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VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

November 2, 1978

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
Attn: Mr. O. D. Parr, Chief  
Light Water Reactors Branch No. 3  
Division of Project Management  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Serial No. 597  
PO/FTT:scj  
Docket No. 50-338  
License No. NPF-4

Dear Mr. Denton:

REQUEST FOR RELIEF FROM CERTAIN  
REQUIREMENTS OF ASME XI FOR  
INSERVICE TESTING OF PUMPS AND VALVES  
FOR NORTH ANNA UNIT 1

PUMPS

Our letter Serial No. 052D, dated September 29, 1977, proposed an inservice testing program for ASME Code Class 1, 2, and 3 pumps for North Anna Power Station, Unit 1. Our letter detailed the tests to be performed on each of the applicable pumps, and requested relief in several cases from the requirements of Section XI of the ASME Code. The NRC Staff, by letter dated October 17, 1977 concluded that our proposed program was acceptable for the first 20 month period following commercial operation of Unit 1, and granted relief from ASME Code requirements.

Our testing program, as outlined in our letter, Serial No. 52D, dated September 29, 1977, stated that flow instrumentation of the component cooling pumps 1-CC-P-1A, 1B and of the service water pumps 1-SW-P-1A, 1B was only accurate to +4% of full scale reading. Operating experience has shown that normal operating flows are approximately half or less than half of full scale flow. Thus accuracy of these gauges is at best +8% of normal operating flow. This accuracy does not lend itself to satisfying the requirements of Table IWP-2100-2, where the acceptable range of flow is +2%-6% of reference flow. In addition, varying the flow rates of these pumps to meet the reference flow interferes with normal plant operation since these flows have been balanced to meet the heat load requirements of the unit. Since these flow gauges were only designed to indicate relative flow and not to evaluate pump performance, an exception to the requirements of IWP-3100 is requested such that the flow and developed head of each pump will be recorded but will not be adjusted or compared to the reference value. The component cooling pumps are not required following an accident. Installation of more accurate

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flow gauges will be investigated during the first 20 months of commercial operation.

With the addition of the Casing Cooling System, two pumps should be added to the Attachment of our letter, Serial No. 052D dated September 29, 1977. These pumps are the Casing Cooling Pumps 1-RS-P-3A, 3B and will be tested per Subsection IWP to Section XI of the ASME Code - 1974 edition with addenda through Summer 1975.

The proposed changes to pump testing are attached and indicated by a vertical line in the right hand margin. Pages 1 and 15 supercede pages 1 and 15 and page 13b supplements page 13 of the attachment to our letter, Serial No. 052D, dated September 29, 1977.

#### VALVES

Our letter Serial No. 052C, dated August 10, 1977, requested relief from certain requirements of ASME XI for inservice testing of valves for North Anna Unit 1. Included in this letter as an attachment was a statement of particulars and a tabulation listing all valves to be tested, their testing frequency and a statement of relief requested. The NRC staff, by letter dated October 17, 1977, concluded that our proposed program was acceptable for the first 20 month period following commercial operation of Unit 1, and granted relief from ASME Code requirements. Upon further review, we find it necessary to revise this attachment.

The proposed changes to valve testing as listed below are attached and indicated by a vertical line in the right hand margin. Pages 1 of Attachment C.0; 2, 7, 9, 10, 11 of Attachment C.1; and 5 of Attachment C.2 supercede the corresponding pages of the attachments to our letter, Serial No. 052C, dated August 10, 1977. Page 12 of Attachment C.1 and page 5a of Attachment C.2 supplement our August 10 letter.

1. Delete part stroke testing requirement for the main steam trip valves in Attachment C. 0. as part stroking of these valves could cause a unit trip. The valves will be tested for full closure time during each reactor shutdown but not more than once per 92 days.
2. MOV-1867A, B should be AMSE XI Cat. "B" rather than Cat. "A" and MOV-1867C, D should be Cat. "A" rather than Cat. "B". This was a typographical error.
3. Delete quarterly exercise testing requirements for MOV-1890A and B as explained in Note 27.
4. RHR relief valve, RV-1721, has been replaced by two relief valves, RV-1721A and 1721B. Include this change in attachment.
5. 1-SW-2 should be 1-SW-3. This was a typographical error.

6. Delete 1-FW-125, 1-FW-95, 1-FW-63 and 1-FW-61 which are auxiliary feedwater check valves. These valves are located immediately upstream of manual valves which are to be maintained closed and locked due to a design change. Therefore, these valves are not required to be tested.
7. Include 1-FW-279 which is a check valve in the discharge line from the steam driven auxiliary feedwater pump. Testing of this valve will be the same as is performed on other check valves in the auxiliary feedwater header.
8. Include MOV-RS-100A, B and MOV-RS-101A, B which are valves in the discharge line of the casing cooling pumps. These will be tested as ASME XI Category A valves except leakage testing will be performed in accordance with 10 CFR 50 APP. J in lieu of subsection IWV.
9. Delete 1-EG-272, 1-EG-284, 1-EG-289 and 1-EG-260 which are check valves in the discharge lines of Unit 2 emergency generator pumps and not required for Unit 1 operation.
10. Include 1-RS-146, 1-RS-147, 1-SI-312 and 1-SI-315 which are manual valves in the cross connection between recirc. spray and safety injection. These will be tested as ASME XI category E valves with no exceptions to testing requirements.
11. Include 1-RS-123 and 1-RS-138 which are check valves in the discharge line of the casing cooling pumps. These check valves shall be exercised during refueling outages as stated in Note 28 on Attachment C.2.

Very truly yours,

*C. M. Stallings*

C. M. Stallings  
Vice President-Power Supply  
and Production Operations

Attachments

cc: Mr. James P. O'Reilly

COMPONENT COOLING PUMP

Class 3

1-CC-P-1A

1-CC-P-1B

MEASURED QUANTITIES

$P_i$	-	Monthly	No exception*
$\Delta P$	-	Monthly**	Exception**
$Q$	-	Monthly**	Exception to IWP - 4110 is required since the available flow instrument is only 4% accurate.**
$V$	-	Monthly	No exception
Proper Lubricant Level or Pressure - Monthly			No exception
$T_b$	-	Annually	No exception

NOTES: These pumps are in a variable resistance system and are not required during an accident.

\*\* Values will be recorded monthly but not compared to reference values. Additionally, motor current will be recorded for comparison purposes.

CASING COOLING PUMPS

Class 3

1-RS-P-3A

1-kS-P-3B

MEASURED QUANTITIES

$P_i$	-	Monthly	No exception*
$\Delta P$	-	Monthly	No exception*
Q	-	Monthly***	See IWP-1400
V	-	Monthly	No exception
Proper Lubricant Level or Pressure	-	Monthly	No exception
$T_b$	-	Annually	No exception

\*\*\*Not required but will be measured.

NOTE: The Casing Cooling Pump recirculation path is a fixed resistance system.

SERVICE WATER PUMP

Class 3

1-SW-P-1A

1-SW-P-1B

MEASURED QUANTITIES

$P_i$	-	Exception*	See below
$\Delta P$	-	Monthly **	Exception**
$Q$	-	Monthly **	Exception to IWP-4110 is required since flow instruments are only 4% accurate.**
$V$	-	Monthly	No exception
Proper Lubricant Level or Pressure	-	Exception	See below
$T_b$	-	Not required	See IWP-4310

NOTES: The Service Water pump flow path is a variable resistance system. Proper Lubricant Pressure or Level can not be observed since bearings are in the main flow path. Reference is made to IWP-4310 which establishes exception to  $T_b$  for bearings within the main flow path.

\*\* Values will be recorded monthly but not compared to reference values. Additionally, motor current will be recorded for comparison purposes.

STATEMENT OF PARTICULARS

A review of class 1, 2, 3 valves has been completed for North Anna Unit 1 Systems. Attachment C.1 provides a tabulation of the valves that are subject to the testing requirements of ASME Boiler and Pressure Vessel Code, 1974 edition, subsection IWV with addenda through summer 1975. The table identifies the valves to be tested, valve code classes, and IWV category per IWV-2000. Relief from the testing requirements of ASME XI is requested when they are determined to be impractical. Specific information regarding the code requirement determined to be impractical and alternate testing programs are noted in Attachment C.2

In addition to the valves listed in Attachment C.1, applicable containment isolation valves shall be leak tested and cycled at each refueling. North Anna Unit 1 Technical Specifications will list applicable valves and specify 10CF50 APP. J. Leak Testing will be conducted in accordance with APP. J in lieu of subsection IWV.

There are no testable Category D valves in North Anna Unit 1 Systems. All Category E valves shall be tested in accordance with IWV-3700.

Any inspection requirements identified as impractical during the course of the inspection period will be noted and included in the inspection program at the time of the next revision.

The main steam trip valves full closure time on any closure actuation signal will be verified while in HOT STANDBY during each reactor shutdown except that this verification need not be determined more often than once per 92 days for multiple shutdowns. In the event of continued unit operation, a shutdown will not be required for the sole purpose of performing the full closure test.

The residual heat removal system relief valves shall be tested whenever

SYSTEM SI	FUNCTION	ASME	ASME	RELIEF REQUESTED	TEST FREQUENCY		ASME XI CODE RELIEF REQUESTED
VALVE		III CAT.	XI CAT.		EXERCISE	LEAKAGE	
MOV-1867 A, B	Boron Injection Tank Isolation Valves	II	B	NO	Every 3 Months	NA	NA
MOV-1867 C, D	Boron Injection Tank Isolation Valves	II	A	NO	Every 3 Months (See Note 6)	Each Refueling	NA
MOV-1869 A, B MOV-1836	High Head Safety Injection Off Charging Pump Header	II	AE	YES	Each Refueling	Each Refueling	NOTE 2
MOV-1890 A, B	Low Head Safety Injection To Hot Legs	II	AE	yes	When in modes 4, 5, or 6 (See Note 27)	Each Refueling	Note 27
MOV-1890 C, D	Low Head Safety Injection To Cold Legs	II	A	YES	Each Refueling	Each Refueling	NOTE 3
MOV-1860 A, B	Low Head Safety Injection Pump Suction From Containment Sump	II	A	YES	Every 3 Months	NONE	NOTE 4
1-SI-185, 79 201, 90	High Head Safety Injection Header Check Valves at Containment Penetrations	II	AC	YES	Each Refueling	Each Refueling	NOTE 5
1-SI-206, 207, 197, 195, 199	Low Head Safety Injection Header Check Valves at Containment Penetrations	II	AC	YES	Each Refueling	Each Refueling (NOTE 8 applies to 197, 195, 199)	NOTE 7



SYSTEM	CVCS, RHR, QS	ASME III CAT.	ASME XI CAT.	RELIEF REQUESTED	TEST FREQUENCY		ASME XI CODE RELIEF REQUESTED
					EXERCISE	LEAKAGE	
VALVE	FUNCTION						
1-CH-279, 267, 254	Charging Pump Discharge Check Valve	II	C	NO	Every 3 Months	NA	NA
RV-1203	Letdown Line Relief Valve Inside Containment	II	C	NO	NOTE 1	NA	NA
MOV-1700, 1701, 1720A, 1720B	RHR Suction and Discharge from Reactor Coolant System	I	B	YES	Cold Shutdown	NA	NOTE 16
FCV-1605 FCV-1758	RHR System Flow and Throttle Valve	II	B	NO	Every 3 Months	NA	NA
1-RH-7, 15	RHR Pump Discharge Check Valve	I	C	YES	Cold Shutdown	NA	NOTE 16
RV-1721 A, B	RHR System Relief Valve	II	C	NO	NOTE 26	NA	NA
MOV-QS-101A, B	Quench Spray Pump Discharge and Containment Isolation	II	A	NO	Every 3 Months	Each Refueling	NA
1-QS-19, 11	Quench Spray Pump Discharge and Containment Isolation Check Valve	II	AC	YES	Each Refueling	Each Refueling	NOTE 17

SYSTEM SW. MS	FUNCTION	ASME III CAT.	ASME XI CAT.	RELIEF REQUESTED	TEST FREQUENCY		ASME XI CODE RELIEF REQUESTED
					EXERCISE	LEAKAGE	
1-SW-3, 10 2-SW-3, 10	Service Water Pumps Discharge Check Valve	III	C	NO	Every 3 Months	NA	NA
1-SW-114, 116	Service Water to Recirc. Spray Heat Exchangers Check Valve	III	C	YES	Each Refueling	NA	NOTE 19
RV-SW-100A, B, C, D	Recirc. Spray Heat Exchanger Relief Valve	III	C	NO	NOTE 1	NA	NA
TV-MS-101A, B, C	Main Steam Isolation Trip Valve	II	B	NO	Every 3 Months (see NOTE 21)	NA	NA
TV-MS-111A, B	Steam to Turbine Auxiliary Feedwater Pump	II	B	NO	Every 3 Months	NA	NA
1-MS-119, 122, 124	Main Steam to Turbine Auxiliary Feedwater Pump Check Valve	II	C	NO	Every 3 Months	NA	NA
SV-MS-101A, B, C 102A, B, C 103A, B, C 104A, B, C 105A, B, C	Main Steam Safety Valves	II	C	NO	NOTE 1	NA	NA

SYSTEM FW, RS	FUNCTION	ASME III CAT.	ASME XI CAT.	RELIEF REQUESTED	TEST FREQUENCY		ASME XI CODE RELIEF REQUESTED
VALVE					EXERCISE	LEAKAGE	
HCV-FW-100A, B MOV-FW-100A, C	Auxiliary Feedwater Pump Discharge Isolation	III	E	NO	NONE	NA	NA
HCV-FW-100C MOV-FW-100B, D	Auxiliary Feedwater Pump Discharge Check Valve	III	B	YES	Each Refueling	NA	NOTE 3
1-FW-47, 79, 111	Main Feedwater Check Valve at Containment Penetration	II	C	YES	Each Refueling	NA	NOTE 22
1-FW-68, 100, 132 127, 93, 279	Auxiliary Feedwater Header Check Valves to Main Feedwater Header	III	C	YES	Each Refueling	NA	NOTE 23
1-FW-148, 165, 183, 150, 167, 185	Auxiliary Feedwater Pump Discharge and Recirculation Check Valves	III	C	NO	Every 3 Months	NA	NA
RV-FW-100	Turbine Auxiliary Feedwater Pump Discharge Relief Valve	III	C	NO	NOTE 1	NA	NA
MOV-RS-156A, B	Recirc. Spray Pump Discharge and Containment Isolation	II	A	YES	Each Refueling	Each Refueling	NOTE 3
MOV-RS-155A, B	Recirc. Spray Pump Suction from Containment Sump	II	A	YES	Each Refueling	NONE	NOTE 3, 4

SYSTEM RS, GW, EG, CC, SI	FUNCTION	ASME III CAT.	ASME XI CAT.	RELIEF REQUESTED	TEST FREQUENCY		ASME XI CODE RELIEF REQUESTED
					EXERCISE	LEAKAGE	
MOV-RS-100A, B MOV-RS-101A, B	Casing Cooling Pump Discharge to RS pumps.	II	A	NO	Every 3 months	Each Refueling	NA
1-RS-27, 18	Recirc. Spray Pump Discharge Check Valves at Containment Penetration	II	AC	YES	Each Refueling	Each Refueling	NOTE 17
RV-GW-107A, B 100, 104A, B 103A, B, C, D 102A, B, C, D	Waste Gas Decay Tanks and Gas Stripper Equipment Relief Valves	III	C	YES	NOTE 24	NA	NA
RV-EG-103A, B 104A, B 105A, B 106A, B	Emergency Generator Fuel Oil Pump Discharge Relief Valve	II	C	NO	NOTE 1	NA	NA
1-EG-266, 295 254, 278	Emergency Fuel Oil Pump Discharge Check Valves	II	C	NO	Every 3 months	NA	NA
MOV-CC-100A, B	Component Cooling Water to RHR Heat Exchanger and Containment Isolation	III	B	YES	Cold Shutdown	NA	NOTE 25
1-CC-193, 198	Component Cooling Water to RHR Heat Exchanger and Containment Isolation	III	AC	YES	Cold Shutdown	Each Refueling	NOTE 25
1-RS-146, 147 1-SI-312, 315	Recirc. Spray Pump-Safety Injection Pump Cross Connection	II	E	NO	NONE	NA	NA



integrity. This valve shall be exercised whenever the component cooling system for one unit is shutdown.

21. Refer to Attachment C.0 which amplifies testing schedule.
22. To exercise this normally open check valve to the close position requires main feedwater flow to the steam generators to be secured and the initiation of auxiliary feedwater flow to back seat the disc. This valve shall be exercised when steam generator level and flow control is not required during a refueling outage.
23. It is impractical to exercise this check valve during power operation or cold shutdown per IWV-3520. The introduction of cold auxiliary feedwater to the steam generators induces unnecessary thermal stress on main feedwater piping systems. This check valve shall be exercised at refueling outages using auxiliary feedwater flow.
24. To prevent the release of radioactive contamination, relief valves on the waste gas decay tanks and gas stripper equipment shall be tested in accordance with IWV-3510 whenever these systems are out of service for maintenance and purged.
25. Exercising this valve would decrease flow of component cooling water to major operational components during power operation. It will be exercised during cold shutdown when flow is available to the RHR heat exchangers.
26. These relief valves cannot be tested unless the entire RHR system is not required for service. These valves will be tested when the system is out of service. The RHR system must be available at all times during operation and refueling outages for core cooling capability.

27. Technical Specification 4.5.2 requires these valves to remain closed with power to the operator removed while in MODES 1, 2, 3, and 4. These valves shall be exercised whenever the unit is in MODES 5 or 6 but not more than once per 92 days.
  
28. It is impractical to exercise this check valve during power operation per 1WV-3520. Opening the test valve would break containment vacuum. The check valves shall be exercised at refueling outages.