

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

October 7, 2008

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Serial No. 08-0620
NL&OS/ETS R0
Docket Nos. 50-338/339
License Nos. NPF-4/7

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)
NORTH ANNA POWER STATION UNITS 1 AND 2
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION FOR
PROPOSED LICENSE AMENDMENT REQUEST
DELETION OF TS 3.7.13 - MAIN CONTROL ROOM/EMERGENCY SWITCHGEAR ROOM
BOTTLED AIR SYSTEM FROM TECHNICAL SPECIFICATIONS

In a letter dated March 19, 2008 (Serial No. 08-0080), Dominion requested amendments, in the form of changes to the Technical Specifications to Facility Operating License Numbers NPF-4 and NPF-7, for North Anna Power Station Units 1 and 2, respectively. The proposed amendment would delete the Control Room/Emergency Switchgear Room (MCR/ESGR) Bottled Air System from Technical Specifications. In a September 24, 2008 letter, the NRC requested additional information to complete their review. The requested information is provided in the attachment to this letter.

The information provided in this letter does not affect the conclusion of the significant hazards consideration discussion provided in the March 19, 2008 Dominion letter (Serial No. 08-0080).

If you have any questions or require additional information, please contact Mr. Thomas Shaub at (804) 273-2763.

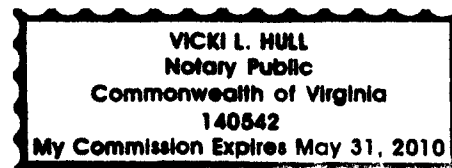
Very truly yours,


J. Alan Price
Vice President – Nuclear Engineering

Attachment

COMMONWEALTH OF VIRGINIA)


COUNTY OF HENRICO)



The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by J. Alan Price, who is Vice President – Nuclear Engineering, of Virginia Electric and Power Company. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 7TH day of October, 2008.

My Commission Expires: May 31, 2010.


Notary Public

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ATTACHMENT

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

**DELETION OF TS 3.7.13 - MAIN CONTROL ROOM/EMERGENCY SWITCHGEAR
ROOM BOTTLED AIR SYSTEM FROM TECHNICAL SPECIFICATIONS**

**North Anna Power Station
Units 1 and 2
Virginia Electric and Power Company
(Dominion)**

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

DELETION OF TS 3.7.13 - MAIN CONTROL ROOM/EMERGENCY SWITCHGEAR ROOM BOTTLED AIR SYSTEM FROM TECHNICAL SPECIFICATIONS

NRC Question 1

Regulatory Position C.1.1.1, "Safety Margins," to Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," states:

The proposed uses of an AST and the associated proposed facility modifications and changes to procedures should be evaluated to determine whether the proposed changes are consistent with the principle that sufficient safety margins are maintained, including a margin to account for analysis uncertainties.

The Bottled Air System is an Engineered-Safety-Feature (ESF) system. Dominion proposed to eliminate TS 3.7.13, "MCR/ESGR Bottled Air System." The NRC staff requests that Dominion provide justification determining, with the requested change, how conformance with the guidance of Regulatory Guide (RG) 1.183 is maintained regarding Regulatory Position C.1.1.1, "Safety Margins." This justification will be used to determine whether the proposed removal of TS 3.7.13 is consistent with the principle that sufficient safety margin, including margin to account for analysis uncertainties, is maintained.

Dominion Response

Envelope inleakage during operation of the Main Control Room (MCR)/Emergency Switchgear Room (ESGR) Bottled Air System was originally accounted for in the safety analysis by assuming a MCR/ESGR inleakage of 10 cfm (for door openings). This was based on maintaining pressure in the control room at 0.05 inches of water. At no time was the bottled air system flow rate or pressure explicitly credited in the safety analysis. The 10 cfm inleakage was an assumption in the analysis not a measured value. North Anna now measures MCR/ESGR envelope inleakage in accordance with TS 3.7.10, MCR/ESGR Emergency Ventilation System and 5.5.16, MCR/ESGR Habitability Program. The MCR/ESGR envelope inleakage acceptance criteria are 250 cfm for LOCAs and 400 cfm for fuel handling accidents in a non-pressurized alignment. The inleakage acceptance criteria is based on the NRC approved Alternate Source Term (AST) analyses, which is consistent with the applicable codes and standards and provides adequate margin to account for the measurement uncertainties associated with test method required to establish the MCR/ESGR inleakage. The last measured tracer gas test result was 150 cfm \pm 3 cfm with the MCR/ESGR envelope in the non-pressurized mode.

The safety analysis and the Technical Specifications are now consistent. Deletion of TS 3.7.13 - MCR/ESGR Bottled Air System does not adversely affect the margin of safety. The existing plant design and operation provide sufficient safety margin to ensure the operator's dose will not exceed the approved safety analysis or any NRC dose limit.

NRC Question 2

Regulatory Position C.1.1.2, "Defense in Depth," to Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," states:

The proposed uses of an AST and the associated proposed facility modifications and changes to procedures should be evaluated to determine whether the proposed changes are consistent with the principle that adequate defense in depth is maintained to compensate for uncertainties in accident progression and analysis data. Consistency with the defense-in-depth philosophy is maintained if system redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties. In all cases, compliance with the General Design Criteria in Appendix A to 10 CFR Part 50 is essential. Modifications proposed for the facility generally should not create a need for compensatory programmatic activities, such as reliance on manual operator actions.

Proposed modifications that seek to downgrade or remove required engineered safeguards equipment should be evaluated to be sure that the modification does not invalidate assumptions made in facility PRA and does not adversely impact the facility's severe accident management program.

The Bottled Air System is an Engineered-Safety-Feature (ESF) system. Dominion proposed to eliminate TS 3.7.13, "MCR/ESGR Bottled Air System." The NRC staff requests that Dominion provide justification that demonstrates conformance with the guidance of RG 1.183, Regulatory Position C.1.1.2, "Defense in Depth," is maintained. This justification will be used to determine that the proposed removal of TS 3.7.13 does not invalidate assumptions made in facility PRA and does not adversely impact the facility's severe accident management program.

Dominion Response

The following justification demonstrates Dominion maintains conformance with the guidance of RG 1.183, Regulatory Position C.1.1.2, "Defense in Depth."

- "A reasonable balance among prevention of core damage, prevention of containment failure, and consequence mitigation is preserved."

Elimination of the MCR/ESGR Bottled Air System TS does not increase the likelihood of any accident, nor create the probability of any new accident. Dose mitigation capability is maintained because the MCR/ESGR envelope, isolation actuation instrumentation, and the MCR/ESGR Emergency Ventilation System (EVS) are required to be OPERABLE. Operability of these systems will continue to ensure the operator dose remains within the safety analysis limits.

- "Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided."

The MCR/ESGR envelope, isolation actuation instrumentation, and EVS design will continue to provide adequate mitigation of operator dose without the reliance on programmatic activities. Manual actions that previously were required are still required to initiate isolation of the MCR/ESGR envelope for a FHA and to initiate EVS trains to provide filtered makeup air to the MCR/ESGR envelope. No additional programmatic activities (manual actions) are necessary as a result of the proposed change.

- "Whether there are appropriate restrictions in place to preclude simultaneous equipment outages that would erode the principles of redundancy and diversity."

Technical Specifications limit the outages of redundant trains of safety-related equipment and the North Anna Maintenance Rule (a)(4) program ensure that simultaneous equipment outages are controlled such that the principles of redundancy and diversity are not eroded.

- "Defenses against potential common cause failures (CCF) are maintained and the potential for introduction of new common cause failure mechanisms is assessed."

No new CCF vulnerabilities were identified in the deletion of the MCR/ESGR Bottled Air System. The remaining mitigation systems will continue to be operated in the same manner without the introduction of new CCF mechanisms

- "Independence of physical barriers is not degraded."

No physical barriers will be degraded by the proposed TS change. The MCR/ESGR envelope and the emergency ventilation system are not degraded by the proposed change. MCR/ESGR operation with leakage below the analyzed limit will ensure that the operator dose will remain below the acceptance criteria.

- "Defenses against human errors are maintained."

No new potential human errors were identified or are expected in deleting the MCR/ESGR Bottled Air System. The proposed TS change only eliminates the need

for the MCR/ESGR Bottled Air System. The MCR/ESGR envelope isolation system and the emergency ventilation system will be operated in the same manner. There are no additional automatic or manual actions required as a result of this proposed change.

- "The intent of the General Design Criteria in Appendix A to 10 CFR Part 50 is maintained."

The General Design Criteria (GDC) are fully satisfied by the proposed TS change. The remaining mitigation systems (i.e., MCR/ESGR envelope, envelope isolation system and emergency ventilation system) continue to meet the intent of the GDC.

The proposed change does not invalidate assumptions made in the current North Anna PRA model based on the following evaluation:

From the Probabilistic Risk Assessment (PRA) perspective, the major function of the MCR/ESGR Bottled Air System is to ensure that the operators' ability to mitigate the consequences of an accident is not impaired. The ability of the operators to perform their required actions is measured by the reliability of their credited actions in the PRA model. These reliability estimates are a function of environmental factors, such as MCR/ESGR habitability. The MCR/ESGR habitability is impacted by inleakage into the MCR/ESGR envelope. Based on an engineering analysis of the proposed changes, due to the Control Room structural integrity and Containment performance:

- The MCR/ESGR envelope inleakage acceptability is not impacted by the proposed changes,
- The reliability of the defenses against high inleakage is not impacted.

The original LOCA analysis modeled the release of the entire core inventory at the initiation of the event and the containment was designed to return to subatmospheric pressure within one hour. The MCR/ESGR Bottled Air System was designed to operate during the one hour period that the containment was above atmospheric pressure and prevent unfiltered inleakage into the control room. Since the original LOCA analysis, the license and design bases have changed. As a result of addressing GSI-191, the containment systems were redesigned and it can take up to 6 hours for the containment to return to subatmospheric pressure. Additionally, in an AST LOCA analysis, the majority of the core release to the containment atmosphere occurs between 0.5 and 1.8 hours. This renders the first hour pressurization of the MCR/ESGR envelope of little value. Finally, North Anna now requires MCR/ESGR envelope inleakage measurement in a non-pressurized alignment with an acceptance criterion of 250 cfm in accordance with TS 3.7.10, MCR/ESGR Emergency Ventilation System and 5.5.16, MCR/ESGR Habitability Program. The AST core release timing and the extended period of containment pressurization has rendered this system obsolete. The bottled air system does not add to defense in depth, its one hour operation is too short to effectively mitigate the consequences of any of the radiological accidents.

NRC Question 3

In a letter dated March 19, 2008, on Page 7 of 18 of Attachment 1, Dominion stated in one of the mitigative actions in the dose analysis (in the analysis of record) that:

For the MSLB, SGTR, and RCP Locked Rotor, the MCR/ESGR envelope is assumed operating with normal ventilation flow and 500 cfm of additional inleakage.

If normal ventilation is required, explain why the MCR/ESGR Emergency Ventilation System (EVS) is not relied upon.

Dominion Response

The normal ventilation is not required to mitigate the MSLB, SGTR, and RCP Locked Rotor accidents. Its operation was assumed to maximize dose by varying the flow rate over its operational range plus an additional amount for unfiltered inleakage. The normal ventilation operation assumption was made to demonstrate that the MCR/ESGR EVS was not required to mitigate the MSLB, SGTR, and RCP Locked Rotor accidents. Isolation of the MER/ESGR and actuation of the MCR/ESGR Emergency Ventilation System would reduce the consequences of those events.