VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

March 30, 2004

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Serial No.: 03-373A
NL&OS/ETS: R1
Docket Nos.: 50-338/339
License Nos.: NPF-4/7

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)
NORTH ANNA POWER STATION UNITS 1 AND 2
GENERIC LETTER 2003-01 CONTROL ROOM HABITABILITY
CONTROL ROOM TESTING AND TECHNICAL INFORMATION SUBMITTAL

On June 12, 2003, the NRC issued Generic Letter (GL) 2003-01, "Control Room Habitability," to all operating reactors. This generic letter requested information that demonstrates that the control room at each facility complies with the current licensing and design bases as well as applicable regulatory requirements. Furthermore, the generic letter requested information that ensures that suitable design, maintenance and testing control measures are in place for maintaining this compliance. In an August 11, 2003 letter (Serial No. 03-373), Dominion provided the NRC an alternate schedule for providing the applicable information and the bases for that schedule. The attachment to this letter provides that information.

A license amendment was submitted on September 12, 2003 (Serial No. 03-464) requesting a revised licensing basis utilizing the NRC's approved Alternate Source Term (AST) methodology. Tracer gas testing was accomplished in September of 2003 to support the North Anna Units 1 and 2 AST license amendment request and response to the NRC's Generic Letter. Specifically, testing was performed in the non-pressurized mode.

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

Very truly yours,

Leslie N. Hartz
Vice President – Nuclear Engineering

Attachment

Commitments made by this letter:

Submit an amendment request to incorporate a control room habitability program into the Technical Specifications within six months following either the approval of TSTF-448 or its adoption in the Consolidated Line Item Improvement Process (CLIIP) by the NRC, whichever is later.

cc: U.S. Nuclear Regulatory Commission
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Attachment

North Anna Units 1 and 2

Response to Generic Letter 2003-01
Control Room Habitability

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

North Anna Units 1 and 2 Response to GL 2003-01, Control Room Habitability

This letter is provided in response to Generic Letter (GL) 2003-01 for North Anna Units 1 and 2. The NRC requested information is in bold, followed by the Dominion response.

NRC Question 1

Provide confirmation that your facility's control room meets the applicable habitability regulatory requirements (e.g., GDC 1, 3, 4, 5, and 19) and that the CRHSs are designed, constructed, configured, operated, and maintained in accordance with the facility's design and licensing bases.

Dominion Response:

Control Room Facility Habitability Design Features

The North Anna Control Room Envelope (CRE) consists of a common Main Control Room (MCR), two separate Emergency Switchgear Rooms (ESGR) located directly beneath the MCR, and four battery rooms located directly above the MCR. There are also four battery rooms in the ESGRs. Poured concrete walls, floors, and ceilings, door and penetration seals, pressurization systems, and the absence of associated system components outside the CRE minimize the infiltration of unfiltered outside air. The CRE, associated ventilation systems, and fire protection systems are described in detail in the North Anna Updated Final Safety Analysis Report (UFSAR) (Ref. 1, 2, 3). Pertinent features of the applicable systems are described below.

Fresh air supply and exhaust for normal and accident conditions are provided by separate and independent systems. During normal operation, fresh air is supplied by a non-safety related fan unit to the CRE via a common duct. Two safety-related isolation dampers in series are located in the supply duct just inside the CRE. Downstream of the dampers, the duct splits into two paths, one supplying the MCR; the other supplying the ESGRs. Exhaust from the CRE is provided by a non safety-related exhaust fan. Ductwork from the MCR and ESGRs combines into a single exhaust duct containing two safety-related isolation dampers in series located just inside the CRE boundary. An excess of supply over exhaust is maintained to keep the CRE at a positive pressure relative to adjacent areas. The normal exhaust and supply fans are located outside the CRE (Ref. 1,2).

During a radiological emergency, two separate systems – the Control Room Emergency Ventilation System (CREVS) and a bottled air pressurization system (BAPS) - provide fresh air and minimize unfiltered inleakage. For the first hour after the event, the redundant and safety-related compressed air cylinders contain enough breathing-quality air to maintain the CRE at a positive pressure. When the compressed air is depleted, four CREVS supply fans and associated HEPA/charcoal filter assemblies are available to provide filtered outside air and pressurize the CRE indefinitely. The fan/filter assemblies are located inside the CRE, and each fan pulls outside air from the turbine building through a separate duct. Each duct includes two safety-related isolation valves in series, located just inside the CRE boundary. The duct also includes a normally-open panel, located between the isolation valves and fan, that allows the fan to recirculate CRE air. A safety injection (SI) signal stops the normal supply and exhaust systems, closes the isolation dampers, and initiates dumps of the compressed (bottled) air system. The bottled air system may also be manually actuated at any time. A SI signal also starts all emergency supply fans in recirculation mode. As the bottled air supply is depleted, one fan is aligned to pressurization mode. Each fan is powered from a different emergency bus and only one fan is necessary to be operating for CRE pressurization. The CREVS fan ductwork is completely separate from that of the normal supply/exhaust system described above. (Refs. 1, 2)

Temperature and humidity control in the CRE is provided by redundant safety-related chillers and 100% recirculating air handling units (AHUs). There are eight AHUs and six chillers. During normal and accident conditions, only one of the two AHUs in each of the four major zones in the CRE (MCR U1, MCR U2, ESGR1, and ESGR2) is required to operate. The AHUs provide air through separate supply ductwork dedicated for each area. With one exception, all AHUs and associated ductwork are inside the CRE. There is a short (~ 20 ft) section of the U2 ESGR ductwork outside the CRE; however, this AHU ductwork is supply only and at a positive pressure. The ductwork for each AHU set is contained within its respective area and is not connected to any other area's ductwork, the normal supply/exhaust system, or the CREVS ducts. One chiller per unit is normally operating and is sufficient for accident conditions. In the event of a MCR fire, two chillers can be operated locally on either unit. The chillers and AHUs are powered from safety-related emergency busses. (Refs. 1, 2, 3)

Protection from fire and smoke events in the CRE is provided by a combination of detection sensors, fire barriers, and suppression systems. Smoke detectors are provided in the MCR and ESGRs, with both heat and smoke detectors in the MCR underfloor (cable) area. Fire dampers are provided in the normal supply/exhaust ducts connecting the MCR and ESGRs. Passive fire protection items include three-hour-rated barriers and penetration seals between all adjacent fire areas. Manually-activated Halon systems protect the ESGRs. An automatically activated Halon system protecting the MCR subfloor area may also be activated from the MCR. Activation of the ESGR Halon system is possible from either the MCR or the ESGRs, and this system will shut down the CRE normal supply/exhaust systems, as well as the AHU for the affected area. (Ref. 3)

As a contingency, self-contained breathing apparatus (SCBA) are located in and just outside the MCR for protection against prolonged exposure to smoke and/or noxious vapors. If deemed necessary by the Operations staff, the CRE can be manually isolated to prevent introduction of smoke or toxic gases into the CRE. (Refs. 1, 3)

General Conformance with GDCs

North Anna was originally designed to meet the draft GDC published in 1966. Construction permits for Units 1 and 2 were issued on February 19, 1971. The GDC, Appendix A to 10 CFR part 50, were published February 20, 1971. Dominion attempted to comply with the intent of the newer criteria to the extent practical, recognizing previous design commitments. As a result, the NRC review assessed the plant design against the GDC published in 1971, and concluded that the design conformed to the newer criteria. The North Anna Safety Evaluation Report (NUREG-0053) was issued in June 1976.

Specific Conformance with Regulatory Requirements - GDC 1, 2, 3, 4, 5 and 19)

Criterion 1 - Quality Standards and Records

Structures, systems and components (SSCs) which support Control Room Habitability (CRH) have been designed, fabricated, erected, tested and maintained as safety-related. The MCR, ESGRs and associated CRH systems are located within a Seismic Category 1 building. Portions of the normal ventilation systems associated with the control room isolation function are classified and maintained as safety-related. The emergency filtration systems and cooling systems are safety-related (Refs. 1, 2). The classification of individual components is noted in the electronic equipment database. Safety-related SSCs are designed, constructed, operated and maintained in accordance with the Dominion Quality Assurance Program Manual.

North Anna is considered to be in full compliance with Criterion 1.

Criterion 2 – Protection against Natural Phenomena

The North Anna SSCs important to safety have been designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, seiches, and floods, as described in Chapters 2 and 3 of the UFSAR. Tsunamis are not applicable to the North Anna site. The MCR, ESGRs and battery rooms are in Seismic Class 1 and tornado missile-protected structures. The CRE air-conditioning system, bottled air system, and emergency ventilation system are designed to remain functional following a seismic event. The chiller rooms, although not in the CRE, are located in Seismic Class 1 and missile-protected areas. (Refs. 1, 2)

North Anna is considered to be in full compliance with Criterion 2.

Criterion 3 - Fire Protection

North Anna conforms to the guidance of Appendix A to Branch Technical Position (BTP) APCSB 9.5-1 as described in NRC's Fire Protection Safety Evaluation Report dated February 1979, and complies with the applicable sections of 10 CFR 50 Appendix R.

Structures, systems and components important to safety are designed and located to minimize the fire hazard. Fire Protection systems are designed to minimize the effects of fires on SSCs important to safety. Adequate means are provided to mitigate the fire hazard encountered in the plant.

Non-combustible and fire resistant materials are used wherever practical throughout the CRE and three-hour rated fire barriers are used to isolate the CRE from other areas. Penetrations in fire barriers, such as doorways, cable tray or conduit penetrations, and ventilation penetrations are protected as required. Three-hour rated dampers and fire doors are installed in ventilation ducts and doorway penetrations of fire barriers. Cable tray penetrations of fire barriers have a three-hour fire rating. Piping and conduit penetrations are sealed around the piping and conduit to prevent smoke transmittal. Conduits penetrating fire barriers are sealed internally if the conduit terminates within 5 feet of the fire barrier. Conduits that penetrate the CR pressure boundary are sealed internally in accordance with original plant design specifications and current procedures. Materials used for air sealing of the control room boundary were selected to be compatible with applicable fire barrier requirements.

The North Anna control room is equipped with portable fire extinguishers, and an underfloor Halon suppression system for a fire that might occur in that area. The underfloor area is isolated from the MCR air space. Each ESGR is protected with a total flooding Halon system.

For North Anna, "Alternate Shutdown" is generally intended to describe that series of manual actions that are taken independently of the control room to achieve safe shutdown for a postulated exposure fire in the control room. Procedures are provided for alternate shutdown of either unit using the respective Alternate Shutdown Panels in each ESGR. Appropriate procedures and equipment are available and staged for use by the station fire brigade in coping with a fire in either the control room or ESGRs.

North Anna is considered to be in full compliance with Criterion 3.

Criterion 4 - Environmental and Missile Design Bases

The MCR and ESGRs are located within the CRE, which is designed for missile impact. In addition, all MCR entrances are protected by missile barriers. Concrete walls and slabs surrounding the MCR are at least 18 inches thick and also serve as radiation shielding. The control room habitability systems are also protected against missiles through similar building design features.

During any postulated Design Basis Accident (DBA), the safety-related air conditioning systems maintain the CRE temperature and humidity within limits for both emergency equipment operability and personnel occupancy. The system design is based on the combined U1 and U2 heat gain from safety-related control room equipment, occupancy, wall transmission, and lighting load.

The effects of various pipe breaks outside containment on the CRE and associated facilities are discussed in Appendix 3C of the North Anna UFSAR. In all cases, the CRE will remain habitable and provide the capability for safe shutdown and cooldown of the plant.

North Anna is considered to be in full compliance with Criterion 4.

Criterion 5 - Sharing of Structures, Systems and Components

As noted previously, North Anna Units 1 and 2 share a common control room. The ESGRs, although in the CRE and adjacent to each other, are separate rooms and separate fire areas, and have separate AHUs for air cooling and recirculation. The MCR and ESGRs share common normal supply/exhaust ventilation systems. These systems are not needed for accident mitigation and automatically isolate the CRE from the adjacent areas post-accident. However, the normal supply/exhaust ducts (within the CRE) that connect the ESGRs and the MCR to each other are not automatically isolated in the event of a MCR fire. A fire in either ESGR, with the resulting Halon discharge, will close the fire dampers in these ducts. Each of the four major areas in the CRE (MCR U1, MCR U2, ESGR U1, and ESGR U2) is equipped with an emergency supply fan/filter system. Only one of these fan/filter assemblies is required to be operating for the entire CRE following radiological events (Ref. 1).

North Anna is considered to be in full compliance with Criterion 5.

Criterion 19 - Control Room

The control room habitability systems include radiation shielding, redundant emergency air filtering and air conditioning systems, radiation monitoring, lighting, and fire protection equipment.

The North Anna control room is common to both units. Sanitary facilities and potable water are located in the control room, and food can be brought to the control room as needed. Radiation protection is provided by shielding (walls and slabs), radiation monitoring, emergency filtration, and separate and independent control room isolation and pressurization systems.

The control room is designed to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions. Adequate radiation protection has been provided to ensure that radiation exposures to personnel occupying the control room during the 30-day period following a DBA will not exceed 5 rem whole body, or its equivalent to any part of the body. The Large Break LOCA is the limiting radiological event. The design basis accidents, dose analyses, and consequences are described in Chapter 15 of the UFSAR.

In addition, evaluations of the LBLOCA and Fuel Handling accidents, using Alternate Source Term, demonstrate that North Anna meets the GDC 19 criterion of 5 rem Total Effective Dose Equivalent (TEDE) with 500 cfm of unfiltered inleakage (Ref. 4). The evaluations illustrate that the thyroid portion of the TEDE dose is the limiting concern for unfiltered inleakage in excess of design basis assumptions. A submittal of DBA analyses using the AST methodology was submitted to the NRC for approval on September 12, 2003 (Ref. 4).

Toxic Gases and Smoke

The design of the North Anna CRE meets the guidance outlined in Regulatory Guides 1.78, Rev 0 and 1.95, Rev 0. The compliance of North Anna with these documents is described in detail in Sections 2.2 and 6.4 of the UFSAR, and summarized below:

No gaseous chlorine is stored on site. Liquefied chlorine is not stored on site except small quantities for laboratory use, which is limited to 20 pounds or less, as allowed by the Regulatory Guide. Therefore, North Anna complies with the guidance of Regulatory Guide 1.95.

The potential for offsite toxic chemical events was assessed in 1982 and again in 1994. There are no manufacturing plants, chemical plants and storage facilities, major water transportation routes, major rail lines, or oil and gas pipelines within 5 miles of the plant site. Several secondary roads pass within 5 miles of the site. However, considering the lack of chemical and industrial facilities along the roads and the distance from the plant site to the roads, it is unlikely that there are chemicals shipped along these routes at a frequency and amount great enough to pose a significant hazard to the habitability of the control room. A postulated seismic event, concurrent with transport failure of toxic gas offsite, is considered an incredible event.

The North Anna UFSAR describes potentially hazardous chemicals stored onsite in quantities greater than 100 lb. These include hydrogen, sulfuric acid, sodium hydroxide, hydrazine, ethanolamine, and sodium hypochlorite. Evaluations for accidental release of these chemicals indicate that the worst-case concentrations at the control room intake would be expected to be less than their respective toxicity limit. The assessments were evaluated on the basis of no action being taken by the control room operator (i.e., normal or emergency supply system remains operating). The nominal flow of an emergency supply fan is 1000 cfm. In contrast, the maximum allowable unfiltered inleakage for a radiological event is 500 cfm. Therefore, the radiological event, not a toxic gas event, is limiting from an inleakage perspective.

In the event of fire/smoke external to the control room, equipment and procedures are available to maintain habitability of the control room. Smoke detectors are installed in the normal AHU return ducts and CREVS supply ducts, as well as other numerous locations in the ESGRs and MCR. If smoke is detected, the normal ventilation supply can be manually isolated. The fire response procedures provide direction for removing smoke from the MCR or ESGRs.

Shutdown Outside the Control Room

In the event that the control room must be evacuated due to internal fire/smoke, equipment is provided at appropriate locations outside the control room, including necessary instrumentation and controls to maintain the unit in a safe condition (Hot Standby). A remote shutdown panel in each ESGR (located in the lower level of the CRE) provides the capability to safely shut down the respective unit outside of the control room. The panel is designed to Seismic Category 1 requirements and is located in a Seismic Category 1 area (Ref. 5). Portable air packs and multiple egress paths are available to facilitate evacuation to the ESGRs. Further discussion of the fire/smoke response is contained below in 1(b).

North Anna is considered to be in full compliance with Criterion 19.

Conclusion

The North Anna CRE and associated systems meet the applicable requirements of GDCs 1, 2, 3, 4, 5 and 19. No compensatory measures are required.

Administrative Control Programs

Procedural controls are provided to ensure continued compliance with the CRH design and licensing basis. Controlled plant procedures are provided for operation, maintenance, instrument calibration and testing of control room habitability systems. Plant configuration, including design documents, licensing documents, equipment databases, calculations, specifications, reports, etc., is maintained through design control and licensing procedures. CRE barrier breaches are identified and controlled by design control and station procedures.

NRC Question 1(a)

That the most limiting unfiltered inleakage into your CRE (and the filtered inleakage if applicable) is no more than the value assumed in your design basis radiological analyses for control room habitability. Describe how and when you performed the analyses, tests, and measurements for this confirmation.

Dominion Response:

The North Anna CRE was designed to be pressurized to prevent unfiltered inleakage. The original analyses assumed 0 cfm unfiltered in-leakage (Ref. 6). The accidents analyzed include the LOCA, Fuel Handling Accident (FHA), Steam Generator Tube Rupture (SGTR), Main Steam Line Break (MSLB), Locked Rotor (LR), Waste Gas Decay Tank Rupture (WGDTR), and Volume Control Tank Rupture (VCTR). The WGDTR and VCTR accidents were evaluated for exclusion area boundary dose only. In the late 1980's, the analyses were revised to include 10 cfm to account for ingress/egress door opening (Ref. 7). Following issuance of NUREG-1465, the decision was made to reanalyze the DBAs using those methods and change the design/licensing basis.

The analyses performed to demonstrate the radiological consequences of various DBAs using the NUREG-1465 (Alternate Source Term – AST) methods is described in North Anna's AST license amendment submittal (Ref. 4). The accidents analyzed include the LOCA, Fuel Handling Accident, Steam Generator Tube Rupture, Main Steam Line Break, and Locked Rotor. The WGDTR and VCTR were not reanalyzed since these two events would not be affected by the change to AST and the existing analyses are considered bounding. The new analyses were performed using the RADTRAD-NAI computer code.

Key assumptions and input parameters are described in detail in the attachments to Reference 4 and summarized here. The analyses employ the TEDE calculation method, determined at the exclusion area boundary for the worst 2-hr interval. The TEDE doses for individuals at the Low Population Zone (LPZ) and MCR personnel are calculated for the 30-day duration of the event. The onsite atmospheric dispersion factors were calculated for each accident by Dominion using the ARCON96 code. The nominal flowrate of the emergency filtered supply fan is 1000 cfm. The values used in the analyses were 0, 900, or 1100, depending on the accident sensitivity and modeling consideration.

Based on the AST analyses, the GDC 19 acceptance criteria were met for the limiting accident (LOCA), with a total unfiltered inleakage of 500 cfm. In support of the AST submittal, a tracer gas test of the North Anna CRE was performed in September 2003 to verify that the actual inleakage was less than that assumed in the AST analysis. This testing is consistent with the testing proposed by Dominion in a meeting with the NRC in March 2003. The CRE design, proposed test method, and ventilation alignment were specifically discussed during that meeting (Ref. 8). Although the design/licensing basis at the time of the test was a pressurized CRE, it was agreed in principle that a test in a non-pressurized condition with adjacent area ventilation in a worst-case alignment would be bounding for unfiltered inleakage. Accordingly, the test was performed in a non-pressurized alignment, with the acceptance criteria being that inleakage assumed in the AST LOCA analysis. The test data indicated an actual unfiltered in-leakage rate of 150 cfm in the non-pressurized alignment. Since the inleakage measured in this conservative alignment is well below that assumed in the AST analyses and the AST leakage criteria will become the North Anna design/licensing basis in the near future, the integrity of the CRE is considered acceptable.

NRC Question 1 (b)

That the most limiting unfiltered inleakage into your CRE is incorporated into your hazardous chemical assessments. This inleakage may differ from the value assumed in your design basis radiological analyses. Also confirm that the reactor control capability is maintained from either the control room or the alternate shutdown panel in the event of smoke.

Dominion Response:

As noted earlier, all hazardous chemical events are evaluated on the basis of no action being taken by the control room operator (i.e., no ventilation changes). The nominal flow provided by either the normal supply or CREVS fan is approximately twice that of the unfiltered inleakage allowed for radiological events. Therefore, the unfiltered inleakage for a toxic gas event is not the limiting value. In addition, SCBAs are required by the Fire Protection program to be available for the control room operators, but are not necessary for protective action following a toxic gas event or radiological event.

There are several combinations of systems available to shut down the reactor and cool the core of either unit during and after a fire, coincident with a loss of offsite power. Safe shutdown analyses have been performed for each fire area using Appendix R guidelines, identifying the safe shutdown systems that would remain unaffected by the worst-case fire in that area. Based on these analyses, North Anna complies with the specific requirements of Appendix R Sections III.G, III.J, III.L, and III.O, with exemptions as noted in the 10 CFR 50 Appendix R Report.

Passive fire protection systems are provided to minimize fire damage. The CRE is divided into three fire areas (MCR, U1 ESGR, U2 ESGR), separated by walls, floors, ceilings, fire doors, fire dampers, and penetration seals rated at 3-hours. Conduits penetrating fire barriers are sealed internally if the conduit terminates within 5 feet of the fire barrier. As noted previously, conduits that penetrate the CR pressure boundary are sealed internally.

Smoke detectors and fixed and portable fire suppression systems are provided to minimize the effects of smoke and fire. The cable tray rooms above the MCR are protected by a CO_2 system. Halon systems protect the ESGRs and the MCR underfloor (cable) area. Both ESGRs and the MCR are provided with smoke detectors. The MCR underfloor is sealed so that actuation of the Halon system will not require MCR evacuation. Portable fire extinguishers and air bottles are available in, and just outside, the MCR for operator use.

In the unlikely event of an MCR fire or smoke event, equipment and procedures are available to ensure safe shutdown of the units. In the case of an external fire/smoke event, the CRE normal supply/exhaust systems can be manually isolated. For internal fires or smoke, an auxiliary shutdown panel is located in each ESGR, and can be easily reached via a stairwell in the CRE, or by going outside to the Turbine Building. The stairwell connects the MCR with the ESGRs below, and is provided with fire-rated doors at each end. SCBAs are available both in and just outside the control room to facilitate evacuation to the ESGRs. The potential for smoke migration from the MCR to the ESGRs through the normal supply/exhaust ductwork has been reviewed and determined to be inconsequential. Specific smoke and fire response actions (e.g., portable exhaust fans, door and ventilation configuration, etc) will depend on the nature of the fire, and will be made by the Fire Brigade as necessary.

NRC Question 1 (c)

That your technical specifications verify the integrity of the CRE, and the assumed inleakage rates of potentially contaminated air. If you currently have a ΔP surveillance requirement to demonstrate CRE integrity, provide the basis for your conclusion that it remains adequate to demonstrate CRE integrity in light of the ASTM E741 testing results. If you conclude that your ΔP surveillance

requirement is no longer adequate, provide a schedule for: 1) revising the surveillance requirement in your technical specification to reference an acceptable surveillance methodology (e.g., ASTM E741), and 2) making any necessary modifications to your CRE so that compliance with your new surveillance requirement can be demonstrated.

If your facility does not currently have a technical specification surveillance requirement for your CRE, explain how and on what frequency you confirm your CRE integrity and why this is adequate to demonstrate CRE integrity.

Dominion Response:

The North Anna Technical Specifications contain Surveillance Requirements for the major components in the CRE boundary and ventilation systems. Requirements for the MCR/ESGR Emergency Ventilation System (EVS) include a 10-hr run of each EVS train every 31 days, filter testing in accordance with the Ventilation Filter Testing Program, and verification on an 18-month basis that an EVS train starts on an actuation signal and maintains the CRE at a positive pressure (ΔP). The pressure and valve positions in the bottled air pressurization system are verified every 31 days. As with the EVS, there is an 18-month verification of system start on an actuation signal, air flowrate and duration, and adequate CRE pressurization (ΔP). Finally, the refrigeration capability of the CRE chillers is verified on a staggered 18-month basis (Ref. 9).

Due to the design, maintenance, and testing of the CRE noted previously, the current Technical Specifications are adequate to demonstrate CRE integrity and conformance with the inleakage assumed in the Alternate Source Term analyses. The tracer gas test was performed in a non-pressurized (bounding) alignment, with adjacent area ventilation systems in the worst credible configuration. The measured inleakage was less than one-third of that assumed in the AST calculations. Since all CRE ventilation equipment susceptible to inleakage is located in the CRE, the inleakage in the pressurized alignment would therefore be significantly less that measured in the non-pressurized mode. Experience has shown that ΔP and flow testing can easily identify CRE changes that affect leaktightness.

However, Dominion has been involved with the NEI Control Room Habitability Task Force and is following the progress of Technical Specification Task Force effort TSTF-448. This proposed change will modify the current Improved Technical Specification (ITS) to include a requirement for a CR Habitability Program. The TSTF-448 retains the current TS requirement to verify the flow rate of filtered outside makeup air through the emergency ventilation systems, and adds requirements for inleakage testing in accordance with ASTM E741 or other method that may be approved by the NRC in the future.

Although Dominion anticipates that the finalized TSTF-448 will be acceptable for reference, a commitment to adopt this TSTF without knowing its final content cannot be made at this time. Accordingly, Dominion intends to submit proposed changes to the North Anna Technical Specifications that will incorporate the intent of the current proposed TSTF-448 presuming its approval. The Technical Specification changes will be submitted within six months following either the approval of TSTF-448, or its adoption in the Consolidated Line Item Improvement Process (CLIIP) by the NRC, whichever is later. Dominion's proposed changes will include the addition of a Control Room Habitability Program in Section 5, incorporating elements described in Regulatory Guide 1.196.

North Anna has procedures for monitoring and maintaining the integrity of the control room boundary and has performed a tracer gas test to verify consistency with dose analyses. Delaying TS changes involving Control Room Habitability until TSTF-448 is approved will not adversely affect control room integrity.

NRC Question 2

If you currently use compensatory measures to demonstrate control room habitability, describe the compensatory measures at your facility and the corrective actions needed to retire these compensatory measures.

Dominion Response:

No compensatory measures are needed or used to demonstrate CRH.

NRC Question 3

If you believe that your facility is not required to meet either the GDC, the draft GDC, or the "Principle Design Criteria" regarding control room habitability, in addition to responding to items 1 and 2 above, provide documentation (e.g., Preliminary Safety Analysis Report, Final Safety Analysis Report sections, or correspondence) of the basis for this conclusion and identify your actual requirements

Dominion Response:

North Anna 1 & 2 meet the GDCs referenced in GL 2003-01, as discussed Item 1 above.

References:

1) North Anna UFSAR, Section 6.4 – Habitability Systems.

2) North Anna UFSAR, Section 9.4 – Air-Conditioning, Heating, Cooling, and Ventilation Systems.

3) North Anna UFSAR, Section 9.5.1 – Fire Protection System.

4) Virginia Electric and Power Letter No. 03-464, Docket Nos. 50-338/339, September 12, 2003, Proposed Technical Specification Changes – Implementation of Alternate Source Term.

5) North Anna UFSAR, Section 7.4 – Systems Required for Safe Shutdown.

6) Virginia Electric and Power Letter No. 1013, Docket Nos. 50-338,-339, December 30, 1980, Response to Item III.D.3.4 of NUREG-0737.

7) Virginia Electric and Power Letter No. 89-0221013, Docket Nos. 50-338/339, March 1, 1989, Control Room Habitability – Engineering Evaluation and Proposed License Amendment.

8) NRC Letter of April 4, 2003, Meeting Summary – Discussion of Control Room Habitability Testing at North Anna Power Station Units 1 and 2.

9) North Anna Technical Specifications 3.7.10 (MCR / ESGR Emergency Ventilation System), 3.7.11 (MCR / ESGR Air Conditioning System), 3.7.13 (MCR/ESGR Bottled Air System), and 3.7.14 (MCR/ESGR Emergency Ventilation System During Movement of Recently Irradiated Fuel Assemblies).