VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

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

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License No. DPR-32

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNIT 1
10 CFR 50 APPENDIX J EXEMPTION REQUEST

Pursuant to 10 CFR 50.12, Virginia Electric and Power Company requests an exemption from 10 CFR 50, Appendix J, Paragraph III.A.6(b), which requires, in part, that "if two consecutive periodic Type A tests fail to meet the applicable acceptance criteria in III.A.5(b), a Type A test shall be performed at each plant shutdown for refueling or approximately 18 months, whichever occurs first, until two consecutive Type A tests meet the acceptance criteria in III.A.5(b), after which time the retest schedule specified in III.D may be resumed." The purpose of Type A testing is to ensure that the leakage through the primary reactor containment would not exceed the maximum allowable leakage during a DBA. It also provides assurance that the Local Leak Rate Test Program (LLRT) adequately identifies and corrects containment penetrations requiring repair. Our last two Type A tests have demonstrated that containment integrity did not significantly degrade over the operating cycle. Therefore, Virginia Electric and Power Company requests an exemption from the schedular requirements of paragraph III.A.6(b), which states that a Type A test be performed every refueling outage until two consecutive tests meet the acceptance criteria in III.A.5(b), and that we resume the normal test schedule specified in III.D.

We have implemented a corrective action program (see Attachment 1) that has reduced the containment overall Type B and C leakage. The results of this program provide assurance that the containment is leak tight and that any leakage during a DBA would be well within the limits of III.A.5(b). With our corrective action program, we believe we have met the intent of the regulation in establishing containment integrity (leakage rate less than 0.75 La), and maintaining that integrity over the operating cycle.

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Therefore, Virginia Electric and Power Company believes that this exemption should be granted pursuant to 10 CFR 50.12(a)(2)(ii) and (v), in that: application of the regulation in this particular instance is not necessary to achieve the underlying purpose of the rule which is to ensure that the leakage through the containment structure does not exceed the allowable leakage rate at any time during the operating cycle; and, the exemption would provide only temporary relief from the applicable regulation for which we have made a good faith effort to comply. This one-time exemption will enable Surry Unit 1 to resume the retest schedule specified in Section III.D of 10 CFR 50, Appendix J and therefore, prevent unnecessary pressurization of the containment to design basis pressure.

If you have any questions or need additional information to process this request, please contact us.

Very truly yours,

W. L. Stewart
Senior Vice President - Nuclear

Attachments

cc: U. S. Nuclear Regulatory Commission
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Mr. W. E. Holland
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Surry Power Station

ATTACHMENT 1

Corrective Action Program

Leak Rate Testing Program

CORRECTIVE ACTION PROGRAM

I. Problem

Surry Unit 1 did not pass the 'as-found' analysis performed for the 1986 Type A test due to application of leakage corrections following Type C valve repairs. In this case, the majority of the leakage was attributable to the containment sump isolation valves (TV-DA-100 A&B).

II. Discussion

The following are the results from the 1986 and 1988 Type A tests. In each case, the tests demonstrate that containment integrity was maintained.

A. Surry Unit One CILRT - June 1988

The Unit One 1988 CILRT was successfully completed on June 26, 1988. The final Upper Confidence Limit (UCL) Leakage result for the test was 0.02785 wt%/day. With the Type C penalties added to the test results, due to various penetrations not being aligned in their post accident configuration, the final 'as-left' leakage was 0.03145 wt%/day.

An 'as-found' analysis was performed to determine what the actual Type A test leakage would have been if the Type A test had been performed at the beginning of the outage prior to the Type B and C testing. This 'as-found' analysis accounts for the leakage savings associated with valve repairs over the operating cycle. The 'as-found' leakage was 0.05415 wt%/day. In addition, an analysis was performed on penetrations that are considered credible leakage paths during the first hour of the accident, prior to the containment returning to a subatmospheric pressure. Certain penetrations were excluded as credible leakage sources. An analysis and technical justification for excluding the Type C leakage penalty for 'water filled' penetrations was approved by the NRC in their Safety Evaluation Report (SER) for Surry Unit 2 CILRT exemption, dated November 21, 1988. The results of these analyses are summarized below:

1988 TYPE A TEST

1. Type A Results

Mass Point Leakage		0.021834	wt%/day
95% Confidence Limit		0.006016	wt%/day
Type C Penalties		0.0036	wt%/day
	Total:	0.03145	wt%/day

2. 'As-found' Analysis

Type A Results		0.03145	wt%/day
Leakage Savings Penalty		0.0227	wt%/day
	Total:	0.05415	wt%/day

The acceptance criteria of 0.075 wt%/day as stated in Paragraph III.A.5(b).(2) has as been satisfied.

The test results demonstrated that the integrity of the containment structure completely satisfied the criteria in 10 CFR 50 Appendix J, Paragraph III.A.(b).(2) of 0.075 wt%/day for both the 'as-found' and 'as-left'conditions.

B. Surry Unit One CILRT - July 1986

The Unit One 1986 CILRT was completed on July 5, 1986. The final Upper Confidence Limit (UCL) Leakage result for the test was 0.055952 wt%/day. With the Type C penalties added to the test results, the final leakage was 0.056673 wt%/day. The leakage from the 'as-found' analysis was 0.077945 wt%/day which exceeded the limit of 0.075 wt%/day.

1986 TYPE A TEST

1. Type A Results

Mass Point Leakage		0.051923	wt%/day
95% Confidence Level		0.004029	wt%/day
Type C Penalties		0.000721	wt%/day
	Total:	0.056673	wt%/day

2. 'As-found' Analysis

Type A Results		0.056673	wt%/day
Leakage Savings Penalties with 'water filled' and cont. sump penetrations		0.06074	wt%/day
	Total:	0.117413	wt%/day

Type A Results		0.056673	wt%/day
Leakage Savings Penalties with cont.sump penetrations but without "water filled " penetrations.		0.021272	wt%/day
	Total:	0.077945	wt%/day

Type A Results	0.056673	wt%/day
Leakage Savings Penalties without cont. sump penetrations and 'water filled' penetrations	0.009777	wt%/day
Total:	0.066450	wt%/day

A review of the test data indicates that the containment was leak tight and that the overall leakage was steadily decreasing throughout the test. Had the test been extended approximately 1 to 2 hours longer to further stabilize containment pressure and improve the 95% confidence component of leakage, we believe that the total 'as-found' analysis (excluding the 'water-filled' penetrations) would have been below the acceptance criterion of 0.075 wt%/day.

The above analysis shows that with the removal of the leakage savings penalty associated with the 'water filled' penetrations and the containment sump isolation valves, the test would have satisfied the Appendix J criterion. The 'water filled' penetrations can be eliminated from leakage penalty consideration in accordance with our analysis and the NRC SER.

In regard to the 'as-found' Type A test analysis, more than half of the leakage, 35 SCFH of 64.527 SCFH, was due to the containment sump isolation valves (TV-DA-100 A&B). The containment sump isolation valves had been a major contributor to Surry's 'as-found' containment leakage analysis for several outages.

The Unit 1 containment sump valves, and the corresponding valves on Unit 2, had been Type C tested at each cold shutdown since 1983. When excessive leakage was found, it occurred during refueling outages rather than the maintenance outages. This condition can be attributed to the extensive containment decontamination efforts which are routinely performed at the start of each refueling prior to commencing Type C testing. These efforts have the effect of depositing additional debris into the containment sump, leading to scoring of the valve seat. The high leakage seen at the start of the 1986 refueling outage can be attributed to debris from the decontamination effort, rather than being an indication of actual valve condition during unit operation. This conclusion is supported by the significant reduction in leakage following a flush of the valves.

Both TV-DA-100 A&B were replaced during the 1986 outage with an improved valve design that was more suitable for its environment. This replacement occurred as a result of an analysis of the leakage problems associated with these valves. An additional design change was made to the containment sump penetration to minimize the possibility of causing premature wear to the valves. The previous design of the penetration had the isolation valves cycling with the operation of the containment sump pumps. To minimize valve cycling, a check valve was installed in the line allowing the isolation valves to remain open except when they were required to be closed to satisfy containment integrity following an ESF actuation. These corrective actions have increased the reliability of the containment sump isolation valves.

The following are results of Type C testing for TV-DA-100 A&B since their replacement:

TV-DA-100A	TV-DA-100B
05/22/86 - Replaced Valve	05/22/86 - Replaced Valve
06/21/86 - 0.0 SCFH (initial test)	06/21/86 - 0.0 SCFH (initial test)
07/09/86 - 0.90 SCFH ('as-left')	
09/11/86 - 255.0 SCFH ('as-found') valve packing problem	09/11/86 - 0.0 SCFH ('as-found'/ 'as-left')
09/22/86 - 0.0 SCFH ('as-left')	
12/12/86 - 0.32 SCFH ('as-found')	12/12/86 - 31.43 SCFH (as-found) replaced valve
01/13/87 - 0.0 SCFH ('as-left')	01/13/87 - 0.0 SCFH ('as-left')
05/19/87 - 305 SCFH ('as-found') valve actuation problem replaced gasket air operator froze	05/26/87 - 0.0 SCFH ('as-found'/ 'as left')
05/21/87 - 0.0 SCFH ('as-left')	
04/16/88 - 0.109 SCFH ('as-found')	04/16/88 - 4.99 SCFH ('as-found')
04/27/88 - 0.0 SCFH ('as-left')	Replaced gaskets 05/24/88 - 0.0 SCFH ('as-left')

III. Conclusion

Our Corrective Action Program for Type B & C testing has corrected the problems associated with the containment sump isolation valves. In addition, engineering has established a tracking/trending program for containment isolation valves to identify problems before they become a leakage concern. A leakage guideline has also been established for Type B and C penetrations to identify penetrations that need repair. This program ensures that problem penetrations are repaired and that the total Type B and C leakage for each unit is well below the maximum allowable value of 0.6 La.

The Corrective Action Program, as described, has assured that containment integrity is being maintained in that the last two Unit 1 Type A tests have been successful. The Type C leakage savings penalty, the major contributor of which was the containment sump isolation valves, caused the 1986 Unit 1 Type A 'as-found' analysis to exceed the criteria. The containment sump valves were replaced during the 1986 refueling outage and have corrected the leakage problem. We have also started an evaluation of other problem penetrations to determine if a more suitable valve or design is available to increase containment reliability. Thus, the overall corrective action program for the Appendix J leak rate testing has assured and will continue to ensure that in the event of an accident that the dose levels will not exceed the 10 CFR 100 limits. Therefore, our corrective actions for the overall containment leak rate test program have adequately fulfilled the requirement for increased Type A testing, which is consistent with the position established in IE Information Notice 85-71.

10 CFR 50.12 EXEMPTION JUSTIFICATION

AND SIGNIFICANT HAZARDS CONSIDERATION

EXEMPTION JUSTIFICATION

10 CFR 50.12 states that the Commission may grant exemptions from the requirements contained in 10 CFR 50 provided that: (1) the exemption is authorized by law, (2) the exemption will not present an undue risk to the public health and safety, (3) the exemption is consistent with the common defense and security and, (4) special circumstances as defined in 10 CFR 50.12(a)(2), are present.

1. The Requested Exemption is Authorized by Law

   No law exists which would preclude the activities covered by this exemption request, thus the Commission is authorized to grant this exemption.

2. The Requested Exemption Does Not Present an Undue Risk to the Public Health and Safety

   10 CFR Appendix J states that the purpose of the regulation is to assure that leakage through primary containment does not exceed allowable values, as specified in the Technical Specifications, and that proper maintenance and repair are performed throughout the service life of the containment boundary components. The requested exemption is consistent with the purpose of the regulation and the intent of the testing frequencies required by Appendix J. This one-time exemption would enable Surry Unit 1 to resume the normal retest schedule specified in Section III.D of 10 CFR 50. The intent of the regulation is that testing be performed 3 times in every 10 year ISI period if the containment meets the acceptance criterion. In each case, the Surry Unit 1 containment has met the the Integrated Leak Rate Testing (ILRT) acceptance criterion but the additional leakage penalties from specific penetrations had caused us to exceed the 'as-found' acceptance criterion for the 1986 ILRT. Based upon the following information, the requested exemption will not impact the ability of the containment to limit post-accident leakage to within Technical Specification requirements.

   Our Local Leak Rate Testing (LLRT) Program has undergone significant changes and improvements. In the 1986-88 time frame, we increased efforts to minimize Type C leakage by improving test procedures and methods, conducting supplemental LLRTs on penetrations that have been poor performers, and making modifications to selected penetrations. The latest Type B and C test results are 57 SCFH with 0.6 La equal to 180 SCFH.

   The 1988 ILRT/Type A test met the 'as-found' acceptance criterion. The 1986 ILRT/Type A test did not meet the 'as-found' acceptance criterion. However, nearly 50% of the leakage was due to a leakage penalty for the containment sump isolation valves (TV-DA-100 A&B) and these valves were replaced that same outage. Since then with few exceptions, the new containment sump valves have exhibited minimal leakage. Thus, if the leakage penalty for the old valves was removed from the 1986 ILRT, the 'as-found' analysis would have met the acceptance criterion.

3. The Requested Exemption Will Not Endanger the Common Defense and Security

The common defense and security are not an issue in this exemption request.

4. Special Circumstances are Present Which Necessitate the Request for an Exemption to the Regulations of 10 CFR 50 Appendix J Section III.D.3

Per 10 CFR 50.12(a)(2), the following special circumstances are present:

a. Application of the regulation in this particular circumstances is not necessary to meet the intent of the regulation. The intent of the regulation is to measure and ensure that the leakage through the primary reactor containment does not exceed the maximum allowable leakage rate. Surry Unit 1 containment has been leak tested and the appropriate maintenance and repairs have been conducted to ensure the leakage rate does not reach or exceed the maximum allowed leakage rate. The major contributor to the leakage rate for the 1986 ILRT/Type A test was the containment sump valves (TV-DA-100 A&B). The replacement of these valves have eliminated this potential leakage concern. Therefore, pressurizing the containment to perform a ILRT during this outage will not serve to further ensure the integrity/leak tightness of the containment.

SIGNIFICANT HAZARDS CONSIDERATION

Virginia Electric and Power Company has reviewed the proposed changes against the criteria of 10 CFR 50.92 and has concluded that the changes as proposed do not pose a significant hazards consideration. Thus, operation of the Surry Power Station in accordance with the proposed changes will not:

1. Involve a significant increase in the probability of occurrence or consequences of any accident or malfunction of equipment which is important to safety and which has been evaluated in the UFSAR. Plant operation and design have not been changed, deferring an Integrated Leak Rate Test (ILRT) does not increase any probability or the consequences of any accident or equipment malfunction. Specifically, the aggressive Type B and C testing program corrective actions have maintained leakage well within the required acceptance criteria and provides adequate margin for component degradation over the cycle of operation.

2. Create the possibility of a new or different type of accident from those previously evaluated in the safety analysis report. Physical plant modifications are not being made and plant operations are not being changed. Consequently, the system's ability to perform its intended function will be maintained, no new accident precursors are being generated and therefore, no new or different kind of accident is created.

3. Involve a significant reduction in the margin of safety. Plant operations are not being changed nor are any of the accident analysis assumptions being modified or exceeded by this change. The deferral of the ILRTs will not result in significant degradation of equipment in that the valves and penetrations will be tested in accordance with Appendix J. This will provide the margin necessary per the regulation. The 'as-left' leakage will be within the acceptance criterion and therefore, provides the same margin of safety as in previous cycles of operation. Therefore, the accident analysis assumptions remain bounding and safety margins remain unchanged.