	11715-CBM-095B	2 OF 2	D6	MO GATE	3.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"B" CHARGING PUMP ALTERNATE AND LOOP FILL DISCHARGE ISOLATION VALVE												
1-CH-MOV-1287C	11715-CBM-095B	2 OF 2	D4	MO GATE	3.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"C" CHARGING PUMP ALTERNATE AND LOOP FILL DISCHARGE ISOLATION VALVE												
1-CH-MOV-1289A	11715-CBM-095C	1 OF 2	D4	MO GATE	3.000	2	A	CIV	EV	C		7	
									LT	C			
									ST	C		7	
									VP	OC			
	MAIN CHARGING HEADER ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-CH-MOV-1289B	11715-CBM-095C	1 OF 2	B3	MO GATE	3.000	2	B		EV	C		7	
									ST	C		7	
									VP	OC			
	MAIN CHARGING HEADER ISOLATION VALVE, OUTSIDE CONTAINMENT												
1-CH-MOV-1350	11715-CBM-095B	1 OF 2	B5	MO GATE	2.000	2	B		EV	O		4	
									ST	O		4	
									VP	OC			
	EMERGENCY BORATION TO CHARGING PUMP SUCTION												
1-CH-MOV-1373	11715-CBM-095B	1 OF 2	A8	MO GATE	3.000	2	E		VP	OC			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	CHARGING PUMP RECIRCULATION HEADER ISOLATION VALVE												
1-CH-MOV-1380	11715-CBM-095C	2 OF 2	F4	MO GATE	3.000	2	A	CIV	EV	C	9		
									LT	C	59		
									ST	C	9		
									VP	OC			
	REACTOR COOLANT PUMP SEAL WATER RETURN, INSIDE CONTAINMENT ISOLATION VALVE												
1-CH-MOV-1381	11715-CBM-095B	1 OF 2	C8	MO GATE	3.000	2	A	CIV	EV	C	9		
									LT	C			
									ST	C	9		
									VP	OC			
	REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-CH-RV-1203	11715-CBM-095C	1 OF 2	F4	RELIEF VALVE	2.000	2	C		SP	O			
	LETDOWN RELIEF VLV DOWNSTREAM OF REGEN HX, RV DISCHARGE TO PRESSURIZER RELIEF TANK												
1-CH-RV-1382B	11715-CBM-095B	1 OF 2	C7	RELIEF VALVE	2.000	2	C		SP	O			
	SEAL WATER HEAT EXCHANGER RELIEF VALVE, RV DISCHARGE TO VOLUME CONTROL TANK												
1-CH-TV-1204A	11715-CBM-095C	1 OF 2	E3	AO GLOBE	2.000	2	A	CIV	EV	C		5	
									FS	C		5	
									LT	C			
									ST	C		5	
									VP	OC			
	LETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATION VALVE												
1-CH-TV-1204B	11715-CBM-095A	4 OF 4	C3	AO GLOBE	3.000	2	A	CIV	EV	C		5	
									FS	C		5	
									LT	C			
									ST	C		5	
									VP	OC			
	LETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENT ISOLATION VALVE												

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-GN-225	11715-FM -105A	1 OF 3	E4	CHECK VALVE	.500	NC	AC		CV LT	C C			1
	BOTTLED NITROGEN SUPPLY TO PORV ISOLATION CHECK VALVE												
1-GN-229	11715-FM -105A	1 OF 3	E6	CHECK VALVE	.500	NC	AC		CV LT	C C			1
	BOTTLED NITROGEN SUPPLY TO PORV ISOLATION CHECK VALVE												
1-GN-RV-108A-1	11715-FM -105A	1 OF 3	E7	RELIEF VALVE	.750	NC	C		SP	O			
	BOTTLED NITROGEN SUPPLY TO PORV RELIEF VALVE												
1-GN-RV-108A-2	11715-FM -105A	1 OF 3	F6	RELIEF VALVE	.750	NC	C		SP	O			
	BOTTLED NITROGEN SUPPLY TO PORV RELIEF VALVE												
1-GN-RV-108A-3	11715-FM -105A	1 OF 3	E6	RELIEF VALVE	.750	NC	C		SP	O			
	BOTTLED NITROGEN SUPPLY TO PORV RELIEF VALVE												
1-GN-RV-108B-1	11715-FM -105A	1 OF 3	E3	RELIEF VALVE	.750	NC	C		SP	O			
	BOTTLED NITROGEN SUPPLY TO PORV RELIEF VALVE												
1-GN-RV-108B-2	11715-FM -105A	1 OF 3	F5	RELIEF VALVE	.750	NC	C		SP	O			
	BOTTLED NITROGEN SUPPLY TO PORV RELIEF VALVE												
1-GN-RV-108B-3	11715-FM -105A	1 OF 3	E5	RELIEF VALVE	.750	NC	C		SP	O			
	BOTTLED NITROGEN SUPPLY TO PORV RELIEF VALVE												

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-HC-014	11715-CBM-106A	1 OF 4	E8	CHECK VALVE	2.000	2	AC	CIV	CV	C	20		
										O	20		
									LT	C			
	UNIT 1 RETURN LINE FROM UNIT 1 HYDROGEN ANALYZERS & RECOMB, INSIDE CONT ISOL CHECK VALVE												
1-HC-018	11715-CBM-106A	2 OF 4	E6	CHECK VALVE	2.000	2	AC	CIV	CV	C	20		
										O	20		
									LT	C			
	UNIT 1 RETURN LINE FROM UNIT 2 HYDROGEN ANALYZERS & RECOMB, INSIDE CONT ISOL CHECK VALVE												
1-HC-063	11715-CBM-106A	1 OF 4	C7	CHECK VALVE	.375	NC	C		CV	O			
	HYDROGEN ANALYZER DISCHARGE CHECK VALVE												
1-HC-TV-100A	11715-CBM-106A	1 OF 4	E8	SO GLOBE	.375	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	54		
										O	54		
									VP	OC			
	UNIT 1 SAMPLE LINE TO UNIT 1 HYDROGEN ANALYZERS, INSIDE CONTAINMENT ISOLATION VALVE												
1-HC-TV-100B	11715-CBM-106A	1 OF 4	E7	SO GLOBE	.375	2	A	CIV	EV	C			
										C			
									FS	C			
									LT	C			
									ST	C	54		
										O	54		
									VP	OC			
	UNIT 1 SAMPLE LINE TO UNIT 1 HYDROGEN ANALYZERS, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-HC-TV-101A	11715-CBM-106A	1 OF 4	D7	SO GLOBE	.375	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	54		
										O	54		
									VP	OC			
	RETURN ISOLATION FROM UNIT 1 HYDROGEN ANALYZERS TO UNIT 1 CONT,OUTSIDE CONT ISOL VALVE												
1-HC-TV-101B	11715-CBM-106A	1 OF 4	D7	SO GLOBE	.375	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	54		
										O	54		
									VP	OC			
	RETURN ISOLATION FROM UNIT 1 HYDROGEN ANALYZERS TO UNIT 1 CONT,OUTSIDE CONT ISOL VALVE												
1-HC-TV-102A	11715-CBM-106A	2 OF 4	E6	SO GLOBE	.375	2	A	CIV	EV	C			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-HC-TV-102A	11715-CBM-106A	2 OF 4	E6	SO GLOBE	.375	2	A	CIV	EV	O			
									FS	C			
									LT	C			
									ST	C	54		
										O	54		
									VP	OC			
	UNIT 1 SAMPLE LINE TO UNIT 2 HYDROGEN ANALYZERS, INSIDE CONTAINMENT ISOLATION VALVE												
1-HC-TV-102B	11715-CBM-106A	2 OF 4	E7	SO GLOBE	.375	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	54		
										O	54		
									VP	OC			
	UNIT 1 SAMPLE LINE TO UNIT 2 HYDROGEN ANALYZERS, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-HC-TV-103A	11715-CBM-106A	2 OF 4	D7	SO GLOBE	.375	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	54		
										O	54		
									VP	OC			
	RETURN ISOLATION FROM UNIT 2 HYDROGEN ANALYZERS TO UNIT 1 CONT,OUTSIDE CONT ISOL VALVE												
1-HC-TV-103B	11715-CBM-106A	2 OF 4	D7	SO GLOBE	.375	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	54		
										O	54		
									VP	OC			
	RETURN ISOLATION FROM UNIT 2 HYDROGEN ANALYZERS TO UNIT 1 CONT,OUTSIDE CONT ISOL VALVE												
1-HC-TV-104A	11715-CBM-106A	4 OF 4	F6	AO GLOBE	2.500	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	54		
										O	54		
									VP	OC			
	SUPPLY ISOL FROM UNIT 1 CONT TO N1 HYDRO RECOMB & N2 CONT BLOWER,OUTSIDE CONT ISOL VALVE												
1-HC-TV-104B	11715-CBM-106A	4 OF 4	F6	AO GLOBE	2.500	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	54		
										O	54		
									VP	OC			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	SUPPLY ISOL FROM UNIT 1 CONT TO N1 HYDRO RECOMB & N2 CONT BLOWER,OUTSIDE CONT ISOL VALVE												
1-HC-TV-105A	11715-CBM-106A	1 OF 4	E6	AO GLOBE	2.500	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	54		
										O	54		
									VP	OC			
	RETURN ISOLATION FROM UNIT 1 HYDROGEN RECOMB & ANAL TO UNIT1 CONT, OUTSIDE CONT ISOL VALVE												
1-HC-TV-105B	11715-CBM-106A	1 OF 4	E6	AO GLOBE	2.500	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	54		
										O	54		
									VP	OC			
	RETURN ISOLATION FROM UNIT 1 HYDROGEN RECOMB & ANAL TO UNIT1 CONT, OUTSIDE CONT ISOL VALVE												
1-HC-TV-106A	11715-CBM-106A	4 OF 4	F8	AO GLOBE	2.500	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	54		
										O	54		
									VP	OC			
	UNIT 1 SUPPLY ISOLATION TO N1 CONT ATMO PURGE BLOW & N2 HYDRO RECOMB, OUTSIDE CONT ISOL VLV												
1-HC-TV-106B	11715-CBM-106A	4 OF 4	F8	AO GLOBE	2.500	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	54		
										O	54		
									VP	OC			
	UNIT 1 SUPPLY ISOLATION TO N1 CONT ATMO PURGE BLOW & N2 HYDRO RECOMB, OUTSIDE CONT ISOL VLV												
1-HC-TV-107A	11715-CBM-106A	2 OF 4	E7	AO GLOBE	2.500	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	54		
										O	54		
									VP	OC			
	RETURN ISOLATION FROM UNIT 2 HYDROGEN RECOMB & ANAL TO UNIT1 CONT, OUTSIDE CONT ISOL VALVE												
1-HC-TV-107B	11715-CBM-106A	2 OF 4	E8	AO GLOBE	2.500	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	54		

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-HC-TV-107B	11715-CBM-106A	2 OF 4	E8	AO GLOBE	2.500	2	A	CIV	ST	O	54		
									VP	OC			
	RETURN ISOLATION FROM UNIT 2 HYDROGEN RECOMB & ANAL TO UNIT1 CONT, OUTSIDE CONT ISOL VALVE												
1-HC-TV-108A	11715-CBM-106A	3 OF 4	E8	SO GLOBE	.375	2	A	CIV	EV	C			
									FS	C			
									LT	C			
									ST	C	54		
									VP	OC			
	UNIT 1 SAMPLE LINE TO AIR SAMPLE PANEL, INSIDE CONTAINMENT ISOLATION VALVE												
1-HC-TV-108B	11715-CBM-106A	3 OF 4	E7	SO GLOBE	.375	2	A	CIV	EV	C			
									FS	C			
									LT	C			
									ST	C	54		
									VP	OC			
	UNIT 1 SAMPLE LINE TO AIR SAMPLE PANEL, OUTSIDE CONTAINMENT ISOLATION VALVE												

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-MS-018	11715-CBM-070B	1 OF 3	C6	MANUAL GATE	3.000	2	B		EV	C			
	MAIN STEAM TO AUXILIARY FEEDWATER TURBINE LINE ISOLATION VALVE												
1-MS-057	11715-CBM-070B	2 OF 3	C6	MANUAL GATE	3.000	2	B		EV	C			
	MAIN STEAM TO AUXILIARY FEEDWATER TURBINE LINE ISOLATION VALVE												
1-MS-095	11715-CBM-070B	3 OF 3	C6	MANUAL GATE	3.000	2	B		EV	C			
	MAIN STEAM TO AUXILIARY FEEDWATER TURBINE LINE ISOLATION VALVE												
1-MS-119	11715-CBM-070A	3 OF 3	E7	CHECK VALVE	3.000	2	C		CV	C O	.		
	"A" MAIN STEAM HEADER SUPPLY CHECK VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP												
1-MS-122	11715-CBM-070A	3 OF 3	F7	CHECK VALVE	3.000	2	C		CV	C O			
	"B" MAIN STEAM HEADER SUPPLY CHECK VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP												
1-MS-124	11715-CBM-070A	3 OF 3	F7	CHECK VALVE	3.000	2	C		CV	C O			
	"C" MAIN STEAM HEADER SUPPLY CHECK VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP												
1-MS-NRV-101A	11715-CBM-070B	1 OF 3	D3	CHECK VALVE	32.000	2	C		CV VP	C OC		13	
	"A" MAIN STEAM HEADER NON-RETURN VALVE												
1-MS-NRV-101B	11715-CBM-070B	2 OF 3	D3	CHECK VALVE	32.000	2	C		CV VP	C OC		13	
	"B" MAIN STEAM HEADER NON-RETURN VALVE												
1-MS-NRV-101C	11715-CBM-070B	3 OF 3	D3	CHECK VALVE	32.000	2	C		CV VP	C OC		13	
	"C" MAIN STEAM HEADER NON-RETURN VALVE												
1-MS-PCV-101A	11715-CBM-070B	1 OF 3	E5	AO ANGLE	6.000	2	B		EV FS ST VP	C O C C O OC			
	"A" MAIN STEAM HEADER DISCHARGE TO ATMOSPHERE PRESSURE CONTROL VALVE												
1-MS-PCV-101B	11715-CBM-070B	2 OF 3	E6	AO ANGLE	6.000	2	B		EV FS	C O C			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-MS-PCV-101B	11715-CBM-070B	2 OF 3	E6	AO ANGLE	6.000	2	B		ST	C O			
									VP	OC			
	"B" MAIN STEAM HEADER DISCHARGE TO ATMOSPHERE PRESSURE CONTROL VALVE												
1-MS-PCV-101C	11715-CBM-070B	3 OF 3	D3	AO ANGLE	6.000	2	B		EV	C O			
									FS	C			
									ST	C O			
									VP	OC			
	"C" MAIN STEAM HEADER DISCHARGE TO ATMOSPHERE PRESSURE CONTROL VALVE												
1-MS-SV-101A	11715-CBM-070B	1 OF 3	E6	SAFETY VALVE	6.000	2	C		SP	O			
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
1-MS-SV-101B	11715-CBM-070B	2 OF 3	E6	SAFETY VALVE	6.000	2	C		SP	O			
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
1-MS-SV-101C	11715-CBM-070B	3 OF 3	D6	SAFETY VALVE	6.000	2	C		SP	O			
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
1-MS-SV-102A	11715-CBM-070B	1 OF 3	E5	SAFETY VALVE	6.000	2	C		SP	O			
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
1-MS-SV-102B	11715-CBM-070B	2 OF 3	E5	SAFETY VALVE	6.000	2	C		SP	O			
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
1-MS-SV-102C	11715-CBM-070B	3 OF 3	D6	SAFETY VALVE	6.000	2	C		SP	O			
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
1-MS-SV-103A	11715-CBM-070B	1 OF 3	E6	SAFETY VALVE	6.000	2	C		SP	O			
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
1-MS-SV-103B	11715-CBM-070B	2 OF 3	E5	SAFETY VALVE	6.000	2	C		SP	O			
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
1-MS-SV-103C	11715-CBM-070B	3 OF 3	D6	SAFETY VALVE	6.000	2	C		SP	O			
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
1-MS-SV-104A	11715-CBM-070B	1 OF 3	E6	SAFETY VALVE	6.000	2	C		SP	O			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
1-MS-SV-104B	11715-CBM-070B	2 OF 3	E6	SAFETY VALVE	6.000	2	C		SP	O			
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
1-MS-SV-104C	11715-CBM-070B	3 OF 3	D6	SAFETY VALVE	6.000	2	C		SP	O			
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
1-MS-SV-105A	11715-CBM-070B	1 OF 3	E5	SAFETY VALVE	6.000	2	C		SP	O			
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
1-MS-SV-105B	11715-CBM-070B	2 OF 3	E5	SAFETY VALVE	6.000	2	C		SP	O			
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
1-MS-SV-105C	11715-CBM-070B	3 OF 3	D5	SAFETY VALVE	6.000	2	C		SP	O			
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
1-MS-TV-101A	11715-CBM-070B	1 OF 3	D4	AO DISC	32.000	2	B		EV	C		16	
									FS	C		16	
									ST	C		16	
									VP	OC			
	"A" MAIN STEAM HEADER TRIP VALVE												
1-MS-TV-101B	11715-CBM-070B	2 OF 3	C4	AO DISC	32.000	2	B		EV	C		16	
									FS	C		16	
									ST	C		16	
									VP	OC			
	"B" MAIN STEAM HEADER TRIP VALVE												
1-MS-TV-101C	11715-CBM-070B	3 OF 3	C4	AO DISC	32.000	2	B		EV	C		16	
									FS	C		16	
									ST	C		16	
									VP	OC			
	"C" MAIN STEAM HEADER TRIP VALVE												
1-MS-TV-109	11715-CBM-070A	1 OF 3	A8	AO GLOBE	3.000	2	B		EV	C		14	
									FS	C		14	
									ST	C		14	
									VP	OC			
	MAIN STEAM HIGH PRESSURE DRAIN ISOLATION TO CONDENSER												
1-MS-TV-110	11715-CBM-070B	3 OF 3	A4	AO GLOBE	1.500	2	B		EV	C			
									FS	C			
									ST	C			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-MS-TV-110	11715-CBM-070B	3 OF 3	A4	AO GLOBE	1.500	2	B		VP	OC			
	MAIN STEAM HIGH PRESSURE DRAIN HEADER ISOLATION TO STEAM GENERATOR BLOWDOWN SYSTEM												
1-MS-TV-111A	11715-CBM-070A	3 OF 3	E5	AO GLOBE	3.000	2	B		EV	C			
										O			
									FS	O			
									ST	C			
										O			
									VP	OC			
	MAIN STEAM SUPPLY TRIP VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP												
1-MS-TV-111B	11715-CBM-070A	3 OF 3	E4	AO GLOBE	3.000	2	B		EV	C			
										O			
									FS	O			
									ST	C			
										O			
									VP	OC			
	MAIN STEAM SUPPLY TRIP VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP												
1-MS-TV-113A	11715-CBM-070B	1 OF 3	D4	AO GLOBE	3.000	2	B		EV	C		33	
									FS	C		33	
									ST	C		33	
									VP	OC			
	"A" MAIN STEAM TRIP BYPASS VALVE												
1-MS-TV-113B	11715-CBM-070B	2 OF 3	D4	AO GLOBE	3.000	2	B		EV	C		33	
									FS	C		33	
									ST	C		33	
									VP	OC			
	"B" MAIN STEAM TRIP BYPASS VALVE												
1-MS-TV-113C	11715-CBM-070B	3 OF 3	D4	AO GLOBE	3.000	2	B		EV	C		33	
									FS	C		33	
									ST	C		33	
									VP	OC			
	"C" MAIN STEAM TRIP BYPASS VALVE												
1-MS-TV-115	11715-CBM-070A	3 OF 3	C4	MECH TRIP VLV	3.000	3	E		VP	OC			
	MAIN STEAM SUPPLY TRIP VALVE TO TURBINE DRIVEN AFW PUMP												

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-

THIS PAGE IS INTENTIONALLY BLANK.

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-QS-011	11715-CBM-091A	2 OF 4	D6	WL CHECK VLV	8.000	2	AC	CIV	CV	C	67		
										O	67		
									LT	C			
	"A" QUENCH SPRAY PUMP INSIDE CONTAINMENT ISOLATION CHECK VALVE												
1-QS-019	11715-CBM-091A	2 OF 4	E6	WL CHECK VLV	8.000	2	AC	CIV	CV	C	67		
										O	67		
									LT	C			
	"B" QUENCH SPRAY PUMP INSIDE CONTAINMENT ISOLATION CHECK VALVE												
1-QS-MOV-100A	11715-CBM-091A	2 OF 4	A3	MO GATE	10.000	2	E		VP	OC			
	"A" QUENCH SPRAY PUMP SUCTION ISOLATION VALVE FROM REFUELING WATER STORAGE TANK												
1-QS-MOV-100B	11715-CBM-091A	2 OF 4	A3	MO GATE	10.000	2	E		VP	OC			
	"B" QUENCH SPRAY PUMP SUCTION ISOLATION VALVE FROM REFUELING WATER STORAGE TANK												
1-QS-MOV-101A	11715-CBM-091A	2 OF 4	D5	MO GATE	8.000	2	A	CIV	EV	C			
										O			
									LT	C			
									ST	C			
										O			
									VP	OC			
	"A" QUENCH SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-QS-MOV-101B	11715-CBM-091A	2 OF 4	E5	MO GATE	8.000	2	A	CIV	EV	C			
										O			
									LT	C			
									ST	C			
										O			
									VP	OC			
	"B" QUENCH SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-QS-MOV-102A	11715-CBM-091A	1 OF 4	D5	MO GATE	6.000	2	B		EV	O		44	
									ST	O		44	
									VP	OC			
	CHEMICAL ADDITION TANK DISCHARGE ISOLATION VALVE												
1-QS-MOV-102B	11715-CBM-091A	1 OF 4	D6	MO GATE	6.000	2	B		EV	O		44	
									ST	O		44	
									VP	OC			
	CHEMICAL ADDITION TANK DISCHARGE ISOLATION VALVE												

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-RH-007	11715-CBM-094A	1 OF 2	E5	CHECK VALVE	10.000	2	C		CV	C O		46 46	
	"B" RHR PUMP DISCHARGE CHECK VALVE												
1-RH-015	11715-CBM-094A	1 OF 2	E7	CHECK VALVE	10.000	2	C		CV	C O		46 46	
	"A" RHR PUMP DISCHARGE CHECK VALVE												
1-RH-036	11715-CBM-094A	2 OF 2	C4	MANUAL GATE	6.000	2	AE	CIV	LT	C			
	RHR SUPPLY ISOLATION TO REFUEL WATER STORAGE TANK, INSIDE CONTAINMENT ISOLATION VALVE												
1-RH-037	11715-CBM-094A	2 OF 2	E3	MANUAL GATE	6.000	2	AE	CIV	LT	C			
	RHR SUPPLY ISOLATION TO REFUEL WATER STORAGE TANK, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-RH-MOV-1700	11715-CBM-094A	1 OF 2	A5	MO GATE	14.000	1	B		EV ST VP	O O OC		18 18	
	RHR PUMP SUPPLY ISOLATION FROM "A" HOT LEG, INSIDE MISSILE BARRIER												
1-RH-MOV-1701	11715-CBM-094A	1 OF 2	A4	MO GATE	14.000	1	B		EV ST VP	O O OC		18 18	
	RHR PUMP SUPPLY ISOLATION FROM "A" HOT LEG, OUTSIDE MISSILE BARRIER												
1-RH-MOV-1720A	11715-CBM-094A	2 OF 2	C3	MO GATE	10.000	1	B		EV ST VP	O O OC		18 18	
	RHR RETURN ISOLATION TO "B" ACCUMULATOR DISCHARGE LINE												
1-RH-MOV-1720B	11715-CBM-094A	2 OF 2	B3	MO GATE	10.000	1	B		EV ST VP	O O OC		18 18	
	RHR RETURN ISOLATION TO "C" ACCUMULATOR DISCHARGE LINE												
1-RH-RV-1721A	11715-CBM-094A	1 OF 2	E6	RELIEF VALVE	3.000	2	C		SP	O			
	RHR SYSTEM RELIEF VALVE AT "A" RHR PUMP SUCTION, RV DISCHARGE TO PRESSURIZER RELIEF TANK												
1-RH-RV-1721B	11715-CBM-094A	1 OF 2	E4	RELIEF VALVE	3.000	2	C		SP	O			
	RHR SYSTEM RELIEF VALVE AT "B" RHR PUMP SUCTION, RV DISCHARGE TO PRESSURIZER RELIEF TANK												

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	MC ALT TEST VCN-

THIS PAGE IS INTENTIONALLY BLANK.

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-SI-001	11715-CBM-096A	1 OF 3	B7	CHECK VALVE	12.000	2	C		CV	O	37		
	"A" LOW HEAD SI PUMP SUCTION CHECK VALVE FROM CONTAINMENT SUMP												
1-SI-004	11715-CBM-096A	1 OF 3	C7	CHECK VALVE	.750	2	AC		CV	C	53		
									LT	C			
	"A" LOW HEAD SI PUMP SEAL WATER SUPPLY CHECK VALVE FROM RWST												
1-SI-009	11715-CBM-096A	2 OF 3	B6	CHECK VALVE	10.000	2	C		CV	C	38		
										O	38		
	"A" LOW HEAD SI PUMP DISCHARGE CHECK VALVE												
1-SI-012	11715-CBM-096A	2 OF 3	B5	CHECK VALVE	2.000	2	C		CV	O			
	"A" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE DISCHARGE CHECK VALVE												
1-SI-016	11715-CBM-096A	1 OF 3	B5	CHECK VALVE	12.000	2	C		CV	O	37		
	"B" LOW HEAD SI PUMP SUCTION CHECK VALVE FROM CONTAINMENT SUMP												
1-SI-018	11715-CBM-096A	1 OF 3	B3	CHECK VALVE	12.000	2	C		CV	O	38		
	RWST SUPPLY CHECK VALVE TO "B" LOW HEAD SI PUMP SUCTION												
1-SI-021	11715-CBM-096A	1 OF 3	C5	CHECK VALVE	.750	2	AC		CV	C	53		
									LT	C			
	"B" LOW HEAD SI PUMP SEAL WATER SUPPLY CHECK VALVE												
1-SI-026	11715-CBM-096A	2 OF 3	B4	CHECK VALVE	10.000	2	C		CV	C	38		
										O	38		
	"B" LOW HEAD SI PUMP DISCHARGE CHECK VALVE												
1-SI-029	11715-CBM-096A	2 OF 3	B4	CHECK VALVE	2.000	2	C		CV	O			
	"B" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE DISCHARGE CHECK VALVE												
1-SI-047	11715-CBM-096A	1 OF 3	E5	CHECK VALVE	8.000	2	AC		CV	C	39		
										O	39		
									LT	C	75		
	RWST SUPPLY CHECK VALVE TO CHARGING PUMP SUCTION HEADER												
1-SI-058	11715-CBM-096A	1 OF 3	E7	MANUAL GLOBE	1.000	2	AE	CIV	LT	C			
	ACCUMULATOR MAKEUP LINE, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-SI-066	11715-CBM-096A	3 OF 3	D4	CHECK VALVE	1.000	2	C		CV	C			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-SI-HCV-1936	11715-CBM-096B	1 OF 4	E5	AO GATE	1.000	2	A	CIV	EV	C			
									FS	C			
									LT	C			
									ST	C			
									VP	OC			
	WASTE GAS FROM ACCUMULATORS TO CHARCOAL FILTERS												
1-SI-MOV-1836	11715-CBM-096A	3 OF 3	C8	MO GATE	3.000	2	A	CIV	EV	C		23	
										O		23	
									LT	C			
									ST	C		23	
										O		23	
									VP	OC			
	HIGH HEAD SI FROM CHARGING HEADER TO RCS COLD LEGS, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-SI-MOV-1860A	11715-CBM-096A	1 OF 3	B7	MO GATE	12.000	2	B		EV	C			
										O			
									ST	C			
										O			
									VP	OC			
	"A" LOW HEAD SI PUMP SUCTION ISOLATION FROM CONTAINMENT SUMP												
1-SI-MOV-1860B	11715-CBM-096A	1 OF 3	B5	MO GATE	12.000	2	B		EV	C			
										O			
									ST	C			
										O			
									VP	OC			
	"B" LOW HEAD SI PUMP SUCTION ISOLATION FROM CONTAINMENT SUMP												
1-SI-MOV-1862A	11715-CBM-096A	1 OF 3	A3	MO GATE	12.000	2	B		EV	C			
									ST	C			
									VP	OC			
	"A" LOW HEAD SI PUMP SUCTION FROM RWST												
1-SI-MOV-1862B	11715-CBM-096A	1 OF 3	B3	MO GATE	12.000	2	B		EV	C			
									ST	C			
									VP	OC			
	"B" LOW HEAD SI PUMP SUCTION FROM RWST												
1-SI-MOV-1863A	11715-CBM-096A	2 OF 3	C5	MO GATE	8.000	2	B		EV	C			
										O			
									ST	C			
										O			
									VP	OC			
	"A" LOW HEAD SAFETY INJECTION PUMP SUPPLY ISOLATION TO CHARGING PUMPS												
1-SI-MOV-1863B	11715-CBM-096A	2 OF 3	D4	MO GATE	8.000	2	B		EV	C			
										O			
									ST	C			
										O			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-SI-MOV-1863B	11715-CBM-096A	2 OF 3	D4	MO GATE	8.000	2	B		VP	OC			
	"B" LOW HEAD SAFETY INJECTION PUMP SUPPLY ISOLATION TO CHARGING PUMPS												
1-SI-MOV-1864A	11715-CBM-096A	2 OF 3	C7	MO GATE	10.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"A" LOW HEAD SI PUMP COLD LEG DISCHARGE STOP VALVE												
1-SI-MOV-1864B	11715-CBM-096A	2 OF 3	C6	MO GATE	10.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"B" LOW HEAD SI PUMP COLD LEG DISCHARGE STOP VALVE												
1-SI-MOV-1865A	11715-CBM-096B	1 OF 4	C7	MO GATE	12.000	2	B		EV	C O		24 24	
									ST	C O		24 24	
									VP	OC			
	"A" ACCUMULATOR DISCHARGE ISOLATION VALVE TO RCS COLD LEG												
1-SI-MOV-1865B	11715-CBM-096B	2 OF 4	C5	MO GATE	12.000	2	B		EV	C O		24 24	
									ST	C O		24 24	
									VP	OC			
	"B" ACCUMULATOR DISCHARGE ISOLATION VALVE TO RCS COLD LEG												
1-SI-MOV-1865C	11715-CBM-096B	3 OF 4	C5	MO GATE	12.000	2	B		EV	C O		24 24	
									ST	C O		24 24	
									VP	OC			
	"C" ACCUMULATOR DISCHARGE ISOLATION VALVE TO RCS COLD LEG												
1-SI-MOV-1867A	11715-CBM-096A	3 OF 3	D4	MO GATE	3.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	BORON INJECTION TANK HIGH HEAD SI INLET VALVE												
1-SI-MOV-1867B	11715-CBM-096A	3 OF 3	D4	MO GATE	3.000	2	B		EV	C O			
									ST	C O			
									VP	OC			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	BORON INJECTION TANK HIGH HEAD SI INLET VALVE												
1-SI-MOV-1867C	11715-CBM-096A	3 OF 3	E7	MO GATE	3.000	2	A	CIV	EV	C O			
									LT	C	59		
									ST	C O			
									VP	OC			
	BORON INJECTION TANK OUTLET TO RCS COLD LEG, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-SI-MOV-1867D	11715-CBM-096A	3 OF 3	D7	MO GATE	3.000	2	A	CIV	EV	C O			
									LT	C	59		
									ST	C O			
									VP	OC			
	BORON INJECTION TANK OUTLET TO RCS COLD LEG, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-SI-MOV-1869A	11715-CBM-096A	3 OF 3	C8	MO GATE	3.000	2	A	CIV	EV	C O		23 23	
									LT	C			
									ST	C O		23 23	
									VP	OC			
	HIGH HEAD SI FROM CHARGING HEADER TO RCS HOT LEGS, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-SI-MOV-1869B	11715-CBM-096A	3 OF 3	B8	MO GATE	3.000	2	A	CIV	EV	C O		23 23	
									LT	C			
									ST	C O		23 23	
									VP	OC			
	HIGH HEAD SI FROM CHARGING HEADER TO RCS HOT LEGS, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-SI-MOV-1885A	11715-CBM-096A	2 OF 3	C3	MO GLOBE	2.000	2	A		EV	C			
									LT	C	75		
									ST	C			
									VP	OC			
	"A" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION												
1-SI-MOV-1885B	11715-CBM-096A	2 OF 3	B3	MO GLOBE	2.000	2	A		EV	C			
									LT	C	75		
									ST	C			
									VP	OC			
	"B" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION												
1-SI-MOV-1885C	11715-CBM-096A	2 OF 3	D3	MO GLOBE	2.000	2	A		EV	C			
									LT	C	75		
									ST	C			
									VP	OC			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	"A" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION												
1-SI-MOV-1885D	11715-CBM-096A	2 OF 3	B3	MO GLOBE	2.000	2	A		EV	C			
									LT	C	75		
									ST	C			
									VP	OC			
	"B" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION												
1-SI-MOV-1890A	11715-CBM-096A	2 OF 3	D7	MO GATE	10.000	2	A	CIV	EV	C		23	
										O		23	
									LT	C			
									ST	C		23	
										O		23	
									VP	OC			
	"A" LOW HEAD SI PUMP HOT LEG DISCHARGE STOP VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-SI-MOV-1890B	11715-CBM-096A	2 OF 3	D7	MO GATE	10.000	2	A	CIV	EV	C		23	
										O		23	
									LT	C			
									ST	C		23	
										O		23	
									VP	OC			
	"B" LOW HEAD SI PUMP HOT LEG DISCHARGE STOP VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-SI-MOV-1890C	11715-CBM-096A	2 OF 3	C8	MO GATE	10.000	2	A	CIV	EV	C			
										O			
									LT	C	59		
									ST	C			
										O			
									VP	OC			
	LOW HEAD SI PUMPS COLD LEG DISCHARGE STOP VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-SI-MOV-1890D	11715-CBM-096A	2 OF 3	C7	MO GATE	10.000	2	A	CIV	EV	C			
										O			
									LT	C	59		
									ST	C			
										O			
									VP	OC			
	LOW HEAD SI PUMPS COLD LEG DISCHARGE STOP VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE												
1-SI-RV-1845A	11715-CBM-096A	2 OF 3	D6	RELIEF VALVE	.750	2	C		SP	O			
	"A" LOW HEAD SI PUMP DISCHARGE RELIEF VALVE, RV DISCHARGE TO SAFEGUARDS AREA SUMP												
1-SI-RV-1845B	11715-CBM-096A	2 OF 3	C7	RELIEF VALVE	.750	2	C		SP	O			
	LOW HEAD SI HEADER TO COLD LEG RELIEF VALVE, RV DISCHARGE TO SAFEGUARDS AREA SUMP												
1-SI-RV-1845C	11715-CBM-096A	2 OF 3	C6	RELIEF VALVE	.750	2	C		SP	O			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-SW-0003	11715-CBM-078A	3 OF 4	D7	CHECK VALVE	20.000	3	C		CV	C O	63 63		
	UNIT 1 "A" SERVICE WATER PUMP DISCHARGE CHECK VALVE												
1-SW-0010	11715-CBM-078A	3 OF 4	D6	CHECK VALVE	20.000	3	C		CV	C O	63 63		
	UNIT 1 "B" SERVICE WATER PUMP DISCHARGE CHECK VALVE												
1-SW-0022	11715-CBM-078A	1 OF 4	C3	CHECK VALVE	24.000	3	C		CV	C O	 73		
	UNIT 1 AUXILIARY SERVICE WATER PUMP DISCHARGE CHECK VALVE												
1-SW-0114	11715-CBM-078B	1 OF 4	F8	CHECK VALVE	24.000	3	C		CV	O	45		
	"A" SERVICE WATR HEADER SUPPLY CHECK VALVE TO RECIRC SPRAY HX UPSTREAM OF CROSS CONNECT												
1-SW-0116	11715-CBM-078B	1 OF 4	F8	CHECK VALVE	24.000	3	C		CV	O	45		
	"B" SERVICE WATR HEADER SUPPLY CHECK VALVE TO RECIRC SPRAY HX UPSTREAM OF CROSS CONNECT												
1-SW-0120	11715-CBM-078B	1 OF 4	E3	CHECK VALVE	16.000	2	C		CV	O	45		
	"A" RECIRC SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY CHECK VALVE												
1-SW-0130	11715-CBM-078B	1 OF 4	E4	CHECK VALVE	16.000	2	C		CV	O	45		
	"B" RECIRC SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY CHECK VALVE												
1-SW-0140	11715-CBM-078B	1 OF 4	E6	CHECK VALVE	16.000	2	C		CV	O	45		
	"C" RECIRC SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY CHECK VALVE												
1-SW-0150	11715-CBM-078B	1 OF 4	E7	CHECK VALVE	16.000	2	C		CV	O	45		
	"D" RECIRC SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY CHECK VALVE												
1-SW-0251	11715-CBM-078C	2 OF 2	B8	MANUAL GATE	4.000	3	B		EV	C			
	SERVICE WATER SUPPLY MAUNAL ISOLATION VALVE												
1-SW-0252	11715-CBM-078C	2 OF 2	B8	CHECK VALVE	4.000	3	C		CV	O			
	SERVICE WATER SUPPLY CHECK VALVE												
1-SW-0254	11715-CBM-078C	2 OF 2	B8	MANUAL GATE	4.000	3	B		EV	C			
	SERVICE WATER SUPPLY MAUNAL ISOLATION VALVE												
1-SW-0255	11715-CBM-078C	2 OF 2	B8	CHECK VALVE	4.000	3	C		CV	O			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	SERVICE WATER SUPPLY CHECK VALVE												
1-SW-0285	11715-CBM-078C	2 OF 2	B8	MANUAL GATE	4.000	3	B		EV	C			
	SERVICE WATER RETURN MAUNAL ISOLATION VALVE												
1-SW-0286	11715-CBM-078C	2 OF 2	B8	MANUAL GATE	4.000	3	B		EV	C			
	SERVICE WATER RETURN MAUNAL ISOLATION VALVE												
1-SW-0364	11715-CBB-040D	1 OF 3	E7	CHECK VALVE	4.000	NC	C		CV	O			
	SERVICE WATER SUPPLY TO CONTROL ROOM CONDENSER WATER PUMPS												
1-SW-0386	11715-CBB-040D	1 OF 3	C7	CHECK VALVE	4.000	NC	C		CV	O			
	SERVICE WATER SUPPLY TO CONTROL ROOM CONDENSER WATER PUMPS												
1-SW-0420	11715-CBB-040D	1 OF 3	A7	CHECK VALVE	4.000	NC	C		CV	O			
	SERVICE WATER SUPPLY TO CONTROL ROOM CONDENSER WATER PUMPS												
1-SW-0630	11715-CBM-078G	1 OF 2	E8	CHECK VALVE	2.000	3	C		CV	O		35	
	SERVICE WATER SUPPLY TO CHARGING PUMP LUBE OIL COOLER CHECK VALVE												
1-SW-0631	11715-CBM-078G	1 OF 2	E7	CHECK VALVE	2.000	3	C		CV	O		35	
	SERVICE WATER SUPPLY TO CHARGING PUMP LUBE OIL COOLER CHECK VALVE												
1-SW-0641	11715-CBM-078G	1 OF 2	E6	CHECK VALVE	2.000	3	C		CV	O		35	
	SERVICE WATER SUPPLY TO CHARGING PUMP SEAL COOLER CHECK VALVE												
1-SW-0644	11715-CBM-078G	1 OF 2	E7	CHECK VALVE	2.000	3	C		CV	O		35	
	SERVICE WATER SUPPLY TO CHARGING PUMP SEAL COOLER CHECK VALVE												
1-SW-0647	11715-CBM-078G	1 OF 2	E6	CHECK VALVE	2.000	3	C		CV	O		35	
	SERVICE WATER SUPPLY TO CHARGING PUMP LUBE OIL COOLER CHECK VALVE												
1-SW-0648	11715-CBM-078G	1 OF 2	E6	CHECK VALVE	2.000	3	C		CV	O		35	
	SERVICE WATER SUPPLY TO CHARGING PUMP LUBE OIL COOLER CHECK VALVE												
1-SW-0658	11715-CBM-078G	1 OF 2	E5	CHECK VALVE	2.000	3	C		CV	O		35	
	SERVICE WATER SUPPLY TO CHARGING PUMP SEAL COOLER CHECK VALVE												

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-SW-0661	11715-CBM-078G	1 OF 2	E5	CHECK VALVE	2.000	3	C		CV	O		35	
	SERVICE WATER SUPPLY TO CHARGING PUMP SEAL COOLER CHECK VALVE												
1-SW-0664	11715-CBM-078G	1 OF 2	E4	CHECK VALVE	2.000	3	C		CV	O		35	
	SERVICE WATER SUPPLY TO CHARGING PUMP LUBE OIL COOLER CHECK VALVE												
1-SW-0665	11715-CBM-078G	1 OF 2	E4	CHECK VALVE	2.000	3	C		CV	O		35	
	SERVICE WATER SUPPLY TO CHARGING PUMP LUBE OIL COOLER CHECK VALVE												
1-SW-0678	11715-CBM-078G	1 OF 2	A3	MANUAL GATE	4.000	3	B		EV	C			
	SERVICE WATER RETURN MAUNAL ISOLATION VALVE												
1-SW-0679	11715-CBM-078G	1 OF 2	B3	MANUAL GATE	4.000	3	B		EV	C			
	SERVICE WATER RETURN MAUNAL ISOLATION VALVE												
1-SW-0681	11715-CBM-078G	1 OF 2	F3	MANUAL GATE	4.000	3	B		EV	C			
	SERVICE WATER SUPPLY MAUNAL ISOLATION VALVE												
1-SW-0686	11715-CBM-078G	1 OF 2	E3	CHECK VALVE	2.000	3	C		CV	O		35	
	SERVICE WATER SUPPLY TO CHARGING PUMP SEAL COOLER CHECK VALVE												
1-SW-0689	11715-CBM-078G	1 OF 2	E3	CHECK VALVE	2.000	3	C		CV	O		35	
	SERVICE WATER SUPPLY TO CHARGING PUMP SEAL COOLER CHECK VALVE												
1-SW-0694	11715-CBM-078G	1 OF 2	F3	MANUAL GATE	4.000	3	B		EV	C			
	SERVICE WATER SUPPLY MAUNAL ISOLATION VALVE												
1-SW-1067	11715-CBM-078A	3 OF 4	E7	MANUAL GATE	1.000	3	B		EV	C		45	
	SERVICE WATER CHEMICAL ADDITION SYSTEM MANUAL ISOLATION VALVE												
1-SW-1070	11715-CBM-078A	3 OF 4	F7	MANUAL GATE	1.000	3	B		EV	C		45	
	SERVICE WATER CHEM ADDITION SYSTEM MANUAL ISOLATION VALVE												
1-SW-1139	11715-CBM-078A	3 OF 4	E7	MANUAL GATE	1.500		B		EV	C		45	
	SERVICE WATER CHEM ADDITION SYSTEM MANUAL ISOLATION VALVE												
1-SW-MOV-101A	11715-CBM-078A	4 OF 4	B3	MO BFLY	24.000	3	B		EV ST VP	O O OC		34 34	

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	"A" SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS												
1-SW-MOV-101B	11715-CBM-078A	4 OF 4	B3	MO BFLY	24.000	3	B		EV	O		34	
									ST	O		34	
									VP	OC			
	"A" SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS												
1-SW-MOV-101C	11715-CBM-078A	4 OF 4	B3	MO BFLY	24.000	3	B		EV	O		34	
									ST	O		34	
									VP	OC			
	"B" SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS												
1-SW-MOV-101D	11715-CBM-078A	4 OF 4	C3	MO BFLY	24.000	3	B		EV	O		34	
									ST	O		34	
									VP	OC			
	"B" SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS												
1-SW-MOV-102A	11715-CBM-078B	1 OF 4	F8	MO BFLY	24.000	3	B		EV	C			
									ST	C			
									VP	OC			
	SERVICE WATER SUPPLY CROSS CONNECTS TO RECIRC SPRAY HEAT EXCHANGERS												
1-SW-MOV-102B	11715-CBM-078B	1 OF 4	F8	MO BFLY	24.000	3	B		EV	C			
									ST	C			
									VP	OC			
	SERVICE WATER SUPPLY CROSS CONNECTS TO RECIRC SPRAY HEAT EXCHANGERS												
1-SW-MOV-103A	11715-CBM-078B	1 OF 4	E3	MO BFLY	16.000	2	A	CIV	EV	C			
										O			
									LT	C			
									ST	C			
										O			
									VP	OC			
	SERVICE WATER SUPPLY TO "A" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												
1-SW-MOV-103B	11715-CBM-078B	1 OF 4	E4	MO BFLY	16.000	2	A	CIV	EV	C			
										O			
									LT	C			
									ST	C			
										O			
									VP	OC			
	SERVICE WATER SUPPLY TO "B" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												
1-SW-MOV-103C	11715-CBM-078B	1 OF 4	E6	MO BFLY	16.000	2	A	CIV	EV	C			
										O			
									LT	C			
									ST	C			
										O			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-SW-MOV-103C	11715-CBM-078B	1 OF 4	E6	MO BFLY	16.000	2	A	CIV	VP	OC			
	SERVICE WATER SUPPLY TO "C" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												
1-SW-MOV-103D	11715-CBM-078B	1 OF 4	E7	MO BFLY	16.000	2	A	CIV	EV	C O			
									LT	C			
									ST	C O			
									VP	OC			
	SERVICE WATER SUPPLY TO "D" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												
1-SW-MOV-104A	11715-CBM-078B	1 OF 4	C3	MO BFLY	16.000	2	A	CIV	EV	C O			
									LT	C			
									ST	C O			
									VP	OC			
	SERVICE WATER RETURN FROM "A" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												
1-SW-MOV-104B	11715-CBM-078B	1 OF 4	C5	MO BFLY	16.000	2	A	CIV	EV	C O			
									LT	C			
									ST	C O			
									VP	OC			
	SERVICE WATER RETURN FROM "B" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												
1-SW-MOV-104C	11715-CBM-078B	1 OF 4	C6	MO BFLY	16.000	2	A	CIV	EV	C O			
									LT	C			
									ST	C O			
									VP	OC			
	SERVICE WATER RETURN FROM "C" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												
1-SW-MOV-104D	11715-CBM-078B	1 OF 4	C7	MO BFLY	16.000	2	A	CIV	EV	C O			
									LT	C			
									ST	C O			
									VP	OC			
	SERVICE WATER RETURN FROM "D" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												
1-SW-MOV-105A	11715-CBM-078A	4 OF 4	C3	MO BFLY	24.000	3	B		EV	O		34	
									ST	O		34	
									VP	OC			
	"B" SERVICE WATER HEADER RETURN ISOLATION FROM RECIRC SPRAY HEAT EXCHANGERS												
1-SW-MOV-105B	11715-CBM-078A	4 OF 4	C3	MO BFLY	24.000	3	B		EV	O		34	
									ST	O		34	

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
1-SW-MOV-105B	11715-CBM-078A	4 OF 4	C3	MO BFLY	24.000	3	B		VP	OC			
	"B" SERVICE WATER HEADER RETURN ISOLATION FROM RECIRC SPRAY HEAT EXCHANGERS												
1-SW-MOV-105C	11715-CBM-078A	4 OF 4	C3	MO BFLY	24.000	3	B		EV	O		34	
									ST	O		34	
									VP	OC			
	"A" SERVICE WATER HEADER RETURN ISOLATION FROM RECIRC SPRAY HEAT EXCHANGERS												
1-SW-MOV-105D	11715-CBM-078A	4 OF 4	C3	MO BFLY	24.000	3	B		EV	O		34	
									ST	O		34	
									VP	OC			
	"A" SERVICE WATER HEADER RETURN ISOLATION FROM RECIRC SPRAY HEAT EXCHANGERS												
1-SW-MOV-106A	11715-CBM-078B	1 OF 4	B8	MO BFLY	24.000	3	B		EV	C			
									ST	C			
									VP	OC			
	SERVICE WATER RETURN CROSS CONNECTS FROM RECIRC SPRAY HEAT EXCHANGERS												
1-SW-MOV-106B	11715-CBM-078B	1 OF 4	A8	MO BFLY	24.000	3	B		EV	C			
									ST	C			
									VP	OC			
	SERVICE WATER RETURN CROSS CONNECTS FROM RECIRC SPRAY HEAT EXCHANGERS												
1-SW-MOV-108A	11715-CBM-078C	1 OF 2	B3	MO BFLY	24.000	3	B		EV	C		43	
										O		43	
									ST	C		43	
										O		43	
									VP	OC			
	"A" SERVICE WATER HEADER SUPPLY ISOLATION TO COMPONENT COOLING HEAT EXCHANGERS												
1-SW-MOV-108B	11715-CBM-078C	1 OF 2	B3	MO BFLY	24.000	3	B		EV	C		43	
										O		43	
									ST	C		43	
										O		43	
									VP	OC			
	"A" SERVICE WATER HEADER SUPPLY ISOLATION TO COMPONENT COOLING HEAT EXCHANGERS												
1-SW-MOV-110A	11715-CBM-078A	4 OF 4	C4	MO BFLY	8.000	3	E		VP	OC			
	SERVICE WATER HEADER SUPPLY TO RECIRCULATION AIR COOLERS												
1-SW-MOV-110B	11715-CBM-078A	4 OF 4	C4	MO BFLY	8.000	3	E		VP	OC			
	SERVICE WATER HEADER SUPPLY TO RECIRCULATION AIR COOLERS												
1-SW-MOV-113A	11715-CBM-078A	4 OF 4	B7	MO BFLY	10.000	3	E		VP	OC			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	SERVICE WATER RETURN ISOLATION FROM FUEL PIT COOLERS												
1-SW-MOV-113B	11715-CBM-078A	4 OF 4	B5	MO BFLY	10.000	3	E		VP	OC			
	SERVICE WATER SUPPLY ISOLATION TO FUEL PIT COOLERS												
1-SW-MOV-114A	11715-CBM-078A	4 OF 4	C4	MO BFLY	8.000	3	E		VP	OC			
	SERVICE WATER HEADER RETURN FROM RECIRCULATION AIR COOLERS												
1-SW-MOV-114B	11715-CBM-078A	4 OF 4	C4	MO BFLY	8.000	3	E		VP	OC			
	SERVICE WATER HEADER RETURN FROM RECIRCULATION AIR COOLERS												
1-SW-MOV-115A	11715-CBM-078A	1 OF 4	E7	MO BFLY	24.000	3	B		EV ST VP	O O OC			
	SERVICE WATER HEADER SUPPLY ISOLATION VALVE FROM AUXILIARY SERVICE WATER PUMPS												
1-SW-MOV-117	11715-CBM-078A	1 OF 4	C3	MO BFLY	24.000	3	B		EV ST VP	O O OC			
	UNIT 1 AUXILIARY SERVICE WATER PUMP DISCHARGE ISOLATION VALVE												
1-SW-MOV-118	11715-CBM-078A	1 OF 4	D4	MO BFLY	24.000	3	E		VP	OC			
	AUXILIARY SERVICE WATER SUPPLY HEADER CROSS CONNECT VALVE												
1-SW-MOV-119	11715-CBM-078A	1 OF 4	D4	MO BFLY	8.000	3	B		EV ST VP	C C OC			
	MAKEUP PUMP SUPPLY VALVE												
1-SW-MOV-120A	11715-CBM-078A	4 OF 4	F3	MO BFLY	10.000	NC	E		VP	OC			
	AUXILIARY SERVICE WATER RETURN HEADER VALVE												
1-SW-MOV-120B	11715-CBM-078A	4 OF 4	F3	MO BFLY	10.000	NC	E		VP	OC			
	AUXILIARY SERVICE WATER RETURN HEADER VALVE												
1-SW-MOV-121A	11715-CBM-078H	1 OF 1	B5	MO BFLY	18.000	3	B		EV ST VP	O O OC			
	SERVICE WATER TO SPRAY ARRAYS STOP VALVE												
1-SW-MOV-121B	11715-CBM-078H	1 OF 1	B7	MO BFLY	18.000	3	B		EV ST	O O			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCH-
1-SW-MOV-121B	11715-CBM-078H	1 OF 1	B7	MO BFLY	18.000	3	B		VP	OC			
	SERVICE WATER TO SPRAY ARRAYS STOP VALVE												
1-SW-MOV-122A	11715-CBM-078H	1 OF 1	C5	MO BFLY	18.000	3	B		EV ST VP	O O OC			
	SERVICE WATER TO SPRAY ARRAYS STOP VALVE												
1-SW-MOV-122B	11715-CBM-078H	1 OF 1	C6	MO BFLY	18.000	3	B		EV ST VP	O O OC			
	SERVICE WATER TO SPRAY ARRAYS STOP VALVE												
1-SW-MOV-123A	11715-CBM-078H	1 OF 1	E4	MO BFLY	24.000	3	B		EV ST VP	C C OC			
	SERVICE WATER BYPASS VALVE												
1-SW-MOV-123B	11715-CBM-078H	1 OF 1	E8	MO BFLY	24.000	3	B		EV ST VP	C C OC			
	SERVICE WATER BYPASS VALVE												
1-SW-RV-100A	11715-CBM-078B	1 OF 4	E3	RELIEF VALVE	.750	2	C		SP	O			
	"A" RECIRC SPRAY HEAT EXCHANG SERVICE WATER RELIEF VALVE, RV DISCHARGE TO CONT SUMP												
1-SW-RV-100B	11715-CBM-078B	1 OF 4	E4	RELIEF VALVE	.750	2	C		SP	O			
	"B" RECIRC SPRAY HEAT EXCHANG SERVICE WATER RELIEF VALVE, RV DISCHARGE TO CONT SUMP												
1-SW-RV-100C	11715-CBM-078B	1 OF 4	E6	RELIEF VALVE	.750	2	C		SP	O			
	"C" RECIRC SPRAY HEAT EXCHANG SERVICE WATER RELIEF VALVE, RV DISCHARGE TO CONT SUMP												
1-SW-RV-100D	11715-CBM-078B	1 OF 4	E7	RELIEF VALVE	.750	2	C		SP	O			
	"D" RECIRC SPRAY HEAT EXCHANG SERVICE WATER RELIEF VALVE, RV DISCHARGE TO CONT SUMP												
1-SW-TCV-102A	11715-CBM-078G	1 OF 2	C4	AO GATE	2.000	3	B		EV FS ST	O O O			
	SERVICE WATER FROM CHARGING PUMP LUBE OIL COOLER TEMP CONTROL VALVE												
1-SW-TCV-102B	11715-CBM-078G	1 OF 2	C6	AO GATE	2.000	3	B		EV FS ST	O O O			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	SERVICE WATER FROM CHARGING PUMP LUBE OIL COOLER TEMP CONTROL VALVE												
1-SW-TCV-102C	11715-CBM-078G	1 OF 2	C8	AO GATE	2.000	3	B		EV FS ST	O O O			
	SERVICE WATER FROM CHARGING PUMP LUBE OIL COOLER TEMP CONTROL VALVE												
2-SW-MOV-215B	11715-CBM-078A	1 OF 4	E6	MO BFLY	24.000	3	B		EV ST VP	O O OC			
	SERVICE WATER HEADER SUPPLY ISOLATION VALVE FROM AUXILIARY SERVICE WATER PUMPS												

RELIEF REQUEST V-38

I. IDENTIFICATION OF COMPONENTS

System : Safety Injection

Valve(s): 1-SI-9
1-SI-18
1-SI-26

Class : 2

II. IMPRACTICAL CODE REQUIREMENTS

Exercise valves every three months

III. BASIS FOR RELIEF

Due to system design, check valves 1-SI-9 and 26 are not in the Low Head Safety Injection Pump test flowpaths. They cannot be full or part-stroke tested during power operation because the LHSI pumps cannot overcome reactor coolant system pressure. Valve 1-SI-18 can only be partial stroked every quarter because the quarterly test loop is a mini-flow loop.

During cold shutdown, the reactor coolant system pressure still prevents full flow testing of the check valves. Partial stroke exercising the valves with flow could cause an overpressurization condition during cold shutdowns.

To verify closure of Valves 1-SI-9 and 26, the low head safety injection system must be isolated which can only be done at reactor refueling. By isolating the system, the test boundary is established to demonstrate adequate seat tightness for the discharge valve to the non-running pump.

IV. ALTERNATE TESTING

Valves 1-SI-9 and 26 will be exercised to the full open and closed position every reactor refueling (not to exceed 24 months). Valve 1-SI-18 will be partial stroke tested every quarter and full flow tested every reactor refueling.

RELIEF REQUEST V-41

I. IDENTIFICATION OF COMPONENTS

System : Safety Injection

Valve(s):	1-SI-83	1-SI-195
	1-SI-86	1-SI-197
	1-SI-89	1-SI-199

Class : 1

II. IMPRACTICAL CODE REQUIREMENTS

Exercise valves every three months

III. BASIS FOR RELIEF

These Safety Injection check valves must open and close to fulfill their safety functions. They cannot be full or part-stroke exercised to the open position during power operation because this would thermally shock the injection system and cause unnecessary plant transients. Flow cannot be established in the low head injection lines during normal plant operation.

During cold shutdown, the Reactor Coolant System pressure still prevents full design flow. Also, a partial or full stroke test could cause an overpressurization of the Reactor Coolant System and force a safety system to function.

These valves can only be tested to the closed position by draining the lines and performing a back seat leak test. They are identified as pressure isolation valves in Technical Specification Table 3.4-1 and as such are leakage tested every reactor refueling outage.

With low head pump flow, the cold leg injection valves 1-SI-83, 86, 89, 195, 197 and 199 will be nonintrusively monitored using a sampling plan every reactor refueling.

The sampling plan will follow the recommended alternative testing method described in NUREG 1482, Section 4.1.2. Per this plan, the valves will be placed into two groups with valves 1-SI-83, 86 and 89 in one group, and valves 1-SI-195, 197 and 199 in the other group. During initial testing using nonintrusive techniques, each valve in the group will be verified as operable.

During subsequent testing, nonintrusive verification will be performed for only one valve of the group on a rotating schedule each time the testing is performed, and the balance of the group will be flow tested. If problems are found with the sample valve that are determined to affect the operational readiness of the valve, all valves in the group must be tested using nonintrusive techniques during the same outage.

IV. ALTERNATE TESTING

Exercise to the open position using nonintrusive techniques every reactor refueling. Exercise to the closed position every reactor refueling per Technical Specification 4.4.6.2.2.

RELIEF REQUEST V-42

I. IDENTIFICATION OF COMPONENTS

System : Safety Injection

Valve(s):	1-SI-125	1-SI-144
	1-SI-127	1-SI-159
	1-SI-142	1-SI-161

Class : 1

II. IMPRACTICAL CODE REQUIREMENTS

Exercise valves for operability every three months

III. BASIS FOR RELIEF

These valves cannot be partial or full flow tested during normal operation because the accumulator pressure (600 to 650 psig) is below Reactor Coolant System pressure and the injection of borated water would upset the reactor coolant chemistry.

During cold shutdown, the RCS pressure may still prevent full flow testing. Also, discharging the accumulators would challenge the Low Temperature Overpressure Protection System.

A partial flow test is not practical during cold shutdowns. The flow from the accumulator is dependent on the pressure differential between the accumulator and the RCS. The pressure differential cannot be controlled to the fine degree necessary to preclude dumping too much water into the pressurizer, thus making it difficult to control pressurizer level while pressure is being reduced during cooldown. Also, the RCS temperature is high during short cold shutdowns. Dumping cold accumulator water into the RCS could thermally shock the system.

The accumulators must be isolated to verify closure using back flow for valves 1-SI-127, 144 and 161. The small increase in safety gained by performing the back seat check valve tests every cold shutdown versus every reactor refueling does not justify the added burden of the increased test frequency.

The use of nonintrusive monitoring techniques are being evaluated for confirming full disk movement. If nonintrusive techniques can provide a "positive means" for verifying obturator movement, a sampling program will be used as described below due to the burden of applying these techniques in the field.

IV. ALTERNATE TESTING

During the first refueling outage where nonintrusive techniques are used, all valves in the group will be tested to verify that the techniques verify valve obturator movement. During subsequent refueling outages, flow testing will be performed on all valves in the group, but the nonintrusive techniques will be applied only to one sample valve in each group, on a rotating basis, unless indications of problems are identified. In this case, all valves in the group will be subjected to the nonintrusive techniques. Valves 1-SI-127, 144 and 161 are closest to the reactor coolant system and will be in one group, and valves 1-SI-125, 142 and 159 will be in the other group. This sampling plan will follow the recommended alternative testing method described in NUREG 1482, Section 4.1.2.

The flow test will consist of discharging the accumulator from an initial pressure that is less than 600 psig. Discharging the accumulator at a lower initial pressure reduces the severity of the transient and the risk of adverse effects on the reactor coolant system. The low pressure test should provide enough flow to force the disk to the full open position.

If full disk movement cannot be confirmed using nonintrusive monitoring during the initial verification of obturator movement, these valves will be placed into two groups and one valve from each group will be disassembled and inspected every other reactor refueling. The justification for the extended disassembly and inspection schedule is available at the station.

Valves 1-SI-127, 144 and 161 will be confirmed closed every reactor refueling.

RELIEF REQUEST V-43

I. IDENTIFICATION OF COMPONENTS

System : Safety Injection

Valve(s):			
	1-SI-79	1-SI-185	1-SI-211
	1-SI-90	1-SI-201	1-SI-213
	1-SI-95	1-SI-206	
	1-SI-99	1-SI-207	
	1-SI-103	1-SI-209	

Class : 1 for 1-SI-90, 95, 99, 103, 201, 209, 211 and 213
2 for 1-SI-79, 185, 206, 207

II. IMPRACTICAL CODE REQUIREMENTS

Exercise valves every three months

III. BASIS FOR RELIEF

These Safety Injection check valves must open and close to fulfill their safety function. They cannot be full or part-stroke exercised to the open position during power operation because this would cause safety injection flow into the Reactor Coolant System which would thermally shock the injection system and cause unnecessary plant transients. Flow cannot be established in the low head injection lines during normal plant operation.

During cold shutdown, the Reactor Coolant System pressure still prevents full design flow. Also, a partial or full stroke test could cause an overpressurization of the Reactor Coolant System and force a safety system to function.

These valves can only be tested to the closed position by a back seat leak test, which requires draining the lines.

With low head pump flow, the hot leg injection valves 1-SI-95, 99, 103, 209, 211 and 213 will be nonintrusively monitored using a sampling plan every reactor refueling. The sampling plan will follow the recommended alternative testing method described in NUREG 1482, Section 4.1.2.

During subsequent testing, nonintrusive verification will be performed for only one valve of the group on a rotating schedule each time the testing is performed, and the balance of the group will be flow tested. If problems are found with the sample valve that are determined to affect the operational readiness of the valve, all valves in the group must be tested using nonintrusive techniques during the same outage.

IV. ALTERNATE TESTING

Exercise to the open and closed positions every reactor refueling.

RELIEF REQUEST V-50

Relief Request Withdrawn

RELIEF REQUEST V-72

I. IDENTIFICATION OF COMPONENTS

System : Chemical & Volume Control System

Valve(s): 1-CH-215
1-CH-649

Class : 2

II. IMPRACTICAL CODE REQUIREMENTS

Exercise valve closed every three months

III. BASIS FOR RELIEF

Due to the plant configuration, these valves cannot be verified closed using flow. The only method to verify closure other than disassembly and inspection is to perform a leak rate/back pressure test on each valve.

During normal operation, these valves cannot be isolated to perform a back pressure test because normal letdown and charging flow, and reactor coolant pump seal flow would be interrupted. Also, if the valves were isolated during normal operation, the charging pumps would have to be secured.

These valves are also subject to leak testing, which is performed every reactor refueling. Verification of closure will be performed during the leak test every reactor refueling instead of every cold shutdown because the small increase in safety gained by testing during cold shutdown does not justify the burden of performing a leak rate test.

IV. ALTERNATE TESTING

Exercise to the closed position every reactor refueling.

RELIEF REQUEST V-74

Replaced by Cold Shutdown Justification CSV-46

RELIEF REQUEST V-75

I. IDENTIFICATION OF COMPONENTS

System : Chemical and Volume Control and Safety Injection

Valve(s):

1-CH-MOV-1115B	1-SI-MOV-1885A
1-CH-MOV-1115D	1-SI-MOV-1885B
1-SI-47	1-SI-MOV-1885C
	1-SI-MOV-1885D

Class : 2

II. IMPRACTICAL CODE REQUIREMENTS

IWV-3427 (a) - Valves with leakage rates exceeding either the values specified by the Owner or those rates given in IWV-3426 shall be replaced or repaired.

III. BASIS FOR RELIEF

Valves 1-CH-MOV-1115B and D, and 1-SI-47 are in the supply line to the charging pumps from the RWST. Valves 1-SI-MOV-1885A, B, C and D are on test lines that run from the discharge of the low head SI pumps to the RWST. During recirculation mode transfer, the RWST is isolated and the low head SI pumps recirculate highly contaminated water from the containment sump to the reactor vessel.

The RWST isolation valves work as a system of valves to protect the RWST from the contaminated sump water. Permissible valve leakage rates are based on each valve's possible contribution to the total allowable leakage rate to the RWST. When the leakages from each valve have been measured and summed, an individual valve's permissible leakage rate may have been exceeded but the overall allowable leakage to the RWST may not have been exceeded. In these cases, a repair or replacement may not be necessary because the system of isolation valves has been verified to be performing adequately.

IV. ALTERNATE TESTING

In addition to replacement or repair as corrective actions, an evaluation can be performed which demonstrates that even if a valve has exceeded its permissible leakage rate, the overall leakage rate to the RWST will be maintained below the overall allowable RWST leakage rate. No repair or replacement is necessary if the evaluation is performed.

COLD SHUTDOWN JUSTIFICATION CSV-20

Cold Shutdown Justification withdrawn

COLD SHUTDOWN JUSTIFICATION CSV-38

I. IDENTIFICATION OF COMPONENTS

System : Chemical and Volume Control

Valve(s): 1-CH-252
1-CH-264
1-CH-277
1-CH-649

Class : 2

II. COLD SHUTDOWN JUSTIFICATION

These check valves must open to allow charging pump recirculation. There is no permanently mounted instrumentation to measure full flow in the recirculation flow path. Therefore, full flow conditions will have to be measured by using temporary ultrasonic flow instrumentation. The ultrasonic flow transducers and their mounting carriages must be installed and the transducers referenced to a no flow condition before each test. After each test, the equipment must be removed from the field and decontaminated if necessary. Therefore, use of the ultrasonic flow instrumentation is very labor intensive and not practical for quarterly testing.

Test experience has shown that the discharge pressure drop is undetectable when flow through the recirculation line is established in conjunction with normal charging. Therefore, quarterly partial flow testing is not verifiable.

COLD SHUTDOWN JUSTIFICATION CSV-39

Cold Shutdown Justification Withdrawn

COLD SHUTDOWN JUSTIFICATION CSV-43

I. IDENTIFICATION OF COMPONENTS

System : Service Water

Valve(s): 1-SW-MOV-108A
1-SW-MOV-108B

Class : 3

II. COLD SHUTDOWN JUSTIFICATION

These isolation valves are located in series on service water supply to the component cooling heat exchangers. The component cooling heat exchangers carry a majority of the heat load for the service water system. When the heat exchangers are isolated, service water flow decreases to less than 10% of normal flow. Due to the design of the service water pumps, the pumps experience harmful high-magnitude vibrations as the service water flow decreases through a range from 7000 gpm to 6000 gpm. These pumps cannot be stopped during the valve exercise test because they provide service water to other plant heat loads. Therefore, performing the valve exercise test as frequently as once every three months should be avoided due to the harmful affects that the testing has on the service water pumps.

The valve controllers do not allow for a partial-stroke exercise test. To reduce the harmful affects of high-magnitude vibrations on the service water pumps, the isolation valves will be full-stroke exercised on a cold shutdown frequency.

COLD SHUTDOWN JUSTIFICATION CSV-44

I. IDENTIFICATION OF COMPONENTS

System : Quench Spray

Valve(s): 1-QS-MOV-102A
1-QS-MOV-102B

Class : 2

II. COLD SHUTDOWN JUSTIFICATION

These normally closed six inch motor operated isolation valves are located in parallel flow paths from the refueling water chemical addition tank to the reactor water storage tank (RWST). The piping between the isolation valves and the chemical addition tank contains high concentrations of sodium hydroxide. To exercise the motor operated valves, downstream manual isolation valves must be closed to prevent the sodium hydroxide from entering the quench spray system and chemically contaminating the boric acid solution in the RWST.

After the motor operated isolation valves are stroked open and closed, the piping between the motor operated valves and the downstream manual isolation valves must be drained of sodium hydroxide. Approximately five gallons of highly caustic fluid are drained into a plastic container after each valve test. Draining the piping presents a significant personnel hazard. Sodium hydroxide causes severe burns if it comes in contact with the skin. The test personnel must wear rubber gloves, boots and face shields.

The drains are located outdoors and are near to the ground, which makes collection difficult. Any soil that is contaminated with sodium hydroxide must be neutralized by the test personnel. Partial stroke testing of these valves presents the same hazards as full stroke testing.

To reduce the number of times that test personnel are exposed to sodium hydroxide, the motor operated isolation valves will be tested on a cold shutdown frequency.

COLD SHUTDOWN JUSTIFICATION CSV-45

I. IDENTIFICATION OF COMPONENTS

System : Service Water

Valve(s): 1-SW-1067
1-SW-1070
1-SW-1139

Class : 3

II. COLD SHUTDOWN JUSTIFICATION

These normally open manual 1 inch (1-SW-1067 and 1070) and 1.5 inch (1-SW-1139) valves are closed within 24 hours of the accident as required by the abnormal operating procedures to prevent loss of service water in the event that the connected non-seismic pipe fails. These valves are located in an expansion joint vault outside the service water pump house. The vault is defined as a confined space due to possible consumption resulting from an expansion joint failure. Entry into this confined space requires an entry permit, an air meter and two operators (buddy system). Also, special tools are required to remove the manhole cover which weighs in excess of 300 lbs and is a missile barrier. Closing these valves would require securing the service water addition system which could adversely affect the biological agent concentration in the service water.

These manual valves remain in the open position during normal operation and are not subject to wear. Closing these valves every three months to fulfill quarterly testing requirements creates an undue burden with no compensating benefit to quality and safety. Exercising these valves on a cold shutdown test frequency (but not more frequently then once every three months), is adequate to demonstrate that the valves can be closed in the case where service water isolation is required.

COLD SHUTDOWN JUSTIFICATION CSV-46

I. IDENTIFICATION OF COMPONENTS

System : Residual Heat Removal

Valve(s): 1-RH-7
1-RH-15

Class : 2

II. COLD SHUTDOWN JUSTIFICATION

These RHR pump discharge check valves can only be partial-stroke or full-stroke exercised to the open position and verified closed when the RHR pumps 1-RH-P-1A and 1-RH-P-1B are running. The low pressure pumps take suction from and discharge to the reactor coolant system which operates at 2235 psig. This pressure is well above the operating pressure of the pumps, therefore, partial-stroke or full-stroke testing during normal operation is not practical. These valves will be full-stroke exercised every cold shutdown but not more frequently then every three months.

NON-CODE ALTERNATIVE TESTING VNC-1

I. IDENTIFICATION OF COMPONENTS

System : Service Air

Valve(s): 1-GN-225, 1-GN-229, 1-IA-2152, 1-IA-2153, 1-IA-2154, 1-IA-2155

Class : NC

II. IMPRACTICAL CODE REQUIREMENTS

Exercise valves to the closed position every three months

Exercise each valve individually

III. BASIS FOR ALTERNATE TESTING

Due to the plant configuration, these valves cannot be verified closed using flow.

The only method to verify closure other than disassembly and inspection is to perform a local leak rate/back pressure test. To perform the leak rate/back pressure test, the normal instrument air and nitrogen supplies to the PORVs must be isolated. The PORVs are required to be operable during normal operation. Also, these valves are located inside containment and are inaccessible during normal operation.

These valves are also subject to leak testing, which is performed every reactor refueling. Verification of closure will be performed during the leak test every reactor refueling instead of every cold shutdown because the small increase in safety gained by testing during cold shutdown does not justify the burden of performing a back pressure test.

Valves 1-IA-2152 and 2153 are in series and valves 1-IA-2154 and 2155 are in series. There are no vents in between the two sets of valves; therefore, these valves cannot be individually back pressure tested or leak tested.

IV. ALTERNATE TESTING

Exercise to the closed position every reactor refueling.

Valves 1-IA-2152 and 2153, and valves 1-IA-2154 and 2155 will be back pressure/leak tested in groups. If the group of valves fails the test, both valves in the group will be subject to repair or replacement.

The leak test for valves 1-IA-2152, 2153, 2154 and 2155, and 1-GN-225 and 229 will consist of recording the nitrogen bottle pressure, waiting a given period of time and then recording the bottle pressure again. The results will be compared to appropriate acceptance criteria.

ATTACHMENT 3

SUMMARY OF CHANGES TO NORTH ANNA UNIT 2

IST PROGRAM REVISION 7

SUMMARY OF CHANGES TO NORTH ANNA UNIT 2
IST PROGRAM, REVISION 7

The following summary describes the changes to Revision 7 of the North Anna Unit 2 Inservice Testing (IST) Program Plan.

2.2.5 PUMP INSERVICE TESTING TABLE

UNIT 2 PUMP NUMBER	COMMENT/PROGRAM CHANGE
2-RH-P-1A 2-RH-P-1B	Program change: Test frequency was changed from every reactor refueling to every cold shutdown. Refer to relief request P-5.

2.2.6 PUMP INSERVICE TESTING RELIEF REQUESTS

UNIT 2 RELIEF REQUEST	COMMENT/STATUS
P-5	The test frequency for the RHR pumps was changed from every reactor refueling to every cold shutdown but not more frequently then every three months. Also, the hydraulic acceptance criteria will be based on a portion of the pump curve instead of a specific reference value. This change resulted from our response to Anomaly 2 in the NRC Safety Evaluation Report.
P-13	Service water pumps 2-SW-P-1A and B were deleted from this relief request. The discharge pressures are measured using gauges that meet Section XI accuracy requirements.

SUMMARY OF CHANGES TO NORTH ANNA UNIT 2
IST PROGRAM, REVISION 7

2.3.4 VALVE INSERVICE TESTING TABLE

Valves marked with an * are being added to the IST Program.

UNIT 2 VALVE NUMBER	COMMENT/PROGRAM CHANGE
2-CH-495*	This check valve was installed on the header from the charging pump recirculation lines and the RCP seal water return line in response to the Westinghouse Nuclear Service Advisory Letter (NSAL) 92-012. This advisory identified the potential for leakage of contaminated sump water outside the containment via the RCP seal water heat exchanger relief valve to the volume control tank. Program change: The valve was added to the IST program to be leak tested and tested closed every reactor refueling (refer to Relief Request V-73), and to be tested open every cold shutdown (refer to Cold Shutdown Justification CSV-39).
2-CH-MOV-2115B 2-CH-MOV-2115D 2-SI-18 2-SI-MOV-2885A 2-SI-MOV-2885B 2-SI-MOV-2885C 2-SI-MOV-2885D	Relief Request V-76 was added for the RWST isolation valves to allow for the use of an evaluation instead of repair or replacement as corrective action if a valve exceeds it's permissible leakage limit. Program change: Relief request V-76 was added.
2-HC-7	This non-Code class check valve is on the discharge line for the containment purge blower. The primary means of containment hydrogen control is by operation of the recombiners. Therefore, operation of the purge blowers is not critical to accident mitigation or recovery. This valve was carried in the IST program because of a Technical Specification surveillance requirement that could be interpreted as requiring the testing of the blower. This

	requirement has since been clarified. There is no Technical Specification surveillance requirement. Deletion of this valve was approved by SNSOC on June 28, 1995. Program change: The valve was removed from the IST program.
2-HC-69	This hydrogen analyzer discharge check valve was removed from the system along with the analyzer. Program change: The valve was removed from the IST program.
2-MS-19 2-MS-58 2-MS-96	These decay heat release stop check isolation valves are now maintained closed with the stem on the disk. In this configuration, the valve disk does not have to change position to fulfill it's isolation function. Therefore, the Code does not require the valves to be tested. Program change: The valves were removed from the IST program.
2-QS-MOV-202A 2-QS-MOV-202B	Testing valves quarterly presents a significant personnel hazard due to exposure to sodium hydroxide. Program change: These valves will be tested on a cold shutdown frequency instead of quarterly. Refer to Cold Shutdown Justification CSV-44.
2-RH-7 2-RH-15	Program change: The test frequency for these RHR pump discharge check valves was changed from every reactor refueling to every cold shutdown but not more frequently then every three months. Relief Request V-75 was replaced by Cold Shutdown Justification CSV-45.
2-RH-FCV-2605 2-RH-HCV-2758	An engineering evaluation concluded that the simultaneous failure of the RHR heat exchanger bypass and discharge valves to go to their fail-safe positions on loss of

	instrument air will not create a safety concern for achieving safe shutdown. Therefore, these valves need not be included in the IST program. Program change: The valves were removed from the IST Program.
2-SI-91 2-SI-99 2-SI-105	Program change: Reference to using nonintrusive techniques and a sampling plan for verifying full-stroke of the cold leg safety injection check valves was added to Relief Request V-42.
2-SI-92 2-SI-100 2-SI-106	Program change: Reference to using nonintrusive techniques and a sampling plan for verifying full-stroke of the cold leg safety injection check valves was added to Relief Request V-44.
2-SI-112 2-SI-113 2-SI-117 2-SI-118 2-SI-124 2-SI-125	Program change: Reference to using nonintrusive techniques and a sampling plan for verifying full-stroke of the hot leg safety injection check valves was added to Relief Request V-45.
2-SI-151 2-SI-153 2-SI-168 2-SI-170 2-SI-185 2-SI-187	Program change: Reference to using a sampling plan with nonintrusive techniques for verifying full-stroke of the safety injection accumulator discharge check valves was added to Relief Request V-43. Also, the grouping of the valves was changed.
2-SI-MOV-2863B	Program change: The drawing reference was changed to 12050-CBM-096A.
2-SW-MOV-202A 2-SW-MOV-202B 2-SW-MOV-206A 2-SW-MOV-206B	Further evaluation resulting from the recent service water system review revealed that closing these service water cross-tie isolation valves is the preferred method for isolating an inoperable header. Program change: Closure testing was added to the IST program.

2-SW-MOV-208A 2-SW-MOV-208B	These isolation valves are located in series on the service water supply to the component cooling heat exchangers. Testing them every quarter creates a reduced flow condition for the service water pumps which in turn causes the pumps to experience harmful high-magnitude vibrations. Program change: These valves will be tested on a cold shutdown frequency instead of quarterly. Refer to Cold Shutdown Justification CSV-43.

2.3.5 VALVE INSERVICE TESTING PROGRAM RELIEF REQUESTS

UNIT 2 RELIEF REQUEST	COMMENT/STATUS
V-39	The basis for relief was revised to indicate that the low head safety injection system must be isolated to perform closure testing on the check valves.
V-42	Reference to using nonintrusive techniques and a sampling plan for verifying full-stroke of the cold leg safety injection check valves was added. The alternative method described for using nonintrusive techniques described in NUREG 1482 will be followed. According to NUREG 1482, "Relief is not required because this test method is considered an acceptable 'other positive means,' even if used on a rotating basis. However, if the recommended alternative methods of this section are implemented, the licensee must describe the implementation of this section in the IST program document." Even though relief is not required, use of the sampling plan is described in this relief request to satisfy the documentation requirement described above.
V-43	Reference to using a sampling plan with nonintrusive techniques for verifying full-

	stroke of the safety injection accumulator discharge check valves was added. Also, the grouping of the valves was changed from valves 2-SI-170 and 187 in one group, and 2-SI-151, 153, 168 and 185 in the other group, to 2-SI-153, 170 and 187 in one group, and 2-SI-151, 168 and 185 in the other group. This change resulted from our response to Anomaly 6 in the NRC Safety Evaluation Report. The explanation for why the grouping was changed is included in our response. As described in the discussion for V-42, relief is not required for using the sampling plan.
V-44	Reference to using nonintrusive techniques and a sampling plan for verifying full-stroke of the cold leg safety injection check valves was added. As described in the discussion for V-42, relief is not required for using the sampling plan.
V-45	Reference to using nonintrusive techniques and a sampling plan for verifying full-stroke of the hot leg safety injection check valves was added. As described in the discussion for V-42, relief is not required for using the sampling plan.
V-51	Relief request is being withdrawn. The only valve (2-HC-7) in this relief request was removed from the IST program.
V-73	Check valve 2-CH-495 was installed on the header from the charging pump recirculation lines and the RCP seal water return line in response to the Westinghouse Nuclear Service Advisory Letter (NSAL) 92-012 and was added to this relief request for testing to the closed position. During normal operation, this valve cannot be isolated to perform a back pressure test because normal letdown and charging flow, and reactor coolant pump seal flow would be interrupted. Also, if the valve was isolated during normal operation, the charging pumps would have to be secured. This valve is also subject to leak testing,

	which is performed every reactor refueling. Verification of closure will be performed during the leak test every reactor refueling instead of every cold shutdown because the small increase in safety gained by testing during cold shutdown does not justify the burden of performing a leak rate test.
V-75	Relief request is being replaced by Cold Shutdown Justification CSV-45.
V-76	This relief request was added to the IST program and applies to the RWST isolation valves. In addition to replacement or repair as corrective actions, an evaluation can be performed which demonstrates that even if a valve has exceeded its permissible leakage rate, the overall leakage rate to the RWST will be maintained below the overall allowable RWST leakage rate. No repair or replacement is necessary if the evaluation is performed. The relief request was submitted to the NRC by letter dated April 26, 1994. Approval was granted by the NRC in the Safety Evaluation Report for the IST program dated October 18, 1994.

2.3.6 VALVE INSERVICE TESTING PROGRAM COLD SHUTDOWN JUSTIFICATIONS

UNIT 2 COLD SHUTDOWN JUSTIFICATION	COMMENT/STATUS
CSV-20	Justification is being withdrawn because valves 2-RH-FCV-2605 and 2-RH-HCV-2758 were deleted from the IST Program.
CSV-39	Check valve 2-CH-495 was installed on the header from the charging pump recirculation lines and the RCP seal water return line in response to the Westinghouse Nuclear Service Advisory Letter (NSAL) 92-012 and was added to this cold shutdown justification for testing to the open position. Full flow conditions have to be measured by using

temporary ultrasonic flow instrumentation which is very labor intensive.

CSV-43

Justification is being added to the IST program. Valves 2-SW-MOV-208A and B are located in series on the service water supply to the component cooling heat exchangers. The component cooling heat exchangers carry a majority of the heat load for the service water system. When the heat exchangers are isolated, service water flow decreases to less than 10% cf normal flow. Due to the design of the service water pumps, the pumps experience harmful high-magnitude vibrations as the service water flow decreases through a range from 7000 gpm to 6000 gpm. These pumps cannot be stopped during the valve exercise test because they provide service water to other plant heat loads. Therefore, performing the valve exercise test as frequently as once every three months should be avoided due to the harmful affects that the testing has on the service water pumps.

The valve controllers do not allow for a partial-stroke exercise test. To reduce the harmful affects of high-magnitude vibrations on the service water pumps, the isolation valves will be full-stroke exercised on a cold shutdown frequency.

CSV-44

Justification is being added to the IST program. The normally closed six inch motor operated isolation valves 2-QS-MOV-202A and B are located in parallel flow paths from the refueling water chemical addition tank to the reactor water storage tank (RWST). The piping between the isolation valves and the chemical addition tank contains high concentrations of sodium hydroxide. To exercise the motor operated valves, downstream manual isolation valves must be closed to prevent the sodium hydroxide from entering the quench spray system and chemically contaminating the boric acid solution in the RWST.

After the motor operated isolation valves are stroked open and closed, the piping between the motor operated valves and the downstream manual isolation valves must be drained of sodium hydroxide. Approximately five gallons of highly caustic fluid are drained into a plastic container after each valve test. Draining the piping presents a significant personnel hazard. Sodium hydroxide causes severe burns if it comes in contact with the skin. The test personnel must wear rubber gloves, boots and face shields.

The drains are located outdoors and are near to the ground, which makes collection difficult. Any soil that is contaminated with sodium hydroxide must be neutralized by the test personnel. Partial stroke testing of these valves presents the same hazards as full stroke testing.

To reduce the number of times that test personnel are exposed to sodium hydroxide, the motor operated isolation valves will be tested on a cold shutdown frequency.

CSV-45

Justification is being added to the IST program. The RHR pump discharge check valves can only be partial-stroke or full-stroke exercised to the open position and verified closed when the RHR pumps 2-RH-P-1A and 2-RH-P-1B are running. The low pressure pumps take suction from and discharge to the reactor coolant system which operates at 2235 psig. This pressure is well above the operating pressure of the pumps, therefore, partial-stroke or full-stroke testing during normal operation is not practical.

REPLACEMENT PAGES TO

NORTH ANNA UNIT 2

IST PROGRAM
REVISION 7

PUMP INSERVICE TESTING TABLE

Pump Ident	ASME Class	System Resist	(1) Speed	Inlet Pressure	Differential Pressure	Flow Rate	Vibration	Lube Oil	Bear Temp.	Relief Request (P-)
2-FW-P-2	3	VAR.	Q	Q	Q	Q	Q	Q	N/A	1,16
2-FW-P-3A	3	VAR.	N/A	Q	Q	Q	Q	Q	N/A	1,16
2-FW-P-3B	3	VAR.	N/A	Q	Q	Q	Q	Q	N/A	1,16
2-QS-P-1A	2	FIXED	N/A	Q	Q	Q	Q	Q	N/A	1,16
2-QS-P-1B	2	FIXED	N/A	Q	Q	Q	Q	Q	N/A	1,1(
2-RH-P-1A	2	VAR.	N/A	CS	CS	CS	CS	CS	N/A	1,5,16
2-RH-P-1B	2	VAR.	N/A	CS	CS	CS	CS	CS	N/A	1,5,16
2-RS-P-1A	2	VAR.	N/A	RR	RR	RR	RR	N/A	N/A	1
2-RS-P-1B	2	VAR.	N/A	RR	RR	RR	RR	N/A	N/A	1
2-RS-P-2A	2	VAR.	N/A	2Y	2Y	2Y	2Y	N/A	N/A	1
2-RS-P-2B	2	VAR.	N/A	2Y	2Y	2Y	2Y	N/A	N/A	1
2-RS-P-3A	3	VAR.	N/A	Q	Q	Q	Q	Q	N/A	1,16
2-RS-P-3B	3	VAR.	N/A	Q	Q	Q	Q	Q	N/A	1,16

RELIEF REQUEST P-5

I. IDENTIFICATION OF COMPONENTS

System : Residual Heat Removal

Pump(s): 2-RH-P-1A
2-RH-P-1B

Class : 2

II. IMPRACTICAL CODE REQUIREMENTS

Frequency of Pump Test.

III. BASIS FOR RELIEF

The low pressure pumps take suction from and discharge to the Reactor Coolant System (RCS)which operates at 2235 psig. This pressure is well above the operating pressure of the pumps; therefore, testing during normal operation is not possible. Also, the pumps are located inside containment and are inaccessible during normal operation.

As a result of industry experience and NRC guidance (Generic Letter 88-17) concerning the loss of decay heat removal capability, North Anna Power Station practices a policy of minimizing perturbations to RHR pump flow and system configuration when decay heat must be removed during cold shutdowns and reactor refueling outages.

Therefore, to permit RHR pump testing and to minimize system perturbations during cold shutdown testing, the RHR pumps will be tested in a range of flows from approximately 2500 gpm to 4000 gpm (depending on the system flow at the time of the test), and the results will be compared to acceptance criteria based on that portion of the pump curve described above and the hydraulic acceptance criteria given in OM Part 6. The guidelines set forth in NUREG 1482, Section 5.2, "Use of Variable Reference Values for Flow Rate and Differential Pressure During Pump Testing," will be followed.

If vibration is found to vary significantly over the range of flow rates, flow rate versus vibration velocity data for at least five points will be taken, and a curve fit for these data points will be determined. Using the fitted curve and the acceptance criteria for vibration testing in OM Part 6, acceptance criteria dependent on flow rate will be determined.

IV. ALTERNATE TESTING

These pumps will be tested every cold shutdown but not more frequently than once every three months. Acceptance criteria will be based on a portion of the pump curve and not on discreet reference values.

RELIEF REQUEST P-13

I. IDENTIFICATION OF COMPONENTS

System : Component Cooling
Chemical and Volume Control
Service Water

Pump(s): 1-CH-P-1A, 1-CH-P-1B, 1-CH-P-1C, 1-CC-P-1A, 1-CC-P-1B, 1-SW-P-4

Class : Class 2 for CH and Class 3 for CC and SW

II. IMPRACTICAL CODE REQUIREMENTS

Instrument Error

III. BASIS FOR REQUEST

Instruments used to measure certain pump parameters receive their signal at the equipment, which is transmitted to a process rack and then to a control room indicator. The sensor and rack accuracy can be affected by drift, temperature, and calibration accuracy. The indicator has a limit of accuracy. The total loop accuracy is found by the root sum of the squares. The only variables in this formula are the sensor calibration accuracy and the indicator accuracy. Installing new sensors and indicators to reduce the accuracy by one percent is not warranted by the increase in safety obtained.

The following instrument loops exceed the ±2% tolerance listed in Table IWP 4110-1.

Instrument	Component	Parameter	Accuracy
FI-1122	1-CH-P-1A,B,C	Flow	2.34%
FI-CC-100A	1-CC-P-1A	Flow	2.69%
FI-CC-100B	1-CC-P-1B	Flow	2.69%
PI-SW-110	1-SW-P-4	Discharge Pressure	2.61%

IV. ALTERNATE TESTING

None

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
2-CH-208	12050-CBM-095B	2 OF 2	D7	CHECK VALVE	3.000	2	C		CV	C O	48 48		
	"C" CHARGING PUMP DISCHARGE CHECK VALVE												
2-CH-260	12050-CBM-095C	2 OF 2	B8	CHECK VALVE	2.000	1	C		CV	C	10		
	"A" RC PUMP SEAL WATER SUPPLY, INSIDE CONTAINMENT ISOLATION CHECK VALVE												
2-CH-284	12050-CBM-095C	2 OF 2	B7	CHECK VALVE	2.000	1	C		CV	C	10		
	"B" RC PUMP SEAL WATER SUPPLY, INSIDE CONTAINMENT ISOLATION CHECK VALVE												
2-CH-308	12050-CBM-095C	2 OF 2	B5	CHECK VALVE	2.000	1	C		CV	C	10		
	"C" RC PUMP SEAL WATER SUPPLY, INSIDE CONTAINMENT ISOLATION CHECK VALVE												
2-CH-331	12050-CBM-095C	2 OF 2	F4	CHECK VALVE	.750	2	AC	CIV	CV LT	C C	10 59		
	RC PUMP SEAL WATER RETURN, INSIDE CONTAINMENT ISOLATION CHECK VALVE												
2-CH-332	12050-CBM-095C	1 OF 2	A5	CHECK VALVE	2.000	1	AC	CIV	CV LT	C C	10		
	CHARGING SUPPLY TO LOOP FILL HEADER, INSIDE CONTAINMENT ISOLATION CHECK VALVE												
2-CH-335	12050-CBM-095C	1 OF 2	D4	CHECK VALVE	3.000	2	AC	CIV	CV LT	C C	10		
	MAIN CHARGING SUPPLY HEADER, INSIDE CONTAINMENT ISOLATION CHECK VALVE												
2-CH-495	12050-CBM-095B	1 OF 2	B6	CHECK VALVE	2.000	2	AC		CV	C O	73	 39	
	CHARGING PUMP RECIRC AND RCP SEAL WATER RETURN LINE ISOLATION CHECK VALVE												
2-CH-FCV-2113A	12050-CBM-095B	1 OF 2	C3	AO GATE	1.000	3	B		EV FS ST VP	O O O OC			
	ALTERNATE EMERGENCY BORATION LINE FLOW CONTROL VALVE												
2-CH-FCV-2114A	12050-CBM-095B	1 OF 2	D4	AO GLOBE	1.000	3	B		EV FS ST VP	C C C OC			
	PRIMARY GRADE WATER FLOW CONTROL VALVE												
2-CH-FCV-2160	12050-CBM-095C	1 OF 2	A4	AO GLOBE	2.000	2	AE	CIV	LT VP	C OC			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	CHARGING FLOW CONTROL TO LOOP FILL HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-CH-LCV-2460A	12050-CBM-095C	1 OF 2	F7	AO GLOBE	2.000	1	B		EV	C		5	
									FS	C		5	
									ST	C		5	
									VP	OC			
	LETDOWN ISOLATION VALVE												
2-CH-LCV-2460B	12050-CBM-095C	1 OF 2	F7	AO GLOBE	2.000	1	B		EV	C		5	
									FS	C		5	
									ST	C		5	
									VP	OC			
	LETDOWN ISOLATION VALVE												
2-CH-MOV-2115B	12050-CBM-095B	2 OF 2	B8	MO GATE	8.000	2	A		EV	C		6	
										O		6	
									LT	C	76		
									ST	C		6	
										O		6	
									VP	OC			
	CHARGING PUMP SUPPLY ISOLATION VALVE FROM REFUELING WATER STORAGE TANK												
2-CH-MOV-2115C	12050-CBM-095B	1 OF 2	C6	MO GATE	4.000	2	B		EV	C		6	
									ST	C		6	
									VP	OC			
	CHARGING PUMP SUPPLY ISOLATION FROM VOLUME CONTROL TANK												
2-CH-MOV-2115D	12050-CBM-095B	2 OF 2	B8	MO GATE	8.000	2	A		EV	C		6	
										O		6	
									LT	C	76		
									ST	C		6	
										O		6	
									VP	OC			
	CHARGING PUMP SUPPLY ISOLATION VALVE FROM REFUELING WATER STORAGE TANK												
2-CH-MOV-2115E	12050-CBM-095B	1 OF 2	C6	MO GATE	4.000	2	B		EV	C		6	
									ST	C		6	
									VP	OC			
	CHARGING PUMP SUPPLY ISOLATION VALVE FROM VOLUME CONTROL TANK												
2-CH-MOV-2267A	12050-CBM-095B	2 OF 2	C3	MO GATE	6.000	2	E		VP	OC			
	"A" CHARGING PUMP SUCTION ISOLATION FROM RWST AND VCT												
2-CH-MOV-2267B	12050-CBM-095B	2 OF 2	C3	MO GATE	6.000	2	E		VP	OC			
	"A" CHARGING PUMP SUCTION ISOLATION FROM LHSI												

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
2-CH-MOV-2269A	12050-CBM-095B	2 OF 2	C5	MO GATE	6.000	2	E		VP	OC			
	"B" CHARGING PUMP SUCTION ISOLATION FROM RWST AND VCT												
2-CH-MOV-2269B	12050-CBM-095B	2 OF 2	C5	MO GATE	6.000	2	E		VP	OC			
	"B" CHARGING PUMP SUCTION ISOLATION FROM LHSI												
2-CH-MOV-2270A	12050-CBM-095B	2 OF 2	C7	MO GATE	6.000	2	E		VP	OC			
	"C" CHARGING PUMP SUCTION ISOLATION FROM RWST AND VCT												
2-CH-MOV-2270B	12050-CBM-095B	2 OF 2	C7	MO GATE	6.000	2	E		VP	OC			
	"C" CHARGING PUMP SUCTION ISOLATION FROM LHSI												
2-CH-MOV-2275A	12050-CBM-095B	2 OF 2	D4	MO GATE	2.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"A" CHARGING PUMP MINIMUM RECIRCULATION ISOLATION VALVE												
2-CH-MOV-2275B	12050-CBM-095B	2 OF 2	D5	MO GATE	2.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"B" CHARGING PUMP MINIMUM RECIRCULATION ISOLATION VALVE												
2-CH-MOV-2275C	12050-CBM-095B	2 OF 2	D7	MO GATE	2.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"C" CHARGING PUMP MINIMUM RECIRCULATION ISOLATION VALVE												
2-CH-MOV-2286A	12050-CBM-095B	2 OF 2	E4	MO GATE	3.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"A" CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE												
2-CH-MOV-2286B	12050-CBM-095B	2 OF 2	E6	MO GATE	3.000	2	B		EV	C O			
									ST	C O			
									VP	OC			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	"B" CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE												
2-CH-MOV-2286C	12050-CBM-095B	2 OF 2	E7	MO GATE	3.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"C" CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE												
2-CH-MOV-2287A	12050-CBM-095B	2 OF 2	D4	MO GATE	3.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"A" CHARGING PUMP ALTERNATE AND LOOP FILL DISCHARGE ISOLATION VALVE												
2-CH-MOV-2287B	12050-CBM-095B	2 OF 2	D6	MO GATE	3.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"B" CHARGING PUMP ALTERNATE AND LOOP FILL DISCHARGE ISOLATION VALVE												
2-CH-MOV-2287C	12050-CBM-095B	2 OF 2	D7	MO GATE	3.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"C" CHARGING PUMP ALTERNATE AND LOOP FILL DISCHARGE ISOLATION VALVE												
2-CH-MOV-2289A	12050-CBM-095C	1 OF 2	D4	MO GATE	3.000	2	A	CIV	EV	C		7	
									LT	C			
									ST	C		7	
									VP	OC			
	MAIN CHARGING HEADER ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-CH-MOV-2289B	12050-CBM-095C	1 OF 2	B3	MO GATE	3.000	2	B		EV	C		7	
									ST	C		7	
									VP	OC			
	MAIN CHARGING HEADER ISOLATION VALVE, OUTSIDE CONTAINMENT												
2-CH-MOV-2350	12050-CBM-095B	1 OF 2	B5	MO GATE	2.000	2	B		EV	O		4	
									ST	O		4	
									VP	OC			
	EMERGENCY BORATION TO CHARGING PUMP SUCTION												
2-CH-MOV-2373	12050-CBM-095B	1 OF 2	A8	MO GATE	3.000	2	E		VP	OC			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	CHARGING PUMP RECIRCULATION HEADER ISOLATION VALVE												
2-CH-MOV-2380	12050-CBM-095C	2 OF 2	F4	MO GATE	3.000	2	A	CIV	EV	C	9		
									LT	C	59		
									ST	C	9		
									VP	OC			
	REACTOR COOLANT PUMP SEAL WATER RETURN, INSIDE CONTAINMENT ISOLATION VALVE												
2-CH-MOV-2381	12050-CBM-095B	1 OF 2	C8	MO GATE	3.000	2	A	CIV	EV	C	9		
									LT	C			
									ST	C	9		
									VP	OC			
	REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-CH-RV-2203	12050-CBM-095C	1 OF 2	F3	RELIEF VALVE	2.000	2	C		SP	O			
	LETDOWN RELIEF VLV DOWNSTREAM OF REGEN HX, RV DISCHARGE TO PRESSURIZER RELIEF TANK												
2-CH-RV-2382B	12050-CBM-095B	1 OF 2	C7	RELIEF VALVE	2.000	2	C		SP	O			
	SEAL WATER HEAT EXCHANGER RELIEF VALVE, RV DISCHARGE TO VOLUME CONTROL TANK												
2-CH-TV-2204A	12050-CBM-095C	1 OF 2	E3	AO GLOBE	2.000	2	A	CIV	EV	C		5	
									FS	C		5	
									LT	C			
									ST	C		5	
									VP	OC			
	LETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATION VALVE												
2-CH-TV-2204B	12050-CBM-095A	2 OF 2	C3	AO GLOBE	3.000	2	A	CIV	EV	C		5	
									FS	C		5	
									LT	C			
									ST	C		5	
									VP	OC			
	LETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENT ISOLATION VALVE												

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
2-HC-015	11715-CBM-106A	1 OF 4	E3	CHECK VALVE	2.000	2	AC	CIV	CV	C O	20		
									LT	C			
	UNIT 2 RETURN LINE FROM UNIT 1 HYDROGEN ANALYZERS & RECOMB, INSIDE CONT ISOL CHECK VALVE												
2-HC-020	11715-CBM-106A	2 OF 4	E4	CHECK VALVE	2.000	2	AC	CIV	CV	C O	20		
									LT	C			
	UNIT 2 RETURN LINE FROM UNIT 2 HYDROGEN ANALYZERS & RECOMB, INSIDE CONT ISOL CHECK VALVE												
2-HC-068	11715-CBM-106A	2 OF 4	C5	CHECK VALVE	.375	NC	C		CV	O			
	HYDROGEN ANALYZER DISCHARGE CHECK VALVE												
2-HC-TV-200A	11715-CBM-106A	1 OF 4	E3	SO GLOBE	.375	2	A	CIV	EV	C O			
									FS	C			
									LT	C			
									ST	C	55		
										O	55		
									VP	OC			
	UNIT 2 SAMPLE LINE TO UNIT 1 HYDROGEN ANALYZERS, INSIDE CONTAINMENT ISOLATION VALVE												
2-HC-TV-200B	11715-CBM-106A	1 OF 4	E4	SO GLOBE	.375	2	A	CIV	EV	C O			
									FS	C			
									LT	C			
									ST	C	55		
										O	55		
									VP	OC			
	UNIT 2 SAMPLE LINE TO UNIT 1 HYDROGEN ANALYZERS, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-HC-TV-201A	11715-CBM-106A	1 OF 4	D4	SO GLOBE	.375	2	A	CIV	EV	C O			
									FS	C			
									LT	C			
									ST	C	55		
										O	55		
									VP	OC			
	RETURN ISOLATION FROM UNIT 1 HYDROGEN ANALYZERS TO UNIT 2 CONT, OUTSIDE CONT ISOL VALVE												
2-HC-TV-201B	11715-CBM-106A	1 OF 4	D4	SO GLOBE	.375	2	A	CIV	EV	C O			
									FS	C			
									LT	C			
									ST	C	55		
										O	55		
									VP	OC			
	RETURN ISOLATION FROM UNIT 1 HYDROGEN ANALYZERS TO UNIT 2 CONT, OUTSIDE CONT ISOL VALVE												
2-HC-TV-202A	11715-CBM-106A	2 OF 4	E4	SO GLOBE	.375	2	A	CIV	EV	C			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
2-HC-TV-202A	11715-CBM-106A	2 OF 4	E4	SO GLOBE	.375	2	A	CIV	EV	O			
									FS	C			
									LT	C			
									ST	C	55		
										O	55		
									VP	OC			
	UNIT 2 SAMPLE LINE TO UNIT 2 HYDROGEN ANALYZERS, INSIDE CONTAINMENT ISOLATION VALVE												
2-HC-TV-202B	11715-CBM-106A	2 OF 4	E4	SO GLOBE	.375	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	55		
										O	55		
									VP	OC			
	UNIT 2 SAMPLE LINE TO UNIT 2 HYDROGEN ANALYZERS, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-HC-TV-203A	11715-CBM-106A	2 OF 4	D3	SO GLOBE	.375	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	55		
										O	55		
									VP	OC			
	RETURN ISOLATION FROM UNIT 2 HYDROGEN ANALYZERS TO UNIT 2 CONT,OUTSIDE CONT ISOL VALVE												
2-HC-TV-203B	11715-CBM-106A	2 OF 4	D3	SO GLOBE	.375	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	55		
										O	55		
									VP	OC			
	RETURN ISOLATION FROM UNIT 2 HYDROGEN ANALYZERS TO UNIT 2 CONT,OUTSIDE CONT ISOL VALVE												
2-HC-TV-204A	11715-CBM-106A	4 OF 4	F4	AO GLOBE	2.500	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	55		
										O	55		
									VP	OC			
	SUPPLY ISOL FROM UNIT 1 CONT TO N1 HYDRO RECOMB & N2 CONT BLOWER,OUTSIDE CONT ISOL VALVE												
2-HC-TV-204B	11715-CBM-106A	4 OF 4	F5	AO GLOBE	2.500	2	A	CIV	EV	C			
										O			
									FS	C			
									LT	C			
									ST	C	55		
										O	55		
									VP	OC			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	SUPPLY ISOL FROM UNIT 1 CONT TO N1 HYDRO RECOMB & N2 CONT BLOWER,OUTSIDE CONT ISOL VALVE												
2-HC-TV-205A	11715-CBM-106A	1 OF 4	E4	AO GLOBE	2.500	2	A	CIV	EV	C O			
									FS	C			
									LT	C			
									ST	C	55		
										O	55		
									VP	OC			
	RETURN ISOLATION FROM UNIT 1 HYDROGEN RECOMB & ANAL TO UNIT2 CONT, OUTSIDE CONT ISOL VALVE												
2-HC-TV-205B	11715-CBM-106A	1 OF 4	E5	AO GLOBE	2.500	2	A	CIV	EV	C O			
									FS	C			
									LT	C			
									ST	C	55		
										O	55		
									VP	OC			
	RETURN ISOLATION FROM UNIT 1 HYDROGEN RECOMB & ANAL TO UNIT2 CONT, OUTSIDE CONT ISOL VALVE												
2-HC-TV-206A	11715-CBM-106A	4 OF 4	F3	AO GLOBE	2.500	2	A	CIV	EV	C O			
									FS	C			
									LT	C			
									ST	C	55		
										O	55		
									VP	OC			
	UNIT 1 SUPPLY ISOLATION TO N1 CONT ATMO PURGE BLOW & N2 HYDRO RECOMB, OUTSIDE CONT ISOL VLV												
2-HC-TV-206B	11715-CBM-106A	4 OF 4	F3	AO GLOBE	2.500	2	A	CIV	EV	C O			
									FS	C			
									LT	C			
									ST	C	55		
										O	55		
									VP	OC			
	UNIT 1 SUPPLY ISOLATION TO N1 CONT ATMO PURGE BLOW & N2 HYDRO RECOMB, OUTSIDE CONT ISOL VLV												
2-HC-TV-207A	11715-CBM-106A	2 OF 4	E3	AO GLOBE	2.500	2	A	CIV	EV	C O			
									FS	C			
									LT	C			
									ST	C	55		
										O	55		
									VP	OC			
	RETURN ISOLATION FROM UNIT 2 HYDROGEN RECOMB & ANAL TO UNIT2 CONT, OUTSIDE CONT ISOL VALVE												
2-HC-TV-207B	11715-CBM-106A	2 OF 4	E3	AO GLOBE	2.500	2	A	CIV	EV	C O			
									FS	C			
									LT	C			
									ST	C	55		

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
2-HC-TV-207B	11715-CBM-106A	2 OF 4	E3	AO GLOBE	2.500	2	A	CIV	ST	O	55		
									VP	OC			
	RETURN ISOLATION FROM UNIT 2 HYDROGEN RECOMB & ANAL TO UNIT2 CONT, OUTSIDE CONT ISOL VALVE												
2-HC-TV-208A	11715-CBM-106A	3 OF 4	E3	SO GLOBE	.375	2	A	CIV	EV	C			
									FS	C			
									LT	C			
									ST	C	55		
									VP	OC			
	UNIT 2 SAMPLE LINE TO AIR SAMPLE PANEL, INSIDE CONTAINMENT ISOLATION VALVE												
2-HC-TV-208B	11715-CBM-106A	3 OF 4	E4	SO GLOBE	.375	2	A	CIV	EV	C			
									FS	C			
									LT	C			
									ST	C	55		
									VP	OC			
	UNIT 2 SAMPLE LINE TO AIR SAMPLE PANEL, OUTSIDE CONTAINMENT ISOLATION VALVE												

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCH-
2-MS-018	12050-CBM-070B	1 OF 3	B7	MANUAL GATE	3.000	2	B		EV	C			
	MAIN STEAM TO AUXILIARY FEEDWATER TURBINE LINE ISOLATION VALVE												
2-MS-057	12050-CBM-070B	2 OF 3	B7	MANUAL GATE	3.000	2	B		EV	C			
	MAIN STEAM TO AUXILIARY FEEDWATER TURBINE LINE ISOLATION VALVE												
2-MS-095	12050-CBM-070B	3 OF 3	B7	MANUAL GATE	3.000	2	B		EV	C			
	MAIN STEAM TO AUXILIARY FEEDWATER TURBINE LINE ISOLATION VALVE												
2-MS-117	12050-CBM-070A	3 OF 3	F7	CHECK VALVE	3.000	2	C		CV	C O			
	"C" MAIN STEAM HEADER SUPPLY CHECK VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP												
2-MS-119	12050-CBM-070A	3 OF 3	F7	CHECK VALVE	3.000	2	C		CV	C O			
	"B" MAIN STEAM HEADER SUPPLY CHECK VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP												
2-MS-121	12050-CBM-070A	3 OF 3	E7	CHECK VALVE	3.000	2	C		CV	C O			
	"A" MAIN STEAM HEADER SUPPLY CHECK VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP												
2-MS-NRV-201A	12050-CBM-070B	1 OF 3	D3	CHECK VALVE	32.000	2	C		CV VP	C OC		13	
	"A" MAIN STEAM HEADER NON-RETURN VALVE												
2-MS-NRV-201B	12050-CBM-070B	2 OF 3	D3	CHECK VALVE	32.000	2	C		CV VP	C OC		13	
	"B" MAIN STEAM HEADER NON-RETURN VALVE												
2-MS-NRV-201C	12050-CBM-070B	3 OF 3	D3	CHECK VALVE	32.000	2	C		CV VP	C OC		13	
	"C" MAIN STEAM HEADER NON-RETURN VALVE												
2-MS-PCV-201A	12050-CBM-070B	1 OF 3	E5	AO ANGLE	6.000	2	B		EV FS ST VP	C O C C O OC			
	"A" MAIN STEAM HEADER DISCHARGE TO ATMOSPHERE PRESSURE CONTROL VALVE												
2-MS-PCV-201B	12050-CBM-070B	2 OF 3	E6	AO ANGLE	6.000	2	B		EV FS	C O C			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
2-MS-PCV-201B	12050-CBM-070B	2 OF 3	E6	AO ANGLE	6.000	2	B		ST	C O			
									VP	OC			
	"B" MAIN STEAM HEADER DISCHARGE TO ATMOSPHERE PRESSURE CONTROL VALVE												
2-MS-PCV-201C	12050-CBM-070B	3 OF 3	D5	AO ANGLE	6.000	2	B		EV	C O			
									FS	C			
									ST	C O			
									VP	OC			
	"C" MAIN STEAM HEADER DISCHARGE TO ATMOSPHERE PRESSURE CONTROL VALVE												
2-MS-SV-201A	12050-CBM-070B	1 OF 3	E6	SAFETY VALVE	6.000	2	C		SP	O			
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
2-MS-SV-201B	12050-CBM-070B	2 OF 3	D6	SAFETY VALVE	6.000	2	C		SP	O			
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
2-MS-SV-201C	12050-CBM-070B	3 OF 3	D6	SAFETY VALVE	6.000	2	C		SP	O			
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
2-MS-SV-202A	12050-CBM-070B	1 OF 3	E5	SAFETY VALVE	6.000	2	C		SP	O			
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
2-MS-SV-202B	12050-CBM-070B	2 OF 3	D5	SAFETY VALVE	6.000	2	C		SP	O			
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
2-MS-SV-202C	12050-CBM-070B	3 OF 3	D6	SAFETY VALVE	6.000	2	C		SP	O			
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
2-MS-SV-203A	12050-CBM-070B	1 OF 3	E6	SAFETY VALVE	6.000	2	C		SP	O			
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
2-MS-SV-203B	12050-CBM-070B	2 OF 3	D5	SAFETY VALVE	6.000	2	C		SP	O			
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
2-MS-SV-203C	12050-CBM-070B	3 OF 3	D6	SAFETY VALVE	6.000	2	C		SP	O			
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
2-MS-SV-204A	12050-CBM-070B	1 OF 3	E6	SAFETY VALVE	6.000	2	C		SP	O			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
2-MS-SV-204B	12050-CBM-070B	2 OF 3	D6	SAFETY VALVE	6.000	2	C		SP	O			
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
2-MS-SV-204C	12050-CBM-070B	3 OF 3	D6	SAFETY VALVE	6.000	2	C		SP	O			
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
2-MS-SV-205A	12050-CBM-070B	1 OF 3	E5	SAFETY VALVE	6.000	2	C		SP	O			
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
2-MS-SV-205B	12050-CBM-070B	2 OF 3	D5	SAFETY VALVE	6.000	2	C		SP	O			
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
2-MS-SV-205C	12050-CBM-070B	3 OF 3	D5	SAFETY VALVE	6.000	2	C		SP	O			
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS												
2-MS-TV-201A	12050-CBM-070B	1 OF 3	D4	AO DISC	32.000	2	B		EV	C		16	
									FS	C		16	
									ST	C		16	
									VP	OC			
	"A" MAIN STEAM HEADER TRIP VALVE												
2-MS-TV-201B	12050-CBM-070B	2 OF 3	C4	AO DISC	32.000	2	B		EV	C		16	
									FS	C		16	
									ST	C		16	
									VP	OC			
	"B" MAIN STEAM HEADER TRIP VALVE												
2-MS-TV-201C	12050-CBM-070B	3 OF 3	C4	AO DISC	32.000	2	B		EV	C		16	
									FS	C		16	
									ST	C		16	
									VP	OC			
	"C" MAIN STEAM HEADER TRIP VALVE												
2-MS-TV-209	12050-CBM-070A	3 OF 3	D3	AO GLOBE	3.000	2	B		EV	C		14	
									FS	C		14	
									ST	C		14	
									VP	OC			
	MAIN STEAM HIGH PRESSURE DRAIN ISOLATION TO CONDENSER												
2-MS-TV-210	12050-CBM-070B	3 OF 3	A4	AO GLOBE	1.500	2	B		EV	C			
									FS	C			
									ST	C			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
2-MS-TV-210	12050-CBM-070B	3 OF 3	A4	AO GLOBE	1.500	2	B		VP	OC			
	MAIN STEAM HIGH PRESSURE DRAIN HEADER ISOLATION TO STEAM GENERATOR BLOWDOWN SYSTEM												
2-MS-TV-211A	12050-CBM-070A	3 OF 3	E5	AO GLOBE	3.000	2	B		EV	C			
										O			
									FS	O			
									ST	C			
										O			
									VP	OC			
	MAIN STEAM SUPPLY TRIP VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP												
2-MS-TV-211B	12050-CBM-070A	3 OF 3	E4	AO GLOBE	3.000	2	B		EV	C			
										O			
									FS	O			
									ST	C			
										O			
									VP	OC			
	MAIN STEAM SUPPLY TRIP VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP												
2-MS-TV-213A	12050-CBM-070B	1 OF 3	D4	AO GLOBE	3.000	2	B		EV	C		34	
									FS	C		34	
									ST	C		34	
									VP	OC			
	"A" MAIN STEAM TRIP BYPASS VALVE												
2-MS-TV-213B	12050-CBM-070B	2 OF 3	D4	AO GLOBE	3.000	2	B		EV	C		34	
									FS	C		34	
									ST	C		34	
									VP	OC			
	"B" MAIN STEAM TRIP BYPASS VALVE												
2-MS-TV-213C	12050-CBM-070B	3 OF 3	D4	AO GLOBE	3.000	2	B		EV	C		34	
									FS	C		34	
									ST	C		34	
									VP	OC			
	"C" MAIN STEAM TRIP BYPASS VALVE												
2-MS-TV-215	12050-CBM-070A	3 OF 3	C4	MECH TRIP VLV	3.000	3	E		VP	OC			
	MAIN STEAM SUPPLY TRIP VALVE TO TURBINE DRIVEN AFW PUMP												

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-

THIS PAGE IS INTENTIONALLY BLANK.

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
2-QS-011	12050-CBM-091A	2 OF 4	D6	WL CHECK VLV	8.000	2	AC	CIV	CV	C	68		
										O	68		
									LT	C			
	"A" QUENCH SPRAY PUMP INSIDE CONTAINMENT ISOLATION CHECK VALVE												
2-QS-022	12050-CBM-091A	2 OF 4	E6	WL CHECK VLV	8.000	2	AC	CIV	CV	C	68		
										O	68		
									LT	C			
	"B" QUENCH SPRAY PUMP INSIDE CONTAINMENT ISOLATION CHECK VALVE												
2-QS-MOV-200A	12050-CBM-091A	2 OF 4	A3	MO GATE	10.000	2	E		VP	OC			
	"A" QUENCH SPRAY PUMP SUCTION ISOLATION VALVE FROM REFUELING WATER STORAGE TANK												
2-QS-MOV-200B	12050-CBM-091A	2 OF 4	A3	MO GATE	10.000	2	E		VP	OC			
	"B" QUENCH SPRAY PUMP SUCTION ISOLATION VALVE FROM REFUELING WATER STORAGE TANK												
2-QS-MOV-201A	12050-CBM-091A	2 OF 4	D5	MO GATE	8.000	2	A	CIV	EV	C			
										C			
									LT	C			
									ST	C			
										O			
									VP	OC			
	"A" QUENCH SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-QS-MOV-201B	12050-CBM-091A	2 OF 4	E5	MO GATE	8.000	2	A	CIV	EV	C			
										O			
									LT	C			
									ST	C			
										O			
									VP	OC			
	"B" QUENCH SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-QS-MOV-202A	12050-CBM-091A	1 OF 4	D5	MO GATE	6.000	2	B		EV	O		44	
									ST	O		44	
									VP	OC			
	CHEMICAL ADDITION TANK DISCHARGE ISOLATION VALVE												
2-QS-MOV-202B	12050-CBM-091A	1 OF 4	D6	MO GATE	6.000	2	B		EV	O		44	
									ST	O		44	
									VP	OC			
	CHEMICAL ADDITION TANK DISCHARGE ISOLATION VALVE												

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
2-RH-007	12050-CBM-094A	1 OF 2	E7	CHECK VALVE	10.000	2	C		CV	C O		45 45	
	"A" RHR PUMP DISCHARGE CHECK VALVE												
2-RH-015	12050-CBM-094A	1 OF 2	E5	CHECK VALVE	10.000	2	C		CV	C O		45 45	
	"B" RHR PUMP DISCHARGE CHECK VALVE												
2-RH-037	12050-CBM-094A	2 OF 2	C4	MANUAL GATE	6.000	2	AE	CIV	LT	C			
	RHR SUPPLY ISOLATION TO REFUEL WATER STORAGE TANK, INSIDE CONTAINMENT ISOLATION VALVE												
2-RH-038	12050-CBM-094A	2 OF 2	D3	MANUAL GATE	6.000	2	AE	CIV	LT	C			
	RHR SUPPLY ISOLATION TO REFUEL WATER STORAGE TANK, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-RH-MOV-2700	12050-CBM-094A	1 OF 2	A5	MO GATE	14.000	1	A	PIV	EV LT ST VP	O C O OC		18 18	
	RHR PUMP SUPPLY ISOLATION FROM "A" HOT LEG, INSIDE MISSILE BARRIER												
2-RH-MOV-2701	12050-CBM-094A	1 OF 2	A4	MO GATE	14.000	1	A	PIV	EV LT ST VP	O C O OC		18 18	
	RHR PUMP SUPPLY ISOLATION FROM "A" HOT LEG, OUTSIDE MISSILE BARRIER												
2-RH-MOV-2720A	12050-CBM-094A	2 OF 2	C3	MO GATE	10.000	1	A	PIV	EV LT ST VP	O C O OC		18 18	
	RHR RETURN ISOLATION TO "B" ACCUMULATOR DISCHARGE LINE												
2-RH-MOV-2720B	12050-CBM-094A	2 OF 2	B3	MO GATE	10.000	1	A	PIV	EV LT ST VP	O C O OC		18 18	
	RHR RETURN ISOLATION TO "C" ACCUMULATOR DISCHARGE LINE												
2-RH-RV-2721A	12050-CBM-094A	1 OF 2	E6	RELIEF VALVE	3.000	2	C		SP	O			
	RHR SYSTEM RELIEF VALVE AT "A" RHR PUMP SUCTION, RV DISCHARGE TO PRESSURIZER RELIEF TANK												
2-RH-RV-2721B	12050-CBM-094A	1 OF 2	E4	RELIEF VALVE	3.000	2	C		SP	O			
	RHR SYSTEM RELIEF VALVE AT "B" RHR PUMP SUCTION, RV DISCHARGE TO PRESSURIZER RELIEF TANK												

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-

THIS PAGE IS INTENTIONALLY BLANK.

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
2-SI-001	12050-CBM-096A	1 OF 3	B6	CHECK VALVE	12.000	2	C		CV	O	38		
	"A" LOW HEAD SI PUMP SUCTION CHECK VALVE FROM CONTAINMENT SUMP												
2-SI-006	12050-CBM-096A	1 OF 3	C7	CHECK VALVE	.750	2	AC		CV	C	54		
									LT	C			
	"A" LOW HEAD SI PUMP SEAL WATER SUPPLY CHECK VALVE FROM RWST												
2-SI-009	12050-CBM-096A	2 OF 3	B6	CHECK VALVE	10.000	2	C		CV	C	39		
										O	39		
	"A" LOW HEAD SI PUMP DISCHARGE CHECK VALVE												
2-SI-012	12050-CBM-096A	2 OF 3	B5	CHECK VALVE	2.000	2	C		CV	O			
	"A" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE DISCHARGE CHECK VALVE												
2-SI-018	12050-CBM-096A	1 OF 3	E5	CHECK VALVE	8.000	2	AC		CV	C	40		
										O	40		
									LT	C	76		
	RWST SUPPLY CHECK VALVE TO CHARGING PUMP SUCTION HEADER												
2-SI-019	12050-CBM-096A	1 OF 3	B3	CHECK VALVE	12.000	2	C		CV	O	39		
	RWST SUPPLY CHECK VALVE TO "B" LOW HEAD SI PUMP SUCTION												
2-SI-021	12050-CBM-096A	1 OF 3	B5	CHECK VALVE	12.000	2	C		CV	O	38		
	"B" LOW HEAD SI PUMP SUCTION CHECK VALVE FROM CONTAINMENT SUMP												
2-SI-029	12050-CBM-096A	1 OF 3	C5	CHECK VALVE	.750	2	AC		CV	C	54		
									LT	C			
	"B" LOW HEAD SI PUMP SEAL WATER SUPPLY CHECK VALVE												
2-SI-032	12050-CBM-096A	2 OF 3	B4	CHECK VALVE	10.000	2	C		CV	C	39		
										O	39		
	"B" LOW HEAD SI PUMP DISCHARGE CHECK VALVE												
2-SI-035	12050-CBM-096A	2 OF 3	B4	CHECK VALVE	2.000	2	C		CV	O			
	"B" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE DISCHARGE CHECK VALVE												
2-SI-047	12050-CBM-096A	1 OF 3	E7	MANUAL GLOBE	1.000	2	AE	CIV	LT	C			
	ACCUMULATOR MAKEUP LINE, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-SI-070	12050-CBM-096A	3 OF 3	D4	CHECK VALVE	1.000	2	C		CV	C			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	"B" LOW HEAD SI PUMP SUCTION FROM RWST												
2-SI-MOV-2863A	12050-CBM-096A	2 OF 3	C5	MO GATE	8.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"A" LOW HEAD SAFETY INJECTION PUMP SUPPLY ISOLATION TO CHARGING PUMPS												
2-SI-MOV-2863B	12050-CBM-096A	2 OF 3	D4	MO GATE	8.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"B" LOW HEAD SAFETY INJECTION PUMP SUPPLY ISOLATION TO CHARGING PUMPS												
2-SI-MOV-2864A	12050-CBM-096A	2 OF 3	C7	MO GATE	10.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"A" LOW HEAD SI PUMP COLD LEG DISCHARGE STOP VALVE												
2-SI-MOV-2864B	12050-CBM-096A	2 OF 3	C6	MO GATE	10.000	2	B		EV	C O			
									ST	C O			
									VP	OC			
	"B" LOW HEAD SI PUMP COLD LEG DISCHARGE STOP VALVE												
2-SI-MOV-2865A	12050-CBM-096B	1 OF 4	C7	MO GATE	12.000	2	B		EV	C O		24 24	
									ST	C O		24 24	
									VP	OC			
	"A" ACCUMULATOR DISCHARGE ISOLATION VALVE TO RCS COLD LEG												
2-SI-MOV-2865B	12050-CBM-096B	2 OF 4	C5	MO GATE	12.000	2	B		EV	C O		24 24	
									ST	C O		24 24	
									VP	OC			
	"B" ACCUMULATOR DISCHARGE ISOLATION VALVE TO RCS COLD LEG												
2-SI-MOV-2865C	12050-CBM-096B	3 OF 4	C5	MO GATE	12.000	2	B		EV	C O		24 24	
									ST	C O		24 24	
									VP	OC			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	"C" ACCUMULATOR DISCHARGE ISOLATION VALVE TO RCS COLD LEG												
2-SI-MOV-2867A	12050-CBM-096A	3 OF 3	D4	MO GATE	3.000	2	B		EV	C			
										O			
									ST	C			
										O			
									VP	OC			
	BORON INJECTION TANK HIGH HEAD SI INLET VALVE												
2-SI-MOV-2867B	12050-CBM-096A	3 OF 3	D4	MO GATE	3.000	2	B		EV	C			
										O			
									ST	C			
										O			
									VP	OC			
	BORON INJECTION TANK HIGH HEAD SI INLET VALVE												
2-SI-MOV-2867C	12050-CBM-096A	3 OF 3	E7	MO GATE	3.000	2	A	C&P	EV	C	37		
										O	37		
									LT	C	59		
									ST	C	37		
										O	37		
									VP	OC			
	BORON INJECTION TANK OUTLET TO RCS COLD LEG, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-SI-MOV-2867D	12050-CBM-096A	3 OF 3	D7	MO GATE	3.000	2	A	C&P	EV	C	37		
										O	37		
									LT	C	59		
									ST	C	37		
										O	37		
									VP	OC			
	BORON INJECTION TANK OUTLET TO RCS COLD LEG, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-SI-MOV-2869A	12050-CBM-096A	3 OF 3	C8	MO GATE	3.000	2	A	C&P	EV	C	35		
										O	35		
									LT	C			
									ST	C	35		
										O	35		
									VP	OC			
	HIGH HEAD SI FROM CHARGING HEADER TO RCS HOT LEGS, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-SI-MOV-2869B	12050-CBM-096A	3 OF 3	B8	MO GATE	3.000	2	A	C&P	EV	C	35		
										O	35		
									LT	C			
									ST	C	35		
										O	35		
									VP	OC			
	HIGH HEAD SI FROM CHARGING HEADER TO RCS HOT LEGS, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-SI-MOV-2885A	12050-CBM-096A	2 OF 3	C3	MO GLOBE	2.000	2	A		EV	C			
									LT	C	76		

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NO ALT TEST VCN-
2-SI-MOV-2885A	12050-CBM-096A	2 OF 3	C3	MO GLOBE	2.000	2	A		ST	C			
									VP	OC			
	"A" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION												
2-SI-MOV-2885B	12050-CBM-096A	2 OF 3	B3	MO GLOBE	2.000	2	A		EV	C			
									LT	C	76		
									ST	C			
									VP	OC			
	"B" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION												
2-SI-MOV-2885C	12050-CBM-096A	2 OF 3	D3	MO GLOBE	2.000	2	A		EV	C			
									LT	C	76		
									ST	C			
									VP	OC			
	"A" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION												
2-SI-MOV-2885D	12050-CBM-096A	2 OF 3	B3	MO GLOBE	2.000	2	A		EV	C			
									LT	C	76		
									ST	C			
									VP	OC			
	"B" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION												
2-SI-MOV-2890A	12050-CBM-096A	2 OF 3	D7	MO GATE	10.000	2	A	C&P	EV	C	35		
										O	35		
									LT	C			
									ST	C	35		
										O	35		
									VP	OC			
	"A" LOW HEAD SI PUMP HOT LEG DISCHARGE STOP VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-SI-MOV-2890B	12050-CBM-096A	2 OF 3	D7	MO GATE	10.000	2	A	C&P	EV	C	35		
										O	35		
									LT	C			
									ST	C	35		
										O	35		
									VP	OC			
	"B" LOW HEAD SI PUMP HOT LEG DISCHARGE STOP VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-SI-MOV-2890C	12050-CBM-096A	2 OF 3	C8	MO GATE	10.000	2	A	C&P	EV	C	37		
										O	37		
									LT	C	59		
									ST	C	37		
										O	37		
									VP	OC			
	LOW HEAD SI PUMPS COLD LEG DISCHARGE STOP VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE												
2-SI-MOV-2890D	12050-CBM-096A	2 OF 3	C7	MO GATE	10.000	2	A	C&P	EV	C	37		
										O	37		
									LT	C	59		
									ST	C	37		

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
2-SW-627	11715-CBM-078G	2 OF 2	E3	CHECK VALVE	2.000	3	C		CV	O		36	
	SERVICE WATER SUPPLY TO CHARGING PUMP SEAL COOLER CHECK VALVE												
2-SW-MOV-201A	11715-CBM-078A	4 OF 4	E7	MO BFLY	24.000	3	B		EV	O		35	
									ST	O		35	
									VP	OC			
	"A" SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS												
2-SW-MOV-201B	11715-CBM-078A	4 OF 4	E7	MO BFLY	24.000	3	B		EV	O		35	
									ST	O		35	
									VP	OC			
	"A" SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS												
2-SW-MOV-201C	11715-CBM-078A	4 OF 4	E7	MO BFLY	24.000	3	B		EV	O		35	
									ST	O		35	
									VP	OC			
	"B" SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS												
2-SW-MOV-201D	11715-CBM-078A	4 OF 4	E7	MO BFLY	24.000	3	B		EV	O		35	
									ST	O		35	
									VP	OC			
	"B" SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS												
2-SW-MOV-202A	11715-CBM-078B	3 OF 4	F8	MO BFLY	24.000	3	B		EV	C			
									ST	C			
									VP	OC			
	SERVICE WATER SUPPLY CROSS CONNECTS TO RECIRC SPRAY HEAT EXCHANGERS												
2-SW-MOV-202B	11715-CBM-078B	3 OF 4	F8	MO BFLY	24.000	3	B		EV	C			
									ST	C			
									VP	OC			
	SERVICE WATER SUPPLY CROSS CONNECTS TO RECIRC SPRAY HEAT EXCHANGERS												
2-SW-MOV-203A	11715-CBM-078B	3 OF 4	E7	MO BFLY	16.000	2	A	CIV	EV	C			
										O			
									LT	C			
									ST	C			
										O			
									VP	OC			
	SERVICE WATER SUPPLY TO "A" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												
2-SW-MOV-203B	11715-CBM-078B	3 OF 4	E6	MO BFLY	16.000	2	A	CIV	EV	C			
										O			
									LT	C			
									ST	C			
										O			
									VP	OC			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	SERVICE WATER SUPPLY TO "B" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												
2-SW-MOV-203C	11715-CBM-0788	3 OF 4	E4	MO BFLY	16.000	2	A	CIV	EV	C O			
									LT	C			
									ST	C O			
									VP	OC			
	SERVICE WATER SUPPLY TO "C" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												
2-SW-MOV-203D	11715-CBM-0788	3 OF 4	E3	MO BFLY	16.000	2	A	CIV	EV	C O			
									LT	C			
									ST	C O			
									VP	OC			
	SERVICE WATER SUPPLY TO "D" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												
2-SW-MOV-204A	11715-CBM-0788	3 OF 4	C7	MO BFLY	16.000	2	A	CIV	EV	C O			
									LT	C			
									ST	C O			
									VP	OC			
	SERVICE WATER RETURN FROM "A" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												
2-SW-MOV-204B	11715-CBM-0788	3 OF 4	C6	MO BFLY	16.000	2	A	CIV	EV	C O			
									LT	C			
									ST	C O			
									VP	OC			
	SERVICE WATER RETURN FROM "B" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												
2-SW-MOV-204C	11715-CBM-0788	3 OF 4	C5	MO BFLY	16.000	2	A	CIV	EV	C O			
									LT	C			
									ST	C O			
									VP	OC			
	SERVICE WATER RETURN FROM "C" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												
2-SW-MOV-204D	11715-CBM-0788	3 OF 4	C3	MO BFLY	16.000	2	A	CIV	EV	C O			
									LT	C			
									ST	C O			
									VP	OC			
	SERVICE WATER RETURN FROM "D" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE												

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
2-SW-MOV-205A	11715-CBM-078A	4 OF 4	E7	MO BFLY	24.000	3	B		EV	O		35	
									ST	O		35	
									VP	OC			
	"B" SERVICE WATER HEADER RETURN ISOLATION FROM RECIRC SPRAY HEAT EXCHANGERS												
2-SW-MOV-205B	11715-CBM-078A	4 OF 4	E7	MO BFLY	24.000	3	B		EV	O		35	
									ST	O		35	
									VP	OC			
	"B" SERVICE WATER HEADER RETURN ISOLATION FROM RECIRC SPRAY HEAT EXCHANGERS												
2-SW-MOV-205C	11715-CBM-078A	4 OF 4	E6	MO BFLY	24.000	3	B		EV	O		35	
									ST	O		35	
									VP	OC			
	"A" SERVICE WATER HEADER RETURN ISOLATION FROM RECIRC SPRAY HEAT EXCHANGERS												
2-SW-MOV-205D	11715-CBM-078A	4 OF 4	E7	MO BFLY	24.000	3	B		EV	O		35	
									ST	O		35	
									VP	OC			
	"A" SERVICE WATER HEADER RETURN ISOLATION FROM RECIRC SPRAY HEAT EXCHANGERS												
2-SW-MOV-206A	11715-CBM-078B	3 OF 4	B3	MO BFLY	24.000	3	B		EV	C			
									ST	C			
									VP	OC			
	SERVICE WATER RETURN CROSS CONNECTS FROM RECIRC SPRAY HEAT EXCHANGERS												
2-SW-MOV-206B	11715-CBM-078B	3 OF 4	A3	MO BFLY	24.000	3	B		EV	C			
									ST	C			
									VP	OC			
	SERVICE WATER RETURN CROSS CONNECTS FROM RECIRC SPRAY HEAT EXCHANGERS												
2-SW-MOV-208A	11715-CBM-078C	1 OF 2	B3	MO BFLY	24.000	3	B		EV	C		43	
										O		43	
									ST	C		43	
										O		43	
									VP	OC			
	"A" SERVICE WATER HEADER SUPPLY ISOLATION TO COMPONENT COOLING HEAT EXCHANGERS												
2-SW-MOV-208B	11715-CBM-078C	1 OF 2	B3	MO BFLY	24.000	3	B		EV	C		43	
										O		43	
									ST	C		43	
										O		43	
									VP	OC			
	"A" SERVICE WATER HEADER SUPPLY ISOLATION TO COMPONENT COOLING HEAT EXCHANGERS												
2-SW-MOV-210A	11715-CBM-078A	4 OF 4	E8	MO BFLY	8.000	3	E		VP	OC			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	SERVICE WATER HEADER SUPPLY TO RECIRCULATION AIR COOLERS												
2-SW-MOV-210B	11715-CBM-078A	4 OF 4	F8	MO BFLY	8.000	3	E		VP	OC			
	SERVICE WATER HEADER SUPPLY TO RECIRCULATION AIR COOLERS												
2-SW-MOV-213A	11715-CBM-078A	4 OF 4	B7	MO BFLY	10.000	3	E		VP	OC			
	SERVICE WATER RETURN ISOLATION FROM FUEL PIT COOLERS												
2-SW-MOV-213B	11715-CBM-078A	4 OF 4	B5	MO BFLY	10.000	3	E		VP	OC			
	SERVICE WATER SUPPLY ISOLATION TO FUEL PIT COOLERS												
2-SW-MOV-214A	11715-CBM-078A	4 OF 4	F8	MO BFLY	8.000	3	E		VP	OC			
	SERVICE WATER HEADER RETURN FROM RECIRCULATION AIR COOLERS												
2-SW-MOV-214B	11715-CBM-078A	4 OF 4	F8	MO BFLY	8.000	3	E		VP	OC			
	SERVICE WATER HEADER RETURN FROM RECIRCULATION AIR COOLERS												
2-SW-MOV-215A	11715-CBM-078A	1 OF 4	D7	MO BFLY	24.000	3	B		EV ST VP	O O OC			
	SERVICE WATER HEADER SUPPLY ISOLATION VALVE FROM AUXILIARY SERVICE WATER PUMPS												
2-SW-MOV-217	11715-CBM-078A	1 OF 4	D6	MO BFLY	24.000	3	B		EV ST VP	O O OC			
	UNIT 2 AUXILIARY SERVICE WATER PUMP DISCHARGE ISOLATION VALVE												
2-SW-MOV-219	11715-CBM-078A	1 OF 4	D5	MO BFLY	8.000	3	B		EV ST VP	C C OC			
	MAKEUP PUMP SUPPLY VALVE												
2-SW-MOV-220A	11715-CBM-078A	4 OF 4	F3	MO BFLY	10.000	NC	E		VP	OC			
	AUXILIARY SERVICE WATER RETURN HEADER VALVE												
2-SW-MOV-220B	11715-CBM-078A	4 OF 4	F3	MO BFLY	10.000	NC	E		VP	OC			
	AUXILIARY SERVICE WATER RETURN HEADER VALVE												
2-SW-MOV-221A	11715-CBM-078H	1 OF 1	C8	MO BFLY	18.000	3	B		EV ST VP	O O OC			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	SERVICE WATER TO SPRAY ARRAYS STOP VALVE												
2-SW-MOV-221B	11715-CBM-078H	1 OF 1	C4	MO BFLY	18.000	3	B		EV ST VP	O O OC			
	SERVICE WATER TO SPRAY ARRAYS STOP VALVE												
2-SW-MOV-222A	11715-CBM-078H	1 OF 1	C7	MO BFLY	18.000	3	B		EV ST VP	O O OC			
	SERVICE WATER TO SPRAY ARRAYS STOP VALVE												
2-SW-MOV-222B	11715-CBM-078H	1 OF 1	C4	MO BFLY	18.000	3	B		EV ST VP	O O OC			
	SERVICE WATER TO SPRAY ARRAYS STOP VALVE												
2-SW-MOV-223A	11715-CBM-078H	1 OF 1	D8	MO BFLY	24.000	3	B		EV ST VP	C C OC			
	SERVICE WATER BYPASS VALVE												
2-SW-MOV-223B	11715-CBM-078H	1 OF 1	D4	MO BFLY	24.000	3	B		EV ST VP	C C OC			
	SERVICE WATER BYPASS VALVE												
2-SW-RV-200A	11715-CBM-078B	3 OF 4	E7	RELIEF VALVE	.750	2	C		SP	O			
	"A" RECIRC SPRAY HEAT EXCHANG SERVICE WATER RELIEF VALVE, RV DISCHARGE TO CONT SUMP												
2-SW-RV-200B	11715-CBM-078B	3 OF 4	E6	RELIEF VALVE	.750	2	C		SP	O			
	"B" RECIRC SPRAY HEAT EXCHANG SERVICE WATER RELIEF VALVE, RV DISCHARGE TO CONT SUMP												
2-SW-RV-200C	11715-CBM-078B	3 OF 4	E4	RELIEF VALVE	.750	2	C		SP	O			
	"C" RECIRC SPRAY HEAT EXCHANG SERVICE WATER RELIEF VALVE, RV DISCHARGE TO CONT SUMP												
2-SW-RV-200D	11715-CBM-078B	3 OF 4	E3	RELIEF VALVE	.750	2	C		SP	O			
	"D" RECIRC SPRAY HEAT EXCHANG SERVICE WATER RELIEF VALVE, RV DISCHARGE TO CONT SUMP												
2-SW-TCV-202A	11715-CBM-078G	2 OF 2	C4	AO GATE	2.000	3	B		EV FS ST	O O O			

VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	NC ALT TEST VCN-
	SERVICE WATER FROM CHARGING PUMP LUBE OIL COOLER TEMP CONTROL VALVE												
2-SW-TCV-202B	11715-CBM-078G	2 OF 2	C6	AO GATE	2.000	3	B		EV	O			
									FS	O			
									ST	O			
	SERVICE WATER FROM CHARGING PUMP LUBE OIL COOLER TEMP CONTROL VALVE												
2-SW-TCV-202C	11715-CBM-078G	2 OF 2	C8	AO GATE	2.000	3	B		EV	O			
									FS	O			
									ST	O			
	SERVICE WATER FROM CHARGING PUMP LUBE OIL COOLER TEMP CONTROL VALVE												

RELIEF REQUEST V-39

I. IDENTIFICATION OF COMPONENTS

System : Safety Injection

Valve(s): 2-SI-9
2-SI-19
2-SI-32

Class : 2

II. IMPRACTICAL CODE REQUIREMENTS

Exercise valves every three months

III. BASIS FOR RELIEF

Due to system design, check valves 2-SI-9 and 32 are not in the Low Head Safety Injection Pump test flowpaths. They cannot be full or part-stroke tested during power operation because the LHSI pumps cannot overcome reactor coolant system pressure. Valve 2-SI-19 can only be partial stroked every quarter because the quarterly test loop is a mini-flow loop.

During cold shutdown, the reactor coolant system pressure still prevents full flow testing of the check valves. Partial stroke exercising the valves with flow could cause an overpressurization condition during cold shutdowns.

To verify closure of Valves 2-SI-9 and 32, the low head safety injection system must be isolated which can only be done at reactor refueling. By isolating the system, the test boundary is established to demonstrate adequate seat tightness for the discharge valve to the non-running pump.

IV. ALTERNATE TESTING

Valves 2-SI-9 and 32 will be exercised to the full open and closed position every reactor refueling (not to exceed 24 months). Valve 2-SI-19 will be partial stroke tested every quarter and full flow tested every reactor refueling.

RELIEF REQUEST V-42

I. IDENTIFICATION OF COMPONENTS

System : Safety Injection

Valve(s):

2-SI-85	2-SI-107
2-SI-91	2-SI-119
2-SI-93	2-SI-126
2-SI-99	2-SI-128
2-SI-105	

Class : 1 for 2-SI-91, 99, 105, 107 and 119
2 for 2-SI-85, 93, 126 and 128

II. IMPRACTICAL CODE REQUIREMENTS

Exercise valves every three months

III. BASIS FOR RELIEF

These Safety Injection check valves must open and close to fulfill their safety functions. They cannot be full or part-stroke exercised to the open position during power operation because this would thermally shock the injection system and cause unnecessary plant transients. Flow cannot be established in the low head injection lines during normal plant operation.

During cold shutdown, the Reactor Coolant System pressure still prevents full design flow. Also, a partial or full stroke test could cause an overpressurization of the Reactor Coolant System and force a safety system to function.

These valves can only be tested to the closed position by draining the lines and performing a back seat leak test. They are identified as pressure isolation valves in Technical Specification Table 3.4-1 and as such are leakage tested every reactor refueling outage.

With low head pump flow, the cold leg injection valves 2-SI-91, 99, and 105 will be nonintrusively monitored using a sampling plan every reactor refueling. The sampling plan will follow the recommended alternative testing method described in NUREG 1482, Section 4.1.2. Per this plan, the valves will be placed into one group. During initial testing using nonintrusive techniques, each valve will be verified as operable.

During subsequent testing, nonintrusive verification will be performed for only one valve of the group on a rotating schedule each time the testing is performed, and the balance of the group will be flow tested. If problems are found with the sample valve that are determined to affect the operational readiness of the valve, all valves in the group must be tested using nonintrusive techniques during the same outage. The flow rate can be measured for the remaining valves in this relief request.

IV. ALTERNATE TESTING

Exercise to the open position every reactor refueling. Exercise to the closed position every reactor refueling per Technical Specification 4.4.6.2.2.

RELIEF REQUEST V-43

I. IDENTIFICATION OF COMPONENTS

System : Safety Injection

Valve(s):	2-SI-151	2-SI-170
	2-SI-153	2-SI-185
	2-SI-168	2-SI-187

Class : 1

II. IMPRACTICAL CODE REQUIREMENTS

Exercise valves for operability every three months

III. BASIS FOR RELIEF

These valves cannot be partial or full flow tested during normal operation because the accumulator pressure (600 to 650 psig) is below Reactor Coolant System pressure and the injection of borated water would upset the reactor coolant chemistry.

During cold shutdown, the RCS pressure may still prevent full flow testing. Also, discharging the accumulators would challenge the Low Temperature Overpressure Protection System.

A partial flow test is not practical during cold shutdowns. The flow from the accumulator is dependent on the pressure differential between the accumulator and the RCS. The pressure differential cannot be controlled to the fine degree necessary to preclude dumping too much water into the pressurizer, thus making it difficult to control pressurizer level while pressure is being reduced during cooldown. Also, the RCS temperature is high during short cold shutdowns. Dumping cold accumulator water into the RCS could thermally shock the system.

The accumulators must be isolated to verify closure using back flow for valves 2-SI-153, 170 and 187. The small increase in safety gained by performing the back seat check valve tests every cold shutdown versus every reactor refueling does not justify the added burden of the increased test frequency.

The use of nonintrusive monitoring techniques are being evaluated for confirming full disk movement. If nonintrusive techniques can provide a "positive means" for verifying obturator movement, a sampling program will be used as described below due to the burden of applying these techniques in the field.

IV. ALTERNATE TESTING

During the first refueling outage where nonintrusive techniques are used, all valves in the group will be tested to verify that the techniques verify valve obturator movement. During subsequent refueling outages, flow testing will be performed on all valves in the group, but the nonintrusive techniques need be applied only to one valve in each group, on a rotating basis, unless indications of problems are identified. In this case, all valves in the group will be subjected to the nonintrusive techniques. Valves 2-SI-153, 170 and 187 are closest to the reactor coolant system and will be in one group, and valves 2-SI-151, 168 and 185 will be in the other group. This sampling plan will follow the recommended alternative testing method described in NUREG 1482, Section 4.1.2.

The flow test will consist of discharging the accumulator from an initial pressure that is less than 600 psig. Discharging the accumulator at a lower initial pressure reduces the severity of the transient and the risk of adverse effects on the reactor coolant system. The low pressure test should provide enough flow to force the disk to the full open position.

If full disk movement cannot be confirmed using nonintrusive monitoring, these valves will be placed into two groups and one valve from each group will be disassembled and inspected every other reactor refueling. The justification for the extended disassembly and inspection schedule is available at the station.

Valves 2-SI-153, 170 and 187 will be confirmed closed every reactor refueling.

RELIEF REQUEST V-44

I. IDENTIFICATION OF COMPONENTS

System : Safety Injection

Valve(s): 2-SI-92
2-SI-100
2-SI-106

Class : 1

II. IMPRACTICAL CODE REQUIREMENTS

Exercise valves every three months

III. BASIS FOR RELIEF

These Safety Injection check valves must open and close to fulfill their safety function. They cannot be full or part-stroke exercised to the open position during power operation because this would cause safety injection flow into the Reactor Coolant System which would thermally shock the injection system and cause unnecessary plant transients. Flow cannot be established in the low head injection lines during normal plant operation.

During cold shutdown, the Reactor Coolant System pressure still prevents full design flow. Also, a partial or full stroke test could cause an overpressurization of the Reactor Coolant System and force a safety system to function.

These valves can only be tested to the closed position by a back seat leak test, which requires draining the lines.

With low head pump flow, these cold leg injection valves will be nonintrusively monitored using a sampling plan every reactor refueling. The sampling plan will follow the recommended alternative testing method described in NUREG 1482, Section 4.1.2. Per this plan, the valves will be placed into one group. During initial testing using nonintrusive techniques, each valve will be verified as operable.

During subsequent testing, nonintrusive verification will be performed for only one valve of the group on a rotating schedule each time the testing is performed, and the balance of the group will be flow tested. If problems are found with the sample valve that are determined to affect the operational readiness of the valve, all valves in the group must be tested using nonintrusive techniques during the same outage.

IV. ALTERNATE TESTING

Exercise to the open and closed positions every reactor refueling.

RELIEF REQUEST V-45

I. IDENTIFICATION OF COMPONENTS

System : Safety Injection

Valve(s):	2-SI-90	2-SI-117
	2-SI-98	2-SI-118
	2-SI-104	2-SI-124
	2-SI-112	2-SI-125
	2-SI-113	

Class : 1

II. IMPRACTICAL CODE REQUIREMENTS

Exercise valves every three months

III. BASIS FOR RELIEF

These Safety Injection check valves must open and close to fulfill their safety function. They cannot be full or part-stroke exercised to the open position during power operation because this would thermally shock the injection system and cause unnecessary plant transients.

During cold shutdown, the Reactor Coolant System pressure still prevents full design flow. Also, a partial or full stroke test could cause an overpressurization of the Reactor Coolant System and force a safety system to function.

The only test methods to individually back seat these valves are to perform leak tests or to use downstream pressure provided by the low head safety injection pump tests. Either test can only be performed during reactor refueling.

With low head pump flow, the hot leg injection valves 2-SI-112, 113, 117, 118, 124 and 125 will be nonintrusively monitored using a sampling plan every reactor refueling. The sampling plan will follow the recommended alternative testing method described in NUREG 1482, Section 4.1.2.

Per this plan, the valves will be placed into two groups with valves 2-SI-113, 118 and 125 in one group, and valves 2-SI-112, 117 and 124 in the other group. During initial testing using nonintrusive techniques, each valve in the group will be verified as operable.

During subsequent testing, nonintrusive verification will be performed for only one valve of the group on a rotating schedule each time the testing is performed, and the balance of the group will be flow tested. If problems are found with the sample valve that are determined to affect the operational readiness of the valve, all valves in the group must be tested using nonintrusive techniques during the same outage.

IV. ALTERNATE TESTING

Exercise to the open and closed positions every reactor refueling.

RELIEF REQUEST V-51

Relief Request Withdrawn

RELIEF REQUEST V-73

I. IDENTIFICATION OF COMPONENTS

System : Chemical & Volume Control System

Valve(s): 2-CH-153
2-CH-495

Class : 2

II. IMPRACTICAL CODE REQUIREMENTS

Exercise valve closed every three months

III. BASIS FOR RELIEF

Due to the plant configuration, these valves cannot be verified closed using flow. The only method to verify closure other than disassembly and inspection is to perform a leak rate/back pressure test on each valve.

During normal operation, these valves cannot be isolated to perform a back pressure test because normal letdown and charging flow, and reactor coolant pump seal flow would be interrupted. Also, if the valves were isolated during normal operation, the charging pumps would have to be secured.

These valves are also subject to leak testing, which is performed every reactor refueling. Verification of closure will be performed during the leak test every reactor refueling instead of every cold shutdown because the small increase in safety gained by testing during cold shutdown does not justify the burden of performing a leak rate test.

IV. ALTERNATE TESTING

Exercise to the closed position every reactor refueling.

RELIEF REQUEST V-75

Replaced by Cold Shutdown Justification CSV-45

RELIEF REQUEST V-76

I. IDENTIFICATION OF COMPONENTS

System : Chemical and Volume Control and Safety Injection

Valve(s):		
	2-CH-MOV-2115B	2-SI-MOV-2885A
	2-CH-MOV-2115D	2-SI-MOV-2885B
	2-SI-18	2-SI-MOV-2885C
		2-SI-MOV-2885D

Class : 2

II. IMPRACTICAL CODE REQUIREMENTS

IWV-3427 (a) - Valves with leakage rates exceeding either the values specified by the Owner or those rates given in IWV-3426 shall be replaced or repaired.

III. BASIS FOR RELIEF

Valves 2-CH-MOV-2115B and D, and 2-SI-18 are in the supply line to the charging pumps from the RWST. Valves 2-SI-MOV-2885A, B, C and D are on test lines that run from the discharge of the low head SI pumps to the RWST. During recirculation mode transfer, the RWST is isolated and the low head SI pumps recirculate highly contaminated water from the containment sump to the reactor vessel.

The RWST isolation valves work as a system of valves to protect the RWST from the contaminated sump water. Permissible valve leakage rates are based on each valve's possible contribution to the total allowable leakage rate to the RWST. When the leakages from each valve have been measured and summed, an individual valve's permissible leakage rate may have been exceeded but the overall allowable leakage to the RWST may not have been exceeded. In these cases, a repair or replacement may not be necessary because the system of isolation valves has been verified to be performing adequately.

IV. ALTERNATE TESTING

In addition to replacement or repair as corrective actions, an evaluation can be performed which demonstrates that even if a valve has exceeded its permissible leakage rate, the overall leakage rate to the RWST will be maintained below the overall allowable RWST leakage rate. No repair or replacement is necessary if the evaluation is performed.

COLD SHUTDOWN JUSTIFICATION CSV-20

Cold Shutdown Justification withdrawn

COLD SHUTDOWN JUSTIFICATION CSV-39

I. IDENTIFICATION OF COMPONENTS

System : Chemical and Volume Control

Valve(s): 2-CH-176
2-CH-191
2-CH-206
2-CH-495

Class : 2

II. COLD SHUTDOWN JUSTIFICATION

These check valves must open to allow charging pump recirculation. There is no permanently mounted instrumentation to measure full flow in the recirculation flow path. Therefore, full flow conditions will have to be measured by using temporary ultrasonic flow instrumentation. The ultrasonic flow transducers and their mounting carriages must be installed and the transducers referenced to a no flow condition before each test. After each test, the equipment must be removed from the field and decontaminated if necessary. Therefore, use of the ultrasonic flow instrumentation is very labor intensive and not practical for quarterly testing.

Test experience has shown that the discharge pressure drop is undetectable when flow through the recirculation line is established in conjunction with normal charging. Therefore, quarterly partial flow testing is not verifiable.

COLD SHUTDOWN JUSTIFICATION CSV-43

I. IDENTIFICATION OF COMPONENTS

System : Service Water

Valve(s): 2-SW-MOV-208A
2-SW-MOV-208B

Class : 3

II. COLD SHUTDOWN JUSTIFICATION

These isolation valves are located in series on service water supply to the component cooling heat exchangers. The component cooling heat exchangers carry a majority of the heat load for the service water system. When the heat exchangers are isolated, service water flow decreases to less than 10% of normal flow. Due to the design of the service water pumps, the pumps experience harmful high-magnitude vibrations as the service water flow decreases through a range from 7000 gpm to 6000 gpm. These pumps cannot be stopped during the valve exercise test because they provide service water to other plant heat loads. Therefore, performing the valve exercise test as frequently as once every three months should be avoided due to the harmful affects that the testing has on the service water pumps.

The valve controllers do not allow for a partial-stroke exercise test. To reduce the harmful affects of high-magnitude vibrations on the service water pumps, the isolation valves will be full-stroke exercised on a cold shutdown frequency.

COLD SHUTDOWN JUSTIFICATION CSV-44

I. IDENTIFICATION OF COMPONENTS

System : Quench Spray

Valve(s): 2-QS-MOV-202A
2-QS-MOV-202B

Class : 2

II. COLD SHUTDOWN JUSTIFICATION

These normally closed six inch motor operated isolation valves are located in parallel flow paths from the refueling water chemical addition tank to the reactor water storage tank (RWST). The piping between the isolation valves and the chemical addition tank contains high concentrations of sodium hydroxide. To exercise the motor operated valves, downstream manual isolation valves must be closed to prevent the sodium hydroxide from entering the quench spray system and chemically contaminating the boric acid solution in the RWST.

After the motor operated isolation valves are stroked open and closed, the piping between the motor operated valves and the downstream manual isolation valves must be drained of sodium hydroxide. Approximately five gallons of highly caustic fluid are drained into a plastic container after each valve test. Draining the piping presents a significant personnel hazard. Sodium hydroxide causes severe burns if it comes in contact with the skin. The test personnel must wear rubber gloves, boots and face shields.

The drains are located outdoors and are near to the ground, which makes collection difficult. Any soil that is contaminated with sodium hydroxide must be neutralized by the test personnel. Partial stroke testing of these valves presents the same hazards as full stroke testing.

To reduce the number of times that test personnel are exposed to sodium hydroxide, the motor operated isolation valves will be tested on a cold shutdown frequency.

COLD SHUTDOWN JUSTIFICATION CSV-45

I. IDENTIFICATION OF COMPONENTS

System : Residual Heat Removal

Valve(s): 2-RH-7
2-RH-15

Class : 2

II. COLD SHUTDOWN JUSTIFICATION

These RHR pump discharge check valves can only be partial-stroke or full-stroke exercised to the open position and verified closed when the RHR pumps 2-RH-P-1A and 2-RH-P-1B are running. The low pressure pumps take suction from and discharge to the reactor coolant system which operates at 2235 psig. This pressure is well above the operating pressure of the pumps, therefore, partial-stroke or full-stroke testing during normal operation is not practical. These valves will be full-stroke exercised every cold shutdown but not more frequently then every three months.