

June 21, 2024

Docket Nos.: 52-025  
52-026

NL-24-0087  
10 CFR 50.90

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

Vogtle Electric Generating Plant – Units 3 and 4  
License Amendment Request: Changes to Technical Specification 3.7.6,  
Main Control Room Emergency Habitability System (VES) Air Storage Tanks

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC) requests an amendment to the Combined License (COL) for Vogtle Electric Generating Plant (VEGP) Units 3 and 4 (License Numbers NPF-91 and NPF-92, respectively). The license amendment request (LAR) proposes to revise the COL Appendix A, Technical Specifications (TS), 3.7.6, Main Control Room Emergency Habitability System (VES) Surveillance Requirement (SR) 3.7.6.5 to refer to the Compressed Gas Association CGA G-7.1, Commodity Specification for Air, Grade E, for the requirements for acceptable compressed air quality in the main control room emergency habitability system (VES) air storage tanks. Additionally, a clarifying change is proposed to TS 3.7.6 Action E to provide a more specific description of the VES inoperable condition due to compressed air storage tank volume below the limit.

These changes were previously discussed with the NRC Staff on a public presubmittal conference call on September 28, 2023 [ADAMS Accession Number ML23272A182]. SNC has incorporated information into the request to address topics discussed during the above call.

The Enclosure to this letter provides the description, technical evaluation, regulatory evaluation (including the Significant Hazards Consideration Determination), and environmental considerations for the proposed changes.

This letter contains no regulatory commitments. This letter has been reviewed and determined not to contain security-related information.

SNC requests NRC staff review and approval of this LAR no later than twelve months from acceptance. SNC expects to implement the proposed amendment within 60 days of approval of the LAR.

In accordance with 10 CFR 50.91, SNC is notifying the State of Georgia by transmitting a copy of this letter and its enclosure to the designated State Official.

If you have any questions, please contact Ryan Joyce at (205) 992-6468.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 21<sup>st</sup> of June 2024.

Respectfully submitted,



Jamie M. Coleman  
Director, Regulatory Affairs  
Southern Nuclear Operating Company

Enclosure: Evaluation of Proposed Changes

cc: NRC Regional Administrator, Region II  
NRR Project Manager – Vogtle 3 & 4  
Senior Resident Inspector – Vogtle 3 & 4  
Director, Environmental Protection Division – State of Georgia  
Document Services RTYPE: VND.LI.L00

**Enclosure to NL-24-0087**  
**Evaluation of Proposed Changes**

1. SUMMARY DESCRIPTION
2. DETAILED DESCRIPTION
  - 2.1 System Design and Operation
  - 2.2 Current Requirements
  - 2.3 Reason for Proposed Change
  - 2.4 Description of Proposed Change
3. TECHNICAL EVALUATION
4. REGULATORY EVALUATION
  - 4.1 Applicable Regulatory Requirements/Criteria
  - 4.2 Precedent
  - 4.3 Significant Hazards Consideration
  - 4.4 Conclusions
5. ENVIRONMENTAL CONSIDERATION
6. REFERENCES

Attachments:

1. Technical Specification Marked-up Pages
2. Revised Technical Specification Pages
3. UFSAR Marked-up Pages
4. Technical Specification Bases Marked-up Pages (for information only)

## 1. SUMMARY DESCRIPTION

The proposed change would revise the Combined License (COLs) for Vogtle Electric Generating Plant (VEGP) Units 3 and 4 by revising COL Appendix A Technical Specification (TS) 3.7.6, Main Control Room Emergency Habitability System (VES) and the Updated Final Safety Analysis Report (UFSAR) subsection 6.4.5.3, Air Quality Testing. The requested TS changes are as follows:

- TS Surveillance Requirement (SR) 3.7.6.5 and UFSAR subsection 6.4.5.3

Proposed changes to SR 3.7.6.5 and UFSAR subsection 6.4.5.3 (based on being a Tier 2 departure that involves a change to the TS) would revise the referenced standard for the VES storage tanks air quality testing requirements from American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) Standard 62-1989 to CGA G-7.1, Commodity Specification for Air, Grade E.

- TS 3.7.6 Action E

Proposed changes to TS 3.7.6 Condition E would identify the condition as "VES compressed air tanks compressed air volume not within limit" with a corresponding change to Required Action E.3 to replace "Restore VES to OPERABLE status" with "Restore VES compressed air tanks compressed air volume to within limit."

## 2. DETAILED DESCRIPTION

### 2.1 System Design and Operation

The nuclear island nonradioactive ventilation system (VBS) normally serves the main control room (MCR) and is designed to control the radiological habitability in the main control room within the guidelines presented in Standard Review Plan (SRP) 6.4 and NUREG 0696, "Functional Criteria For Emergency Response Facilities," when ac power is available. The defense-in-depth function of filtration of main control room/control support area air during conditions of abnormal airborne radioactivity are designed, constructed, and tested to conform with Generic Issue B-36, as described in UFSAR Section 1.9 and Regulatory Guide 1.140, "Design, Inspection, and Testing Criteria for Air Filtration and Adsorption Units of Normal Atmospheric Cleanup Systems in Light-Water-Cooled Nuclear Power Plants," as described in UFSAR Appendix 1A, and the applicable portions of ASME/ANGI AG-1 "Code on Nuclear Air and Gas Treatment," ASME N509 "Nuclear Power Plant Air-Cleaning Units and Components," and ASME N510 "Testing of Nuclear Air-Cleaning Systems". Also, as described in UFSAR subsection 9.4.1.1.2, VBS maintains the main control room/control support area air quality within the guidelines of ASHRAE Standard 62, Table 1 and Appendix C, Table C-1.

The VES provides a protected environment from which operators can control the plant following an uncontrolled release of radioactivity, hazardous chemicals, or smoke. The system is designed to operate following a Design Basis Accident (DBA) that requires protection from the release of radioactivity. In these events,

VBS would continue to function if AC power is available. VES is actuated and the MCR pressure boundary isolated on either a High-2 particulate or iodine signal in the VBS supply ducting, a sustained loss of control room differential pressure, a sustained loss of all AC power, or manually by the operators. Concurrent with this action, the main control room envelope (MCRE) pressure relief isolation valves are opened after a short time delay to preclude over-pressurization of the MCRE pressure boundary.

The major functions of the VES are to: 1) provide forced ventilation to deliver an adequate supply of breathable air for the MCR occupants; 2) provide forced ventilation to maintain the MCR at a positive pressure with respect to the surrounding areas; 3) provide passive filtration to filter potential contaminated air in the MCR; and 4) maintain MCR temperature within acceptable limits to assure the MCR equipment and facilities that remain functional during design bases events.

The VES consists of 32 compressed air storage tanks arranged in four banks of eight tanks each, two air delivery flow paths, an eductor, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), associated valves or dampers, piping, and instrumentation. The VES compressed air storage tanks are initially filled to contain greater than 327,574 standard cubic feet (scf) of compressed air to provide enough breathable air to supply the required air flow to the MCR for at least 72 hours to maintain carbon dioxide (CO<sub>2</sub>) concentration less than 0.5% for up to 11 MCR occupants. Each bank provides at least a quarter (81,893.5 scf) of the total compressed air volume (327,574 scf) needed for 72 hours of operation. The volume of compressed air in the compressed air storage tanks is verified per TS SR 3.7.6.1 to confirm that the volume of breathable air required for 72 hours is stored in the tanks.

During operation of the VES, a self-contained pressure regulating valve maintains a constant downstream pressure regardless of the upstream pressure. Either the eductor, which contains a fixed single plate orifice, or the orifice in the secondary VES bypass line, is used to control the air flow rate into the MCR. The VES is designed to maintain the MCR at 1/8-inch water gauge positive pressure relative to surrounding areas to minimize the infiltration of airborne contaminants from the surrounding areas. The VES operation in maintaining the MCR habitable is discussed in UFSAR Section 6.4.

The compressed and instrument air system (CAS) consists of three subsystems: instrument air, service air, and high-pressure air. Major components of the compressed and instrument air system are located in the turbine building. The high-pressure air subsystem supplies air to recharge the VES storage tanks as well as the firefighting self-contained breathing apparatus (SCBA) recharge station. As described in UFSAR subsection 9.3.1.1.2, the high-pressure air subsystem utilizes an air-cooled, oil-lubricated, four-stage, reciprocating-air compressor with an integral air purification system to produce oil-free air for high-pressure applications. The compressor train includes an intake filter, air-cooled intercoolers, interstage oil/water separators, an air-cooled aftercooler, a final oil/water separator, relief valves, an air purification system, discharge check valves, and a high-pressure receiver. The high-pressure air subsystem supplies

CGA G-7.1 Quality Verification Level E air. Periodic checks on the high-pressure air compressor are made on a regular basis to verify that the breathing air meets the Quality Verification Level E. The high-pressure subsystem breathing air connections are incompatible with the breathing air connections of the service air subsystem to preclude VES air storage bottles and the SCBAs from being filled from the service air subsystem.

## 2.2 Current Requirements

### VES Air Quality Testing

UFSAR subsection 6.4.5.3, Air Quality Testing, identifies that connections are provided for sampling the air supplied from the CAS and for periodic sampling of the air stored in the storage tanks. Air samples of the compressed air storage tanks are taken quarterly and analyzed to confirm the air quality acceptability. This testing is required by TS SR 3.7.6.5, which currently requires that SNC "Verify the air quality of the air storage tanks meets the requirements of Appendix C, Table C-1 of ASHRAE Standard 62 with a pressure dew point of  $\leq 40^{\circ}\text{F}$  at  $\geq 3400$  psig" every 92 days.

### VES Air Storage Tank Volume

TS 3.7.6, Main Control Room Emergency Habitability System (VES) Action E currently requires action to be taken to restore the VES to OPERABLE status within 7 days when one bank of VES air tanks is determined to be inoperable. While in this condition, the stored amount of compressed air in the remaining "OPERABLE" VES air tanks must be verified to be to be greater than 245,680 scf within 2 hours and every 12 hours thereafter. Action E also requires verification of the availability of the VBS MCRE ancillary fans and supporting equipment within 24 hours.

## 2.3 Reason for Proposed Change

### VES Air Quality Testing

Vogtle Units 3 and 4 compressed breathing air systems are tested to ensure that air quality for respiratory protection meets or exceeds requirements as defined by 10 CFR 20.1703 "Use of individual respiratory protection equipment," which specifies Grade D air quality or better as defined by the Compressed Gas Association in publication CGA G-7.1, "Commodity Specification for Air." In contrast, while ASHRAE Standard 62 provides guidelines for acceptable indoor air quality for enclosed spaces that people may occupy, ASHRAE Standard 62 does not specify air quality for compressed breathing air systems, nor does it specify periodic sampling and testing of air quality. As such, SNC proposes that testing to the federally recognized standard for respiratory protection of compressed breathing air provides the appropriate testing criteria for VES compressed air storage tanks as required by TS SR 3.7.6.5. Routine testing of MCR air quality to meet ASHRAE Standard 62 is not found in regulatory guidance.

### VES Air Storage Tank Volume

Condition E of TS 3.7.6 does not clearly convey the intent of expressing the inoperability of VES based on compressed air storage tanks compressed air volume not within limit. Similarly, Required Action E.1 does not clearly present the intent to confirm that a 54-hour compressed air supply will be available to support the allowed 7-day Completion Time (refer to Required Action E.3) to restore the required 72-hour compressed air supply. Verification of a 54-hour supply is accomplished by verifying the VES tanks compressed air volume to be greater than > 245,680 scf. Specifically, TS 3.7.6 Action E currently could be read to not allow for situations in which the total volume of compressed air in the VES tanks is determined to be less than the required limit of > 327,574 scf (per SR 3.7.6.1) with all VES air storage tanks connected, i.e., when there is no single bank of tanks removed from service. In this case, TS 3.7.6 Condition F would be entered based on VES being in operable for reasons other than Condition A, B, C, D, or E; requiring the plant to be in MODE 3 within 6 hours and in MODE 5 within 36 hours even though the VES air storage tanks may contain significantly more compressed air than that what is required to be verified by TS 3.7.6 Required Action E.1 (i.e., > 245,680 scf). The intent of TS 3.7.6 Action E is to allow VES restoration within 7 days if the Required Actions are met while in this Condition without regard to whether the reduced volume is attributed to a single bank or not. The current Action E focus on “banks” is reflective of a condition where one bank is isolated, which is one condition that would result in failing to meet the SR 3.7.6.1 requirement for > 327,574 scf and declaring VES inoperable while leaving three remaining banks with > 245,680 scf. The proposed change appropriately accommodates a broader range of potential VES inoperabilities based on failing to meet SR 3.7.6.1, while retaining the intent of Action E to allow a 7-day Completion Time with at least a 54-hour compressed air supply available.

## 2.4 Description of Proposed Change

### VES Air Quality Testing

The proposed change modifies the acceptance criterion for TS SR 3.7.6.5 to be the air quality requirements of CGA G-7.1, Grade E, in lieu of the current air quality limits specified in ASHRAE Standard 62.

UFSAR subsection 6.4.5.3, Air Quality Testing, proposed change replaces “Table 1 and Appendix C, Table C-1, of Reference 1” with “CGA G-7.1-1997, ‘Commodity Specification for Air,’ Grade E,” and adding CGA G-7.1-1997 as a Reference.

### VES Air Storage Tank Volume

The proposed change would modify TS 3.7.6 Condition E to replace “One bank of VES air tanks inoperable” with “VES compressed air storage tanks compressed air volume not within limit.” Required Action E.1 is proposed to replace “that the OPERABLE” with “compressed air storage” such that it reads “Verify compressed air storage tanks contain > 245,680 scf of compressed air.” Required Action E.3

will be also clarified to replace "Restore VES to OPERABLE status" with "Restore VES compressed air storage tanks compressed air volume to within limit."

Markups showing the TS changes are provided in Attachment 1.

### **3. TECHNICAL EVALUATION**

#### VES Air Quality Testing

ASHRAE Standard 62-1989 served to establish minimum ventilation rates and air quality standards for indoor environments with the goal to maintain acceptable indoor air quality. This guideline does not provide minimum standards for breathable quality of compressed air. Additionally, ASHRAE Standard 62 does not specify periodic sampling and testing for air quality. As such, ASHRAE Standard 62-1989 is not well suited for testing criteria for the quality of compressed breathing air stored in the VES tanks.

The VES air storage tanks and SCBAs inside the MCR are refilled by the high-pressure subsystem of CAS, which only takes place on as needed basis. The high-pressure CAS system provides air that meets the CGA G-7.1 Grade E, air quality standard. This meets or exceeds the air quality requirements of 10 CFR 20.1703 "Use of Individual Respiratory Protection Equipment," which requires CGA G-7.1, Grade D, quality or better. Complying with Grade E limits exceeds the requirements of Grade D air quality limits.

The more appropriate testing criteria for the quality of compressed breathing air stored in the VES tanks is proposed to be a verification that the air quality meets the requirements of CGA G-7.1 Grade E as supplied by the high-pressure air subsystem.

VBS normally serves the MCR and is designed to maintain the main control room/control support area air quality within the guidelines of ASHRAE Standard 62, Table 1 and Appendix C, Table C-1. With VBS normally maintaining the air quality within the MCR environment, a preoperational test (as described in UFSAR subsection 6.4.5.1, Preoperational Inspection and Testing, and in accordance with UFSAR subsection 14.2.9.1.6, Main Control Room Emergency Habitability System Testing) verified that VES operation for 72 hours would maintain the MCR environment within the guidelines of ASHRAE Standard 62, Table 1 and Appendix C, Table C-1, by analyzing air samples taken during the pressurization test. As such, the design has been demonstrated to support continued assurance that the indoor air quality of the MCR will remain within the limits of ASHRAE Standard 62, Table 1 and Appendix C, Table C-1 during normal and post accident operation.

VES provides a safety-related passive filtration system prior distribution into the MCR, which includes a HEPA filter, a charcoal adsorber, and a downstream postfilter. The filters are configured to satisfy the guidelines of Regulatory Guide 1.52. The VES circulates and distributes the breathable air from the emergency air storage tanks throughout the MCR providing an additional means of minimizing the presence of pollutants within the MCR.



In conclusion, the proposed use of CGA G-7.1 Grade E exceeds the employee breathing air quality requirements of 10 CFR 20.1703 and is an appropriate replacement for ASHRAE Standard 62 for VES compressed air storage tank quality confirmation without adversely impacting the safety of the MCR occupants. Therefore, replacing the SR 3.7.6.5 verification of ASHRAE Standard 62, Appendix C Table C-1 requirements with verification of CGA G-7.1 Grade E requirements for the compressed air storage tanks continues to provide appropriate assurance of acceptable MCR air quality and does not adversely affect maintaining the MCR air quality during events that actuate VES.

#### VES Air Storage Tank Volume Clarification

As discussed in NUREG-1793, Final Safety Evaluation Report (FSER) for AP1000 Supplement 2 (ML112061231), subsection 6.4.2.5, "Changes to Improve Operational Flexibility," Technical Specification 3.7.6 Action D (since revised to now be current Action E) was approved to allow for the ability to perform online maintenance on one bank (8 tanks) of VES compressed air storage tanks for up to 7-days. The cited example for this allowance was the replacement or repair of an excessively leaking relief valve, which requires a VES storage tank bank to be isolated and depressurized before work can be performed. Required Action E.1 requires periodic verification that the remaining VES tanks contain > 245,680 scf (which corresponds to 75% of the required volume for a 72-hour supply or an equivalent 54-hour supply), of breathable compressed air. This is the equivalent of 3 out of 4 banks at the minimum required volume of compressed air. However, by stating Condition E in terms of a "bank" being inoperable, it presumes the complete loss of 25% of the required volume of compressed air and that the loss is limited to one bank. TS 3.7.6 Condition E does not clearly convey the intent to apply the Action any time the compressed air storage tanks contain  $\leq$  327,574 scf of compressed air (i.e., failing to meet SR 3.7.6.1), regardless of which banks may be affected. Similarly, Required Action E.1 in confirming that the volume remains > 75% of the required volume (i.e., > 245,680 scf of compressed air) states the provision as "OPERABLE" (or unaffected) banks rather than the total available volume, which could be contained within all four banks.

The volume of breathable air contained in the VES air storage tanks is calculated based on the measured room air temperature and pressure of the air storage tanks. In a case where the calculated total tank volume is slightly below the minimum required volume of 327,574 scf (e.g., potentially due to a room temperature change), each of the four banks is equally affected and TS 3.7.6 Condition F could be unnecessarily entered. The result of entering Action F would require the plant to be in MODE 3 within 6 hours and in MODE 5 within 36 hours even though the VES tanks contained more compressed air than required by TS 3.7.6 Required Action E.1. The plant safety margin in such a case would be greater than that approved for complete removal of a bank from service, which would allow up to 7 days for system restoration with 75% of VES compressed air storage inventory available. Therefore, the more appropriate description of the condition of VES inoperability when the total tank volume falls below the minimum required tank volume is that the "VES compressed air tanks compressed air volume not within limits," rather than the current "One bank of VES air tanks inoperable." Similarly, Required Action E.1 is more appropriately assuring the 54-hour supply is available by stating "Verify compressed air storage

tanks contain > 245,680 scf of compressed air” (i.e., removing reference to “OPERABLE” as a descriptor for the tanks).

The change is consistent with other TS conditions in which a minimum amount of tank volume storage must be maintained. For example, one of the conditions for the Passive Containment Cooling System (PCS) to be considered OPERABLE is that the Passive Containment Cooling Water Storage Tank (PCCWST) water temperature is within SR 3.6.6.1 ( $\geq 40^{\circ}\text{F}$  and  $\leq 120^{\circ}\text{F}$ ) limit and water storage tank volume exceeds SR 3.6.6.2 limit of  $\geq 756,700$  gallons. The corresponding TS 3.6.6 Condition C states “One or more water storage tank parameters not within limits.” For VES, SR 3.7.6.1 addresses the total compressed air volume for the VES compressed air storage tanks and VES is considered inoperable when the combined volume of compressed air of the aligned storage tanks and banks is  $\leq 327,574$  scf.

The use of “inoperable” and “OPERABLE” for the condition of the VES compressed air storage tanks in Condition E and Required Action E.1 respectively, is not consistent with similar presentations of “tanks” or contained volumes, or other parameters of a system (e.g., temperature, level, activity, boron concentration). Operable and inoperable are used for systems, subsystems, trains, components, or devices with a specified safety function. When referring to process parameters (e.g., tank compressed air volume) the TS convention is to simply present the limit(s) and not utilize “OPERABLE” or “inoperable.” The specified safety function of the compressed air storage tanks is to simply contain the required compressed air volume. There is no other operability attribute inferred for entering Condition E other than failure to meet SR 3.7.6.1 for compressed air volume. Furthermore, in accordance with the Writer’s Guide for Plant-Specific Improved Technical Specifications (Reference 1), Conditions and Required Actions referring to parameter will only refer to the parameters as “not within limits” or “within limits” instead of repeating the actual limit that is specified in the SR. As such, the proposed Condition E is reworded to eliminate “inoperable” and to replace “inoperable” with “not within limit.”

Therefore, the proposed changes to TS 3.7.6 Action E do not adversely affect the operation of any structures, systems, or components (SSCs) or the approved remedial actions for VES inoperability due to failure to meet SR 3.7.6.1 for VES compressed air storage tanks.

## **4 REGULATORY EVALUATION**

### **4.1 Applicable Regulatory Requirements/Criteria**

In conformance with 10 CFR 50.36(c)(2) the VEGP Units 3 and 4 Combined License (COL) Appendix A Technical Specifications (TS) provides a Limiting Condition for Operation (LCO) for the Main Control Room Emergency Habitability System (VES) as TS 3.7.6. Also, in conformance with 10 CFR 50.36(c)(2), when that LCO is not met the TS provide for associated remedial actions until the condition can be met as permitted in the TS 3.7.6 Actions. Thus, the proposed changes are consistent with the requirements of 10 CFR 50.36

In conformance with 10 CFR 50.36(c)(3) surveillance requirements in conformance with 10 CFR 50.36, relating to test, calibration, and inspection to assure that the necessary quality of systems and components is maintained, facility operation will be within safety limits, and the limiting conditions for operation will be met. The proposed revision to the surveillance requirements is appropriate to continue to fulfill this regulation. Thus, the proposed changes are consistent with the requirements of 10 CFR 50.36.

10 CFR Part 50, Appendix A, General Design Criteria (GDC) 19 requires that adequate radiation protection be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident. The proposed revision to the surveillance requirements is appropriate to continue to fulfill this regulation. Thus, the proposed change is consistent with the requirements of 10 CFR Part 50, Appendix A, GDC 19.

#### 4.2 Precedent

None.

#### 4.3 Significant Hazards Consideration

Southern Nuclear Operating Company (SNC) is requesting an amendment to Combined License (COL) Nos. NPF-91 and NPF-92 for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, respectively. The license amendment request (LAR) proposes to revise the Combined License (COL) Appendix A, Technical Specifications (TS), Surveillance Requirement (SR) 3.7.6.5, and Updated Final Safety Analysis Report (UFSAR) subsection 6.4.5.3, Air Quality Testing, to refer to the Compressed Gas Association CGA G-7.1, Commodity Specification for Air, Grade E, for the requirements for acceptable air quality in the VES air storage tanks. Additionally, a clarifying change is proposed to TS 3.7.6 Action E to provide a more specific presentation of the VES inoperable condition associated with compressed air storage tanks compressed air volume out of limits.

An evaluation to determine whether or not a significant hazards consideration is involved with the proposed amendment was completed by focusing on the three standards set forth in 10 CFR 50.92(c), "Issuance of amendment," as discussed below.

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed changes do not affect the previously evaluated accident probability because there are no changes to the plant. The proposed changes do not adversely affect the operation of any structures, systems, or components (SSCs) associated with an accident initiator or initiating sequence

of events. The proposed changes continue to maintain the initial conditions and operating limits assumed during normal operation and in the analysis of accidents and anticipated operational occurrences. Therefore, the proposed changes do not result in any increase in probability of an analyzed accident occurring.

The proposed changes do not involve a change to any mitigation sequence or the predicted radiological releases due to postulated accident conditions. The proposed changes do not significantly affect previously evaluated accident consequences since the proposed standard for air quality continues to provide breathing air appropriate for main control room personnel. Thus, the consequences of the accidents previously evaluated are not adversely affected.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed changes continue to provide the required functional capability of the safety systems for previously evaluated accidents and anticipated operational occurrences. The proposed changes do not adversely impact the function of any related systems, and thus, the changes do not introduce a new failure mode, malfunction, or sequence of events that could adversely affect safety or safety-related equipment.

Therefore, the proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The proposed changes continue to provide the required functional capability of the safety systems for previously evaluated accidents and anticipated operational occurrences. The proposed changes do not change the function of the related systems nor significantly affect the margins provided by the systems. The proposed change does not adversely impact the air flowrate supplied to the MCR to support respiration of the MCR occupants. No safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the requested changes.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, it is concluded that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of “no significant hazards consideration” is justified.

#### 4.4 Conclusions

Based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission’s regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public. Therefore, it is concluded that the requested amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of “no significant hazards consideration” is justified.

### 5 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve: (i) a significant hazards consideration, (ii) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

### 6 REFERENCES

1. TSTF-GG-05-01, Writer’s Guide for Plant-Specific Improved Technical Specifications.

Attachment 1  
Technical Specification Marked-up Pages

**Attachment 1**

**Technical Specification Marked-up Pages**

Insertions Denoted by underlined Blue text and Deletions by ~~Red Strikethrough~~  
Omitted text is identified by three asterisks ( \* \* \* )

(This Attachment consists of 3 pages, including this cover page)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. VES inoperable due to inoperable MCRE boundary in MODE 1, 2, 3, or 4.</p>	<p>D.1 Initiate action to implement mitigating actions.</p> <p><u>AND</u></p> <p>D.2 Verify mitigating actions ensure MCRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.</p> <p><u>AND</u></p> <p>D.3 Restore MCRE boundary to OPERABLE status.</p>	<p>Immediately</p> <p>24 hours</p> <p>90 days</p>
<p>E. <u>VES compressed air storage tanks compressed air volume not within limit.</u> <del>One bank of VES air tanks inoperable.</del></p>	<p>E.1 Verify <del>that the OPERABLE</del> <u>compressed air storage tanks</u> contain &gt; 245,680 scf of compressed air.</p> <p><u>AND</u></p> <p>E.2 Verify VBS MCRE ancillary fans and supporting equipment are available.</p> <p><u>AND</u></p> <p>E.3 Restore VES <u>compressed air storage tanks compressed air volume to within limit</u> <del>to OPERABLE status.</del></p>	<p>2 hours</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p> <p>24 hours</p> <p>7 days</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	Verify the compressed air storage tanks contain > 327,574 scf of compressed air.	24 hours
SR 3.7.6.2	Verify thermal mass for the following heat sink locations is within limit:  a. MCRE;  b. Each required individual room adjacent to and below MCRE;  c. Each required room-pair adjacent to and below MCRE; and  d. Room above MCRE.	24 hours
SR 3.7.6.3	Operate VES for ≥ 15 minutes.	31 days on a STAGGERED TEST BASIS
SR 3.7.6.4	Verify each VES air header manual isolation valve is in an open position.	31 days
SR 3.7.6.5	Verify the air quality of the <u>compressed</u> air storage tanks meets the requirements of <u>CGA G-7.1, Commodity Specification for Air, Grade E, Appendix C, Table C-1 of ASHRAE Standard 62</u> with a pressure dew point of ≤ 40°F at ≥ 3400 psig.	92 days
SR 3.7.6.6	Verify all MCRE isolation valves are OPERABLE and will close upon receipt of an actual or simulated actuation signal.	24 months
SR 3.7.6.7	Verify each VES pressure relief isolation valve within the MCRE pressure boundary is OPERABLE.	In accordance with the Inservice Testing Program
SR 3.7.6.8	Verify each VES pressure relief damper is OPERABLE.	24 months



Attachment 2  
Revised Technical Specification Pages

**Attachment 2**

**Revised Technical Specification Pages**

(This Attachment consists of 3 pages, including this cover page)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. VES inoperable due to inoperable MCRE boundary in MODE 1, 2, 3, or 4.	D.1 Initiate action to implement mitigating actions.	Immediately
	<u>AND</u>	
	D.2 Verify mitigating actions ensure MCRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.	24 hours
	<u>AND</u>	
	D.3 Restore MCRE boundary to OPERABLE status.	90 days
E. VES compressed air storage tanks compressed air volume not within limit.	E.1 Verify compressed air storage tanks contain > 245,680 scf of compressed air.	2 hours  <u>AND</u> Once per 12 hours thereafter
	<u>AND</u>	
	E.2 Verify VBS MCRE ancillary fans and supporting equipment are available.	24 hours
	<u>AND</u>	
	E.3 Restore VES compressed air storage tanks compressed air volume to within limit.	7 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	Verify the compressed air storage tanks contain > 327,574 scf of compressed air.	24 hours
SR 3.7.6.2	Verify thermal mass for the following heat sink locations is within limit:  a. MCRE;  b. Each required individual room adjacent to and below MCRE;  c. Each required room-pair adjacent to and below MCRE; and  d. Room above MCRE.	24 hours
SR 3.7.6.3	Operate VES for ≥ 15 minutes.	31 days on a STAGGERED TEST BASIS
SR 3.7.6.4	Verify each VES air header manual isolation valve is in an open position.	31 days
SR 3.7.6.5	Verify the air quality of the compressed air storage tanks meets the requirements of CGA G-7.1, Commodity Specification for Air, Grade E, with a pressure dew point of ≤ 40°F at ≥ 3400 psig.	92 days
SR 3.7.6.6	Verify all MCRE isolation valves are OPERABLE and will close upon receipt of an actual or simulated actuation signal.	24 months
SR 3.7.6.7	Verify each VES pressure relief isolation valve within the MCRE pressure boundary is OPERABLE.	In accordance with the Inservice Testing Program
SR 3.7.6.8	Verify each VES pressure relief damper is OPERABLE.	24 months

**Attachment 3**

**Updated Final Safety Analysis Report (UFSAR) Marked-up Pages**

Insertions Denoted by underlined Blue text and Deletions by ~~Red Strikethrough~~  
Omitted text is identified by three asterisks ( \* \* \* )

(This Attachment consists of 3 pages, including this cover page)

Testing and inspection of the radiation monitors is discussed in [Section 11.5](#). The other tests noted above are discussed in [Chapter 14](#).

#### 6.4.5.2 Inservice Testing

Inservice testing of the main control room emergency habitability system and nuclear island nonradioactive ventilation system is conducted in accordance with the surveillance requirements specified in the Technical Specifications.

ASTM E741 testing of the main control room pressure boundary is conducted in accordance with the frequency specified in the technical specifications.

#### 6.4.5.3 Air Quality Testing

Connections are provided for sampling the air supplied from the compressed and instrument air system and for periodic sampling of the air stored in the storage tanks. Air samples of the compressed air storage tanks are taken quarterly and analyzed for acceptable air quality within the guidelines of ~~Table 1 and Appendix C, Table C-1, of Reference 1~~ with a pressure dew point of 40°F or lower at 3,400 psig or greater.

CGA G 7.1-1997, "Commodity Specification for Air," Grade E (Reference 15),

#### 6.4.5.4 Main Control Room Envelope Habitability

Testing for main control room envelope habitability during VES operation will be conducted in accordance with ASTM E741 ([Reference 4](#)).

The main control room envelope must undergo an analysis of inleakage into the control room envelope to determine the integrity of the control room envelope boundary during a design basis accident, hazardous chemical release, or smoke event. Baseline control room envelope habitability testing will be performed as discussed in [Subsection 6.4.5.1](#), followed by a self-assessment at three (3) years after successful baseline testing, and a periodic test at six (6) years in conjunction with other ASME inservice testing requirements. The self-assessment of the ability to maintain main control room habitability includes a review of procedures, boundaries, design changes, maintenance activities, safety analyses, and other related determinations.

If periodic testing is successful, then the assessment/testing cycle continues with a self-assessment three (3) years later and periodic testing three (3) years after the self-assessment. If a periodic testing is unsuccessful, then a periodic test is required three (3) years after repair and successful re-testing, following the unsuccessful periodic testing, to ensure there is no accelerated degradation of the main control room boundary or discrepancies in control of the main control room habitability.

In addition to periodic tests, control room envelope testing will also be performed when changes are made to structures, systems, and components that could impact control room envelope integrity, including systems internal and external to the control room envelope. The tests must be commensurate with the types and degrees of modifications and repairs and the potential impact upon integrity. Additional control room envelope testing will also be performed if a new limiting condition or alignment arises for which no inleakage data is available. Test failure is considered to be inleakage in excess of the licensing basis value for the particular challenge to control room envelope integrity.

Where possible, inleakage testing is performed in conjunction with the VES system level operability testing since the VES must be in operation to perform the inleakage testing.

10. "Design, Inspection, and Testing Criteria for Air Filtration and Adsorption Units of Post-Accident Engineered-Safety-Feature Atmosphere Cleanup Systems in Light-Water-Cooled Nuclear Power Plants," Regulatory Guide 1.52, Revision 3, 2001.
11. "Standard for Air Filter Units," UL 900, 8th Edition.
12. "AP1000 VES Air Filtration System Test Report," TR-SEE-III-09-03.
13. "Single Failure Criterion," SECY-77-439.
14. NUREG-0700, "Human-System Interface Design Review Guidelines," Revision 2, 2002.
15. "Commodity Specification for Air," CGA G 7.1-1997.



15. "Commodity Specification for Air," CGA G 7.1-1997.

Attachment 4  
Technical Specification Bases Marked-up Pages  
(For Information Only)

**Attachment 4**

**Technical Specification Bases Marked-up Pages (For Information Only)**

Insertions Denoted by underlined Blue text and Deletions by ~~Red Strikethrough~~  
Omitted text is identified by three asterisks ( \* \* \* )

(This Attachment consists of 4 pages, including this cover page)

BASES

---

ACTIONS (continued)

measures that may adversely affect their ability to control the reactor and maintain it in a safe shutdown condition in the event of a DBA. In addition, the 90 day Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the MCRE boundary.

E.1, E.2, and E.3

With VES compressed air storage tanks compressed air volume not within limit (i.e., containing  $\leq 327,574$  scf of compressed air), ~~the equivalent of one bank of VES air tanks inoperable~~, action must be taken to restore VES compressed air storage tanks compressed air volume to within limit ~~OPERABLE status~~ within 7 days. In this Condition, Required Action E.1 directs that the stored amount of compressed air in the ~~remaining OPERABLE~~ VES compressed air storage tanks must be verified within 2 hours and every 12 hours thereafter to ~~be contain~~ > 245,680 scf. The 245,680 scf value is 75% of the minimum amount of stored compressed air that must be available in the compressed air storage tanks. The standard volume is determined using the compressed air storage tank room temperature (VAS-TE-080A/B) and compressed air storage tanks pressure (VES-PT-001A/B) via the plant control system and chart in the system procedures. Verification that the minimum volume of compressed air is contained in the ~~OPERABLE~~ compressed air storage tanks ensures a 54 hour air supply will be available if needed. Additionally, within 24 hours, the VBS ancillary fans are verified to be ~~OPERABLE~~ available so that, if needed, can be put into use once the ~~OPERABLE~~ compressed air storage tanks have been exhausted.

The Completion Times associated with these actions and the 7 day Completion Time to restore VES compressed air storage tanks compressed air volume to within limit ~~is to OPERABLE are~~ based on engineering judgment, considering the low probability of an accident that would result in a significant radiation release from the reactor core, the low probability of radioactivity release, and that the remaining components and compensatory systems can provide the required capability. The 54 hours of air ~~in the~~ remaining in the OPERABLE compressed air storage tanks, along with compensatory operator actions, are adequate to protect the main control room envelope habitability. Dose calculations verify that the MCRE dose limits will remain within the requirements of GDC 19 with the compensatory actions taken at 54 hours.



BASES

---

## SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.6.4

VES air header isolation valves are required to be verified open at 31 day intervals. This SR is designed to ensure that the pathways for supplying breathable air to the MCRE are available should loss of VBS occur. These valves should be closed only during required testing or maintenance of downstream components, or to preclude complete depressurization of the system should the VES isolation valves in the air delivery line open inadvertently or begin to leak.

SR 3.7.6.5

Verification that the air quality of the [compressed](#) air storage tanks meets the requirements of [CGA G-7.1, Commodity Specification for Air, Grade E, Appendix C, Table C-1 of ASHRAE Standard 62](#) (Ref. 4) with a pressure dew point of  $\leq 40^{\circ}\text{F}$  at  $\geq 3400$  psig is required every 92 days. If air has not been added to the air storage tanks since the previous verification, verification may be accomplished by confirmation of the acceptability of the previous surveillance results along with examination of the documented record of air makeup. ~~The purpose of ASHRAE Standard 62 states: "This standard specifies minimum ventilation rates and indoor air quality that will be acceptable to human occupants and are intended to minimize the potential for adverse health effects."~~ Verification of the initial air quality (in combination with the other surveillances) ensures that breathable air is available for 11 MCRE occupants for at least 72 hours. Confirmation of the pressure dew point verifies that water has not formed in the line, eliminating the potential for freezing at the pressure regulating valve during VES operation. In addition, the dry air allows the MCRE to remain below the maximum relative humidity to support the  $90^{\circ}\text{F}$  WBGT required for human factors performance.

SR 3.7.6.6

Verification that the VBS isolation valves and the Sanitary Drainage System (SDS) isolation valves are OPERABLE and will actuate upon demand is required every 24 months to ensure that the MCRE can be isolated upon loss of VBS operation. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the valves.

BASES

---

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.6.11

Verification that the MCR load shed function actuates on an actual or simulated signal from each PMS Division is required every 24 months to confirm that the non-safety stage 1 and stage 2 MCR heat loads can be de-energized by the VES actuation signal within the required time. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage to minimize the potential for adversely affecting MCR operations.

SR 3.7.6.12

Verification that the main VES air delivery isolation valves actuate on an actual or simulated signal to the correct position is required every 24 months to confirm that the VES operates as assumed in the safety analysis. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the valves. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage to minimize adversely affecting MCR operations.

---

REFERENCES

1. FSAR Section 6.4, "Main Control Room Habitability Systems."
2. FSAR Section 9.5.1, "Fire Protection System."
3. Regulatory Guide 1.196, "Control Room Habitability at Light-Water Nuclear Power Reactors."
4. [CGA G-7.1-1997, "Commodity Specification for Air."ASHRAE Standard 62-1989, "Ventilation for Acceptable Indoor Air Quality."](#)
5. NEI 99-03, "Control Room Habitability Assessment," June 2001.
6. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2004, "NEI Draft White Paper, Use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability." (ADAMS Accession No. ML040300694).
7. Regulatory Guide 1.52, "Design, Inspection, and Testing Criteria for Air Filtration and Adsorption Units of Post-Accident Engineered-Safety-Feature Atmosphere Cleanup Systems in Light-Water-Cooled Nuclear Power Plants," Revision 3.