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U.S. Nuclear Regulatory Commission  
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Southern Nuclear Operating Company  
Vogtle Electric Generating Plant Units 3 and 4  
Request for License Amendment and Exemption:  
Main Control Room Emergency Habitability System (VES) Design Changes (LAR-15-006)

Ladies and Gentlemen:

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC), the licensee for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, requests an amendment to Combined License (COL) Numbers NPF-91 and NPF-92, for VEGP Units 3 and 4, respectively. The requested amendment requires changes to the Updated Final Safety Analysis Report (UFSAR) in the form of departures from the incorporated plant-specific Design Control Document (PS-DCD) Tier 2 information, and involves changes to related Tier 1 information, with corresponding changes to the associated COL Appendix C information. Pursuant to the provisions of 10 CFR 52.63(b)(1), an exemption from elements of the design as certified in the 10 CFR Part 52, Appendix D, design certification rule is also requested for the plant-specific DCD Tier 1 material departures.

The requested amendment proposes changes to the Main Control Room Emergency Habitability System (VES) configuration and equipment safety designation. Enclosure 1 provides the description, technical evaluation, regulatory evaluation (including the Significant Hazards Consideration determination), and environmental considerations for the proposed changes in the License Amendment Request (LAR). Enclosure 2 provides the background and supporting basis for the requested exemption. Enclosure 3 identifies the requested changes and provides markups depicting the requested changes to the plant-specific Tier 1 and PS-DCD Tier 2 text and tables.

This letter contains no regulatory commitments.

SNC requests staff approval of this license amendment and exemption by May 2, 2016, to support installation of the safety related eductors. Delayed approval of this licensing request could result in delay of the associated construction activity and subsequent dependent

construction activities. SNC expects to implement the proposed amendment (through incorporation into the licensing basis documents; e.g., the UFSAR) within 30 days of the approval of the requested changes.

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

Should you have any questions, please contact Mr. Jason Redd at (205) 992-6435.

Mr. Brian H. Whitley states that: he is the Regulatory Affairs Director of Southern Nuclear Operating Company; he is authorized to execute this oath on behalf of Southern Nuclear Operating Company; and to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY



Brian H. Whitley

BHW/WES/ljs

Sworn to and subscribed before me this 7<sup>th</sup> day of May, 2015

Notary Public: Kristin Marie Seibert

My commission expires: August 16, 2016



- Enclosures: 1) License Amendment Request; Main Control Room Emergency Habitability System (VES) Design Changes (LAR-15-006)  
2) Exemption Request for Main Control Room Emergency Habitability System (VES) Design Changes (LAR-15-006)  
3) Proposed Changes to Licensing Basis Documents (LAR-15-006)

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**Southern Nuclear Operating Company**

**Vogtle Electric Generating Plant (VEGP) Units 3 and 4**

**ND-15-0304**

**Enclosure 1**

**License Amendment Request**

**Main Control Room Emergency Habitability System (VES) Design Changes**

**(LAR-15-006)**

(This Enclosure contains 15 pages, including this cover)

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Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC) hereby requests an amendment to Combined License (COL) Nos. NPF-91 and NPF-92 for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, respectively.

## **1. Summary Description**

The proposed changes revise the Combined Licenses (COLs) concerning the design details of the Main Control Room Emergency Habitability System (VES). These proposed changes would revise ASME safety classification and transition location, equipment orientation and removal, and identification of the number of emergency air storage tanks.

The proposed changes require revisions to the UFSAR in the form of departures from the incorporated plant-specific Design Control Document (PS-DCD) Tier 2 information (as detailed in Section 2), and involves changes to related plant-specific Tier 1 information, with corresponding changes to the associated COL Appendix C information. This enclosure requests approval of the license amendment necessary to implement the Tier 2 and COL changes. Additionally, Enclosure 2 requests an exemption from plant-specific DCD Tier 1 information.

## **2. Detailed Description and Technical Evaluation**

COL Appendix C, Subsection 2.2.5 and UFSAR Subsection 6.4 identify the VES function as providing a supply of breathable air for the main control room (MCR) occupants and maintaining the MCR at a positive pressure with respect to the surrounding areas whenever ac power is not available for more than 10 minutes or if high-2 particulate or iodine radioactivity is detected in the MCR supply air duct. The VES can also be manually actuated. The VES accomplishes this activity through piping, components, and equipment as shown in COL Appendix C Figure 2.2.5-1 and UFSAR Figure 6.4-2.

The following are the proposed changes to COL Appendix C (which correspond to plant-specific DCD Tier 1 exemptions identified in Enclosure 2) and UFSAR Tier 2.

### **2.1. Change to MCR Air Filtration Line Eductor Orientation**

The MCR air filtration line eductor orientation is shown in its system configuration in COL Appendix C Figure 2.2.5-1 and UFSAR Figure 6.4-2 (Sheet 2) reversed from the intended orientation. The proposed change will have the emergency air storage tanks connected to the motive air inlet of the eductor and the MCR air inlet connected to the suction tap of the eductor. The eductor is connected to the discharge of the emergency air supply line from the emergency air storage tanks and to ductwork located inside the MCR envelope that comprises the passive air filtration portion of

the VES. The eductor works by directing compressed air from the emergency air storage tanks through a specially designed nozzle to create a powerful vacuum that draws air from the MCR through the surrounding ductwork into the passive air filtration line. The design of the eductor consists of a motive air inlet from the emergency air storage tanks, a suction tap to draw in air from the MCR inner vestibule, and a combined eductor discharge flow directed through the passive air filtration unit.

### Technical Evaluation

The eductor supports the operation of the VES. The VES provides the following safety-related design functions whenever ac power is unavailable for more than 10 minutes or if high-2 particulate or iodine radioactivity is detected in the MCR supply air duct: 1) the VES provides a supply of breathable quality air for the occupants of the MCR, 2) the VES maintains the MCR at a positive pressure with respect to the surrounding areas to prevent the ingress of airborne contaminants, 3) the VES provides passive cooling of the equipment and facilities that are required to remain functional during an accident, making use of the heat capacity of surrounding structures, and 4) the VES provides safety-related passive air filtration within the MCR boundary to remove any potentially contaminated air that may enter the MCR with unexpected leakage into the MCR boundary. The VES can also be manually actuated. The VES is designed to meet the ventilation and pressurization requirements for the MCR for 72 hours following a design basis accident.

The purpose of the eductor is to draw air from the MCR into the passive air filtration system at the required design flow rate. In the current VES design as shown in COL Appendix C Figure 2.2.5-1 and UFSAR Figure 6.4-2, the eductor configuration is reversed from the intended orientation, and prevents the eductor from performing the design function as described above. By changing the eductor configuration from what is currently shown on the figures so that the emergency air storage tanks are connected to the motive air inlet of the eductor and the MCR air inlet is connected to the suction tap of the eductor, the eductor is capable of performing the required design function and the VES is capable of performing the required design functions as described above, including providing safety-related passive air filtration within the MCR boundary to ensure General Design Criterion 19 dose limits are met for personnel working in the MCR.

## 2.2 Addition of Air Bank Fill / Vent Header with Air Tank Fill / Vent Isolation Valves

The VES emergency air storage tanks as shown on COL Appendix C Figure 2.2.5-1 do not include a header with isolation valves consistent with the VES emergency air storage tanks design as shown in UFSAR Figure 6.4-2 (Sheet 1). The Tier 2 figure (Figure 6.4-2 (Sheet 1)) reflects an air bank fill / vent header with normally closed double isolation valves (one safety-related and one nonsafety-related) at each air



bank, and a single flanged vent with a normally closed nonsafety-related isolation valve. The proposed changes add the air bank fill / vent header with a safety-related air tank fill / vent isolation valve at each of the four air banks.

As part of the proposed change, the ASME Code classification transition from Class 3 to nonsafety-related is moved to immediately upstream of the safety-related air tank fill / vent isolation valves, which are the closest valves of the two series isolation valves to each of the four air banks. The proposed change is consistent with the design as shown in UFSAR Figure 6.4-2 (Sheet 1), which reflects the air bank fill / vent header with normally closed double isolation valves (one safety-related and one nonsafety-related) at each air bank and a single flanged vent with normally closed isolation valve.

Note: The AP1000 assignment of safety-related classification is described in UFSAR Subsection 3.2.2. This classification system provides an easily recognizable means of identifying the extent to which structures, systems, and components are related to industry and regulatory quality groups. UFSAR Table 3.2-1 provides a comparison of the AP1000 classification letters and other safety classifications. The drawing symbol "3/N" indicates an ASME Section III Class 3 transition to nonsafety-related (N).

### Technical Evaluation

The addition of the air bank fill / vent header with a safety-related air tank fill / vent isolation valve at each of the four air banks to COL Appendix C Figure 2.2.5-1, and moving the ASME Code classification transition from Class 3 to nonsafety-related to immediately upstream of the safety-related air tank fill / vent isolation valves, are required for consistency with UFSAR Figure 6.4-2 (Sheet 1) and the engineering drawings. This configuration, with the air bank fill / vent header and air tank fill / vent isolation valves included, is reflected in the baseline configuration shown in Revision 19 of the AP1000 DCD Tier 2 Figure 6.4-2 (Sheet 1), which was previously reviewed and approved by the NRC. As stated in 10 CFR 52, Appendix D II.D, the design descriptions, interface requirements, and site parameters are derived from Tier 2 information. Consequently, the COL Appendix C Figure 2.2.5-1 is proposed to be revised to be consistent with the information in UFSAR Figure 6.4-2 (Sheet 1) by adding the safety-related air tank fill/ vent isolation valves at each of the four air banks.

### 2.3 Change in Safety Classification of Refill Line Isolation Valve

The current design for the refill line isolation valve (refill line isolation valve VES-PL-V038) in COL Appendix C Figure 2.2.5-1 and UFSAR Table 3I.6-3 designates this valve as safety-related. The proposed change will designate the refill line isolation valve as nonsafety-related. It is also proposed to remove the refill line isolation valve from the COL Appendix C Figure 2.2.5-1 and the UFSAR Table 3I.6-3, which only

include safety-related valves.

#### Technical Evaluation

The refill line isolation valve (VES-PL-V038) is designated as AP1000 Class E or nonsafety-related in UFSAR Figure 6.4-2 (Sheet 1). The proposed change to designate VES-PL-V038 as nonsafety-related would result in the COL Appendix C Figure 2.2.5-1 being consistent with the UFSAR Tier 2 information in Figure 6.4-2 (Sheet 1). In addition, the proposed change to remove a nonsafety-related valve (APP-VES-PL-V038) from UFSAR Table 3I.6-3 would be consistent with the Tier 2 information since this table only includes safety-related equipment.

Designating VES-PL-V038 as nonsafety-related is consistent with the proposed changes in Section 2.2 to add an air bank fill / vent header with a safety-related air tank fill / vent isolation valve at each of the four air banks, and the resulting change to move the transition from Class 3 to nonsafety-related to these valves.

These safety-related air tank fill / vent isolation valves perform the safety-related function in providing isolation of the air banks from the nonsafety-related portions of the air bank fill / vent header. With this change, the refill line isolation valve would no longer perform the safety-related isolation function.

#### 2.4 Deletion of Flow Control Orifices (Flow Restricting Orifices)

The current design includes flow control orifices (APP-VES-PY-R01A and APP-VES-PY-R01B) downstream of the pressure regulating valves APP-VES-PY-V002A and APP-VES-PY-002B. The safety-related design function of the flow control orifices is to provide adequate flow for the VES while maintaining the capability of the air banks to supply breathable air to the occupants of the MCR for at least 72 hours without replenishment. This equipment is shown on COL Appendix C Figure 2.2.5-1 and UFSAR Figure 6.4-2 (Sheet 2). This proposed change would delete the two flow control orifices (APP-VES-PY-R01A and APP-VES-PY-R01B).

#### Technical Evaluation

The flow control orifices downstream of the pressure regulating valves are not needed because the eductor already operates with an inlet flow-metering orifice, and the eductor bypass line contains an eductor bypass flow control orifice, to control and maintain adequate VES flow for the 72 hours. This change was made in Revision 18 of the AP1000 DCD in text updates to AP1000 DCD Tier 2 Subsections 6.4.2.3 and 6.4.4, which describe the eductor inlet flow-metering orifice and the eductor bypass line with eductor bypass flow control orifice. However, conforming changes to AP1000 DCD Tier 2 Figure 6.4-2 (Sheet 2) were inadvertently not incorporated.

## 2.5 Change in Safety Classification and Designation of Emergency Air Storage Tanks

The current design identifies the emergency air storage tanks as nonsafety-related in COL Appendix C Figure 2.2.5-1. This proposed change would revise that classification to safety-related. A related proposed change would delete the ASME Code classification transitions from Class 3 to nonsafety-related designation as currently shown for the emergency air storage tanks. The Tier 2 information in the current design identifies the emergency air storage tanks as AP1000 Safety Class C in UFSAR Table 3.2-3. The emergency air storage tanks provide the safety related function of supplying breathable air to the occupants of the MCR as described in Plant-specific DCD Tier 1 Subsection 2.2.5.

The current design also identifies the upper banks of the emergency air storage tanks on COL Appendix C Figure 2.2.5-1 as VES-MT-01 thru VES-MT-18. This proposed change would revise the identification to VES-MT-01 thru VES-MT-16, because there are only sixteen storage tanks in the upper banks as shown on the same figure. The current design does correctly identify the lower banks as VES-MT-17 thru VES-MT-32 for the sixteen storage tanks.

### Technical Evaluation

The emergency air storage tanks are designated as AP1000 Class C in UFSAR Table 3.2-3 and in the text description of the VES in UFSAR Subsection 6.4.1, which indicates that the design functions that the storage tanks support are safety-related. Plant-specific DCD Tier 1 Section 2.2.5 includes one of the safety-related functions of the VES as supplying breathable air for occupants of the MCR. The proposed change would identify the emergency air storage tanks as safety related consistent with Tier 2 and Tier 1 information. The proposed change would also result in the deletion of the ASME Code classification transitions from Class 3 to nonsafety-related at the emergency air storage tanks as shown on COL Appendix C Figure 2.2.5-1.

An additional proposed change related to the emergency air storage tanks is to revise the designations of the emergency air storage tanks for the upper bank to VES-MT-01 thru VES-MT-16 on COL Appendix C Figure 2.2.5-1. This change in the number of tanks from 18 to 16 is consistent with the actual number of storage tanks shown on the figure, and does not change any design feature or function of the VES.

## 2.6 General Discussion Regarding All Proposed Changes

The proposed changes to the VES are the result of inconsistencies between existing design and corresponding descriptions in COL Appendix C and UFSAR text and figures and do not change the support, design functions, or operation of mechanical and fluid systems. The proposed changes do not change the capacity, function, or response to anticipated transients or postulated accident conditions of any system,

structure, or component (SSC). There is no change to the response of systems to postulated accident conditions. The proposed changes do not affect the prevention or mitigation of abnormal events, e.g., accidents, anticipated operational occurrences, earthquakes, floods and turbine missiles, or their safety or design analyses. There is no change to the predicted radioactive releases due to normal operation or postulated accident conditions. The plant response to previously evaluated accidents or external events is not adversely affected, nor do the proposed changes described create any new accident precursors.

The proposed changes to the VES are the result of inconsistencies between existing design and corresponding descriptions in COL Appendix C and UFSAR text and figures, and do not adversely affect the design code, design code allowable value, design function or design analysis, nor do the proposed changes adversely affect any safety analysis input or result, or design/safety margin. The proposed changes do not interface with or affect a fission product barrier. No system or design function or equipment qualification would be adversely affected by the proposed changes. The proposed changes do not result in a new failure mode, malfunction, or sequence of events that could adversely affect a radioactive material barrier or safety-related equipment. The proposed changes do not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that would result in significant fuel cladding failures.

The proposed changes do not affect the radiological source terms (i.e., amounts and types of radioactive materials released, their release rates, and release durations) used in the accident analyses. Therefore, the consequences of accidents are not affected. These proposed changes do not affect the containment, control, channeling, monitoring, processing or releasing of radioactive or non-radioactive materials.

No effluent release path is affected. The types and quantities of expected effluents are not changed. The design functions and operational features that are credited with controlling the release of effluents during plant operation are not diminished. Therefore, radioactive or non-radioactive material effluents are not affected. Plant radiation zones, controls required by 10 CFR Part 20, and expected amounts and types of radioactive materials are not affected by the proposed changes. Therefore, individual and cumulative radiation exposures do not change.

The proposed changes do not involve, nor interface with, any SSC accident initiator or initiating sequence of events. Therefore, the probabilities of the accidents evaluated in the UFSAR are not affected.

The proposed changes have no adverse effect on the ex-vessel severe accident. The overall design, geometry, and strength of the containment internal structures are not adversely affected. The design and material selection of the concrete floor beneath the reactor vessel is not altered. The response of the containment to a postulated reactor vessel failure, including direct containment heating, ex-vessel steam

explosions, and core concrete interactions, including the detailed design of the structural modules, is not altered by the proposed changes. The design of the reactor vessel and the response of the reactor vessel to a postulated severe accident are not altered by the proposed changes.

The proposed changes have no effect on the Aircraft Impact Assessment. There is no change to protection of plant SSCs against aircraft impact provided by the design of the shield building. There is no change to the design of any of the key design features described in UFSAR Appendix 19F. The proposed changes do not change the overall design or construction of the shield building.

The proposed changes have no effect on the emergency plans or the physical security evaluation, because there are no changes to the configuration of walls, doors, or access to the Nuclear Island.

### Summary

The proposed changes to the VES are the result of inconsistencies between existing design and corresponding descriptions in COL Appendix C and UFSAR text and figures and would revise UFSAR information, and associated COL Appendix C information, concerning detailed design of the VES. The proposed changes do not adversely affect the design functions of the VES.

The proposed changes do not adversely affect any design function, radioactive material barrier, or safety analysis.

### Licensing Basis Change Descriptions

The following licensing basis changes are proposed:

1. COL Appendix C Figure 2.2.5-1 is revised as follows:

- a) The orientation of the MCR air filtration line eductor is changed so that the emergency air storage tanks are connected to the motive air inlet of the eductor and the MCR air inlet is connected to the suction tap of the eductor;
- b) Add an air bank fill / vent header with an air tank fill / vent isolation valve at each of the four air banks;
- c) Move the ASME Code classification transition (Class 3 to nonsafety-related) to immediately upstream of the proposed air tank fill / vent isolation valves;
- d) Remove the refill line isolation valve (refill line isolation valve VES-PL-V038);

e) Remove the flow control orifices (flow restricting orifices) downstream of the pressure regulating valves VES-PL-V002A and VES-PL-V002B;

f) Change the designation of the emergency air storage tanks in the upper banks from VES-MT-01 thru VES-MT-18 to VES-MT-01 thru VES-MT-16; and

g) Remove the ASME Code classification transition at the emergency air storage tanks at eight locations.

2. UFSAR Table 3I.6-3 is revised to remove the Refill Line Isolation Valve (VES-PL-V038).

3. UFSAR Figure 6.4-2 (Sheet 2) is revised as follows:

a) The orientation of the MCR air filtration line eductor is changed so that the emergency air storage tanks are connected to the motive air inlet of the eductor and the MCR air inlet is connected to the suction tap of the eductor; and

b) Remove the flow control orifices downstream of the pressure regulating valves VES-PL-V002A and VES-PL-V002B.

### **3. Technical Evaluation (included in Section 2)**

## **4. Regulatory Evaluation**

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

10 CFR 52.98(f) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a COL. The proposed changes involve a change to COL Appendix C and corresponding plant-specific DCD Tier 1 figure information. Therefore, this activity requires a proposed amendment to the COL. Accordingly, NRC approval is required prior to making the plant-specific changes in this license amendment request.

10 CFR 52, Appendix D, Section VIII.B.5.a allows an applicant or licensee who references this appendix to depart from Tier 2 information, without prior NRC approval, unless the proposed departure involves a change to or departure from Tier 1 information, Tier 2\* information, or the Technical Specifications, or requires a license amendment under paragraphs B.5.b or B.5.c of the section. The proposed changes, which include changes to UFSAR Table 3I.6-3 and Figure 6.4-2 for the VES, involve a revision to Tier 1 Figure 2.2.5-1 information. Therefore, NRC approval is required for the Tier 1 and involved Tier 2 departures.

10 CFR Part 50, Appendix A, GDC 4 requires that systems, structures, and components can withstand the dynamic effects associated with missiles, pipe whipping, and discharging fluids, excluding dynamic effects associated with pipe ruptures, the probability of which is extremely low under conditions consistent with the design basis for the piping. The proposed changes do not adversely affect the configuration of the walls and floors that provide separation between sources and potential targets. The proposed changes have no effect on the capability of the systems, structures, and components to withstand dynamic effects associated with missiles, pipe whipping, and discharging fluids as required by this criterion. The proposed changes do not change the requirements for anchoring safety-related components and supports to seismic Category I structures.

10 CFR Part 50, Appendix A, GDC 19 requires that a control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions, including loss-of-coolant accidents. The proposed changes allow the VES to perform the required design functions to satisfy the MCR ventilation and pressurization requirements for 72 hours after initiation following an accident. There is no adverse effect of the proposed changes on radiation protection features for the MCR and the requirement that personnel not be exposed to radiation levels exceeding 5 rem whole body continues to be satisfied. The proposed changes do not affect the ability of equipment in locations outside the MCR to be able to shut down the reactor and maintain it in a shutdown condition in the event of an accident.

10 CFR 50.34(f)(2)(xxviii) requires an evaluation of potential pathways for radioactivity and radiation that may lead to MCR habitability problems under accident conditions resulting in an accident source term release and make necessary provisions to preclude such problems. These proposed changes do not create any new pathways for radiation nor do they introduce any new accident source terms. There is no adverse effect on the ability to inhabit the MCR following an accident.

NUREG-0737 TMI Action Plan Item III.D.3.4 requires that licensees shall assure that control room operators will be adequately protected against the accidental release of toxic and radioactive gases and that the nuclear power plant can be safely operated or shut down under design basis accident conditions. These proposed changes do not adversely affect any design function or radiation protection feature that would inhibit protection against the accidental release of toxic and radioactive gases. There is no adverse effect on the ability to safely operate or shut down the reactor after a design basis accident.

#### **4.2. Precedent**

None.

### **4.3. Significant Hazards Consideration Determination**

The proposed changes would revise the Combined License (COL) in regards to the Main Control Room Emergency Habitability System (VES) design. The requested amendment requires changes to Updated Final Safety Analysis Report (UFSAR) Tier 2 information, which involve changes to COL Appendix C.

An evaluation to determine whether a significant hazards consideration is involved with the requested amendment was completed by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed.

#### **4.3.1 Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?**

Response: No

The design functions of the VES for the main control room (MCR) are to provide breathable air, maintain positive pressurization relative to the outside, provide cooling of MCR equipment and facilities, and provide passive air filtration within the MCR boundary. The VES is designed to satisfy these functions for up to 72 hours following a design basis accident.

The proposed changes to the ASME safety classification of components, equipment orientation and configuration, addition and deletion of components, and correction to the number of emergency air storage tanks would not adversely affect any design function. The proposed changes maintain the design function of the VES with safety-related equipment and system configuration consistent with the descriptions in UFSAR Subsection 6.4.2. The proposed changes do not affect the support or operation of mechanical and fluid systems. There is no change to the response of systems to postulated accident conditions. There is no change to the predicted radioactive releases due to postulated accident conditions. The plant response to previously evaluated accidents or external events is not adversely affected, nor do the proposed changes described create any new accident precursors.

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



**4.3.2 Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?**

Response: No

The proposed changes to revise the VES design related to the ASME safety classification, equipment orientation and configuration, addition and deletion of components, and correction to the number of emergency air storage tanks maintains consistency with the design function information in the UFSAR. The proposed changes do not create a new fault or sequence of events that could result in a radioactive release. The proposed changes would not affect any safety-related accident mitigating function.

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

**4.3.3 Does the proposed amendment involve a significant reduction in a margin of safety?**

Response: No

The proposed changes do not affect the ability of the VES to maintain the safety-related functions to the MCR. The VES continues to meet the requirements for which it was designed and continues to meet the regulations. No safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the proposed changes, and no margin of safety is reduced.

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

Based on the above, 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.

**4.4 Conclusions**

In conclusion, 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.

Pursuant to 10 CFR 50.92, the requested change does not involve a Significant Hazards Consideration.

## 5. Environmental Considerations

This review supports a request to amend the Combined License (COL) for the Licensee, and to allow departure from Tier 2 of the AP1000 Design Control Document (DCD) in the Updated Final Safety Analysis Report (UFSAR), and involves changes to COL Appendix C and departure from plant-specific Tier 1 material. The proposed amendment changes the Main Control Room Emergency Habitability System (VES) design by changing the orientation, configuration, addition and deletion of components, and classification for some of the system equipment.

The Licensee has determined that the anticipated construction and operational effects of the proposed amendment meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9), in that:

(i) *There is no significant hazards consideration.*

As documented in Section 4.3, Significant Hazards Consideration Determination, of this license amendment request, an evaluation was completed to determine whether or not a significant hazards consideration is involved by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment." The Significant Hazards Consideration determined that (1) the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated; (2) the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated; and (3) the proposed amendment does not involve a significant reduction in a margin of safety. Therefore, 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.

(ii) *There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.*

The proposed changes involve changes to VES equipment that is internal to the plant and have no connection with systems that involve effluents from the plant. Therefore, the proposed changes are unrelated to any aspect of plant construction or operation that introduces any change to effluent types (e.g., effluents containing chemicals or biocides, sanitary system effluents, and other effluents), or affect any plant radiological or non-radiological effluent release quantities. Furthermore, the proposed changes do not diminish the functionality of any design or operational features that are credited with controlling the release of

effluents during plant operation. Therefore, it is concluded that the proposed amendment does not involve a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite.

- (iii) *There is no significant increase in individual or cumulative occupational radiation exposure.*

The proposed changes to the VES only affect non-radioactive systems and areas of the plant that contain non-radioactive plant systems. Consequently, the proposed changes have no effect on individual or cumulative occupational radiation exposure during plant operation and the exposure to the staff of the main control room is unchanged. Therefore, it is concluded that the proposed amendment does not involve a significant increase in individual or cumulative occupational radiation exposure.

Based on the above review of the proposed amendment, it has been determined that anticipated construction and operational effects of the proposed amendment do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental impact statement or environmental assessment of the proposed exemption and proposed amendment is not required.

## **6. References**

None

**Southern Nuclear Operating Company**

**Vogtle Electric Generating Plant (VEGP) Units 3 and 4**

**ND-15-0304**

**Enclosure 2**

**Exemption Request for**

**Main Control Room Emergency Habitability System (VES) Design Changes**

**(LAR-15-006)**

(This Enclosure contains 7 pages, including this cover)

## **1.0 Purpose**

Southern Nuclear Operating Company (the Licensee), requests a permanent exemption from the provisions of 10 CFR 52, Appendix D, Section III.B, "Design Certification Rule for the AP1000 Design, Scope and Contents," to allow a departure from elements of the certification information in Tier 1 of the plant-specific AP1000 Design Control Document (DCD). The regulation, 10 CFR 52, Appendix D, Section III.B, requires an applicant or licensee referencing Appendix D to 10 CFR Part 52 to incorporate by reference and comply with the requirements of the Appendix, including certified information in DCD Tier 1. Tier 1 includes ITAAC that must be satisfactorily performed prior to fuel load. The design details to be verified by these ITAAC are specified in the text, tables, and figures that are referenced in each individual ITAAC. The Tier 1 information for which a departure and permanent exemption is being requested includes information specified in plant-specific Tier 1 figure 2.2.5-1 related to the design of the Main Control Room Emergency Habitability System (VES).

This request for permanent exemption applies the requirements of 10 CFR 52, Appendix D, Section VIII.A.4 to allow changes to information found in plant-specific Tier 1 Figure 2.2.5-1 as follows:

- Change the orientation of the main control room (MCR) air filtration line educator,
- Add an air bank fill/vent header with an air tank fill/vent isolation valve at each of the four emergency air storage banks,
- Remove the flow restricting orifices and the refill line isolation valve,
- Move the ASME Code classification transition from Class 3 (AP1000 Class C) to Non-Nuclear Safety (N) to immediately upstream of the new air tank fill/vent isolation valves,
- Change the ASME safety classification of the emergency air storage tanks from N to Class C, and
- Change the number designation of the emergency air storage tanks in the upper banks to range from 01 to 16 instead of 01 thru 18.

This request will apply the requirements for granting exemptions from design certification information, as specified in 10 CFR 52, Appendix D, Section VIII.A.4, 10 CFR 52.63, §52.7, and §50.12.

## **2.0 Background**

The Licensee is the holder of Combined License (COL) Nos. NPF-91 and NPF-92, which authorize construction and operation of two Westinghouse Electric Company AP1000 nuclear plants, named Vogtle Electric Generating Plant (VEGP) Units 3 & 4, respectively.

Plant-specific Tier 1 Figure 2.2.5-1 identifies the layout and components of the VES including the emergency air storage tanks, valves, and educator. The configuration and equipment in the VES provides a supply of breathable air for the MCR occupants and maintains the MCR at a positive pressure with respect to the surrounding areas whenever ac power is not available for more than 10 minutes or if high-2 particulate or iodine radioactivity is detected in the MCR supply air duct.

The VES design changes are required for consistency with design information in Tier 2 and to meet its required design functions as described above. These specific changes correct equipment information, orientation, and add and remove equipment and safety classification.

A permanent exemption from elements of the AP1000 certified design information is requested to allow the Licensee to depart from the design details contained in this Tier 1 figure.

### **3.0 Technical Justification of Acceptability**

The proposed change to ASME safety classification, equipment orientation, addition and removal of components, and identification of the number of emergency air storage tanks results in changes to plant-specific Tier 1 Figure 2.2.5-1 related to the equipment layout, orientation and location of safety classification transitions between non-nuclear safety related equipment and safety related equipment. The purpose of providing the information in this plant-specific Tier 1 figure is to assist in identifying the physical arrangement of components, piping, and ASME Code designation information to be confirmed during construction by the ITAAC in plant-specific Tier 1 Table 2.2.5-5.

The safety-related functions of the VES are maintained with the proposed changes and breathable air is supplied to the MCR and the MCR is maintained at a positive pressure with respect to the surrounding areas as required. Additional detail for supporting the Technical Justification of this exemption is provided in Enclosure 1, Section 2, of the accompanying License Amendment Request.

### **4.0 Justification of Exemption**

10 CFR Part 52, Appendix D, Section VIII.A.4 and 10 CFR 52.63(b)(1) govern the issuance of exemptions from elements of the certified design information for AP1000 nuclear power plants. The Licensee has identified necessary changes to plant-specific Tier 1 information during VES design finalization activities. As a result, the Licensee requests a permanent exemption from the certified design information in plant-specific Tier 1, pursuant to the above regulations, to allow the implementation of a departure.

10 CFR Part 52, Appendix D, and 10 CFR 50.12, §52.7, and §52.63 state that the NRC may grant exemptions from the requirements of the regulations provided six conditions are met: 1) the exemption is authorized by law [§50.12(a)(1)]; 2) the exemption will not present an undue risk to the health and safety of the public [§50.12(a)(1)]; 3) the exemption is consistent with the common defense and security [§50.12(a)(1)]; 4) special circumstances are present [§50.12(a)(2)(ii)]; 5) the special circumstances outweigh any

decrease in safety that may result from the reduction in standardization caused by the exemption [§52.63(b)(1)]; and 6) the design change will not result in a significant decrease in the level of safety [Part 52, App. D, VIII.A.1].

The requested exemption to allow the licensee to change the design of the Main Control Room Emergency Habitability System satisfies the six criteria for granting specific exemptions, as described below.

**1. This exemption is authorized by law**

The NRC has authority under 10 CFR §§ 50.12, 52.7, and 52.63 to grant exemptions from the requirements of NRC regulations. Specifically, 10 CFR §§50.12 and 52.7 state that the NRC may grant exemptions from the requirements of 10 CFR Part 52 upon a proper showing. No law exists that would preclude the changes covered by this exemption request. Additionally, granting of the proposed exemption does not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations.

Accordingly, this requested exemption is "authorized by law," as required by 10 CFR 50.12(a)(1).

**2. This exemption will not present an undue risk to the health and safety of the public**

The proposed exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would allow the Licensee to depart from elements of the plant-specific DCD Tier 1 design information. The plant-specific Tier 1 material will continue to reflect the approved licensing basis, and will maintain a consistent level of detail with that which is currently provided elsewhere in Tier 1 of the plant-specific DCD. Therefore, no adverse safety impact which would present any additional risk to the health and safety of the public is present. The affected design description in the plant-specific Tier 1 material will also continue to provide the detail necessary to support the performance of the associated ITAAC.

This proposed change will not impact the ability of the SSCs to perform their design functions. Because the changes will not alter the intended operation of any plant equipment or systems, they do not present any undue risk from existing equipment or systems. The proposed changes do not introduce any new industrial, chemical, or radiological hazards that would represent a public health or safety risk, nor do they modify or remove any design or operational controls or safeguards that are intended to mitigate any existing on-site hazards. Furthermore, the proposed changes would not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that would result in fuel cladding failures. Accordingly, these changes do not present an undue risk from any new equipment or systems.

Therefore, the requested exemption from 10 CFR 52, Appendix D, Section III.B would not present an undue risk to the health and safety of the public.

**3. The exemption is consistent with the common defense and security**

The requested exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would allow the licensee to depart from elements of the plant-specific DCD Tier 1 design information. The proposed exemption does not alter the design, function, or operation of any structures or plant equipment that are necessary to maintain a safe and secure status of the plant. The proposed exemption has no impact on plant security or safeguards procedures.

Therefore, the requested exemption is consistent with the common defense and security.

**4. Special circumstances are present**

10 CFR 50.12(a)(2) lists six "special circumstances" for which an exemption may be granted. Pursuant to the regulation, it is necessary for one of these special circumstances to be present in order for the NRC to consider granting an exemption request. The requested exemption meets the special circumstances of 10 CFR 50.12(a)(2)(ii). That subsection defines special circumstances as when "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule."

The rule under consideration in this request for exemption is 10 CFR 52, Appendix D, Section III.B, which requires that a licensee referencing the AP1000 Design Certification Rule (10 CFR Part 52, Appendix D) shall incorporate by reference and comply with the requirements of Appendix D, including Tier 1 information. The VEGP Units 3 & 4 COLs reference the AP1000 Design Certification Rule and incorporate by reference the requirements of 10 CFR Part 52, Appendix D, including Tier 1 information. The underlying purpose of Appendix D, Section III.B is to describe and define the scope and contents of the AP1000 design certification, and to require compliance with the design certification information in Appendix D.

The proposed change to the VES ASME safety classification, equipment orientation, addition and removal, and identification of the number of emergency air storage tanks maintains the function of the VES. The changes do not impact the ability of any structures, systems, or components to perform their functions or negatively impact safety. Additionally, no new design functions are added and no current function is deleted.

Accordingly, this exemption from the plant-specific certification information will allow the Licensee to safely construct and operate the AP1000 facility consistent with the design certified by the NRC in 10 CFR 52, Appendix D.

Therefore, special circumstances are present, because application of the current Tier 1 certified design information as required by 10 CFR Part 52, Appendix D,



Section III.B, in the particular circumstances discussed in this request, is not necessary to achieve the underlying purpose of the rule.

**5. The special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption**

Based on the nature of the proposed departure from the plant-specific DCD Tier 1 information, it is likely that other AP1000 licensees will request this exemption. However, if this is not the case, the special circumstances continue to outweigh any decrease in safety from the reduction in standardization. The proposed change implements changes to the ASME safety classification, equipment orientation, addition and removal, and identification of the number of emergency air storage tanks. This exemption request and the associated marked-up figure 2.2.5-1 demonstrate that the applicable regulatory requirements will continue to be met. Consequently, the safety impact that may result from any reduction in standardization is minimized, since the proposed design change does not result in a reduction in the level of safety.

Therefore, the special circumstances associated with the requested exemption outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption.

**6. The design change will not result in a significant decrease in the level of safety.**

This exemption request proposes to allow the Licensee to revise the plant-specific DCD Tier 1 information by departing from the certified design by revising information on the ASME safety classification, equipment orientation, adding and removing equipment, and identification of the number of emergency air storage tanks. The design change associated with this exemption request does not introduce any new failure mode and the level of safety provided by the SSCs remains unchanged.

Because the proposed changes to the SSCs will not adversely affect their ability to perform their design functions, it is concluded that the changes associated with the proposed exemption will not result in a significant decrease in the level of safety.

## **5.0 Risk Assessment**

A risk assessment was determined to be not applicable to address the acceptability of this request.

## **6.0 Precedent**

None.

## **7.0 Environmental Consideration**

A review of the requested amendment, has determined that anticipated construction and operational effects of the proposed amendment do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the requested amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental impact statement or environmental assessment of the proposed amendment and exemption is not required.

## **8.0 Conclusion**

The Licensee requests a permanent exemption from elements of the AP1000 design certification information within plant-specific Tier 1 material. The proposed changes to Tier 1 are necessary to update and correct information identified in the VES figure, which would continue to provide a supply of breathable air for the MCR occupants and maintain the MCR at a positive pressure with respect to the surrounding areas whenever ac power is not available for more than 10 minutes or if high-2 particulate or iodine radioactivity is detected in the MCR supply air duct. The exemption request meets the requirements of 10 CFR 52.63, "*Finality of Design Certifications*," 10 CFR 50.12, "*Specific Exemptions*," and 10 CFR 52 Appendix D, "*Design Certification Rule for the AP1000*." Specifically, the exemption request meets the criteria of 10 CFR 50.12(a)(1) in that the request is authorized by law, presents no undue risk to public health and safety, and is consistent with the common defense and security. Furthermore, approval of this request does not result in a decrease in the level of safety, does not present a significant decrease in safety as a result of a reduction in standardization, and meets the eligibility requirements for categorical exclusion.

## **9.0 References**

None.

**Southern Nuclear Operating Company**

**Vogtle Electric Generating Plant (VEGP) Units 3 and 4**

**ND-15-0304**

**Enclosure 3**

**Proposed Changes to Licensing Basis Documents**

**(LAR-15-006)**

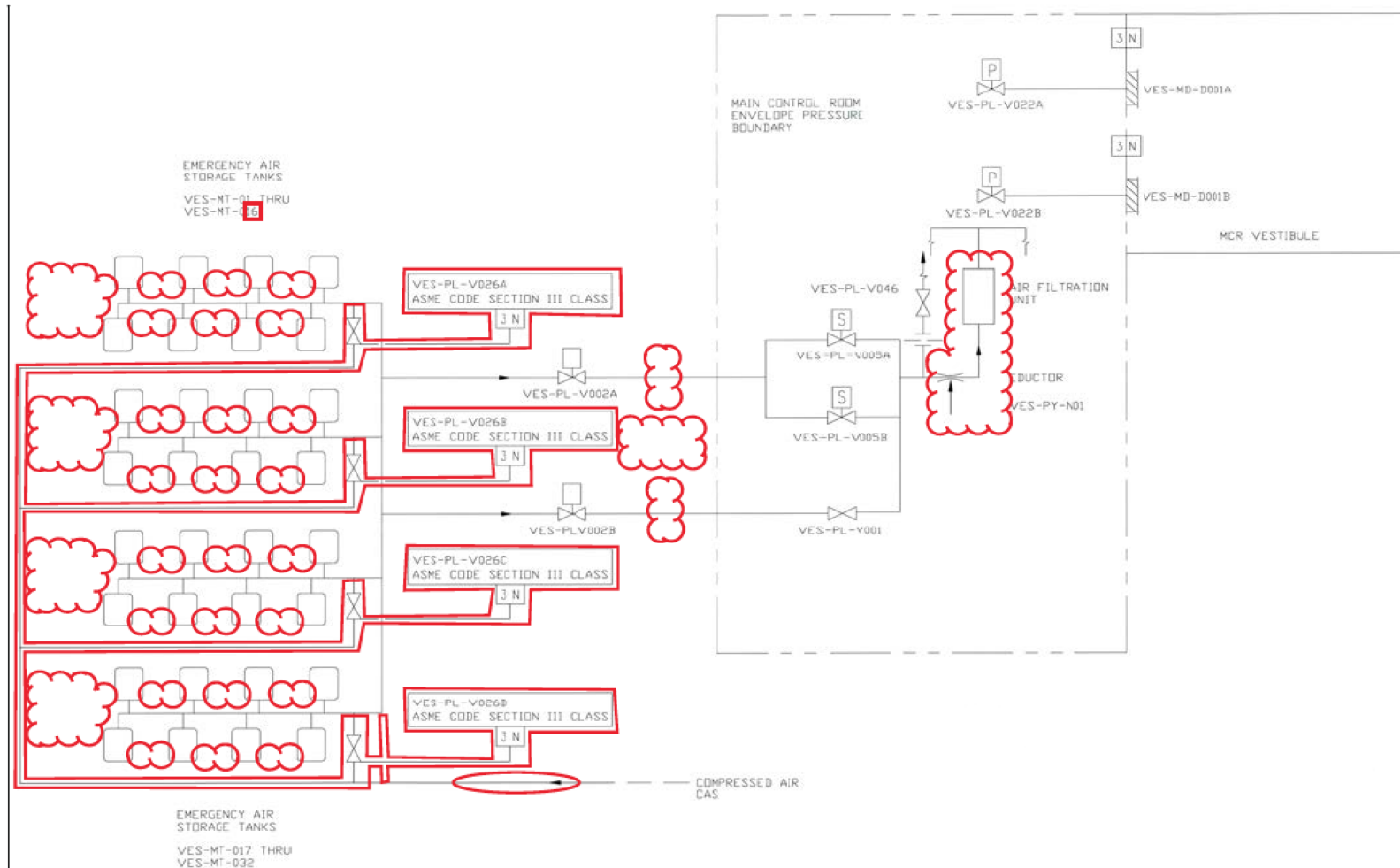
**Insertions Denoted by Blue Underline and Deletions by Red Strikethrough**

**(Note that the sheet numbers and the total number of sheets for the marked-up Tables provided in this Enclosure may be changed by the incorporation of this and other departures. These changes are considered editorial and do not require evaluation in this submittal.)**

**(This Enclosure contains 5 pages, including this cover)**

**COL Appendix C Figure 2.2.5-1 and corresponding Plant-Specific Tier 1 Figure 2.2.5-1, Main Control Room  
Emergency Habitability System**

Revise Figure as shown below:



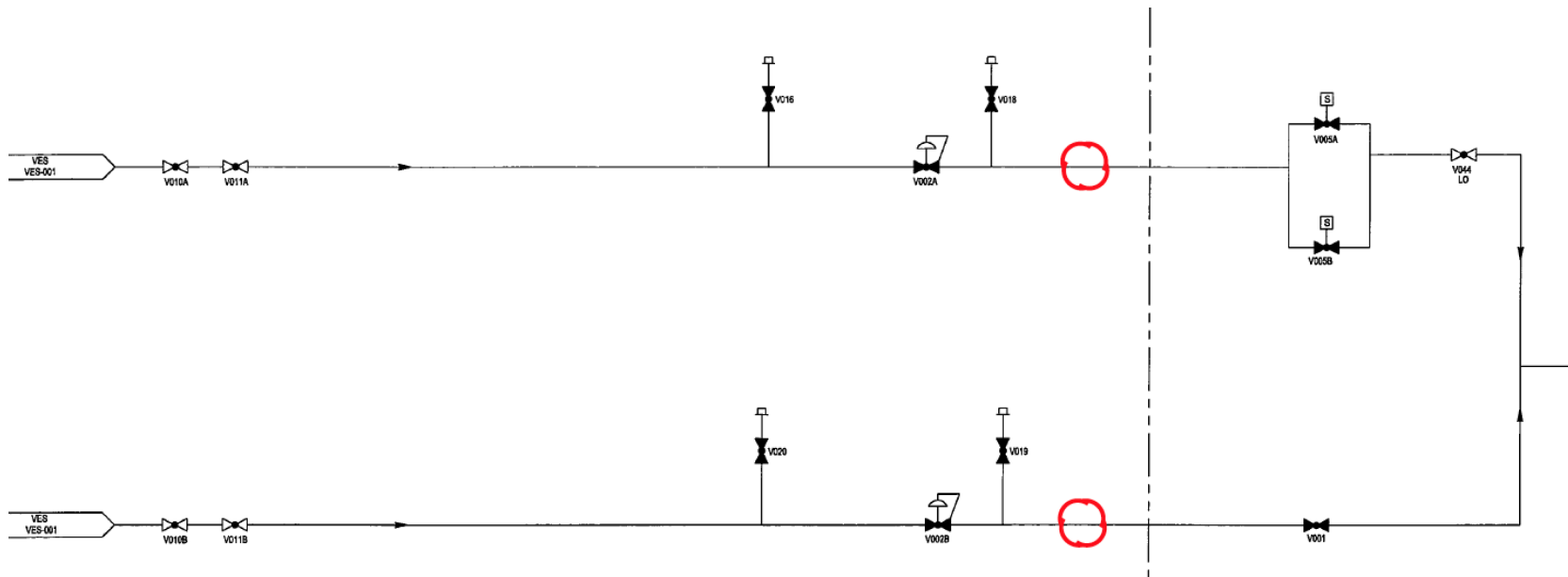
**UFSAR Table 3I.6-3, (Sheet 28 of 32), List Of AP1000 Safety-Related Electrical and Mechanical Equipment Not High Frequency Sensitive**

Revise table as shown below:

| Table 3I.6-3 (Sheet 28 of 32)          |                        |              |
|----------------------------------------|------------------------|--------------|
| Description                            | AP1000<br>Tag Number   | Comment      |
| ...                                    | ...                    | ...          |
| Air Tank Isolation Valve B             | VES-PL-V025B           | 2            |
| <del>Refill Line Isolation Valve</del> | <del>VES-PL-V038</del> | <del>2</del> |
| DP Instrument Line Isolation Valve A   | VES-PL-V043A           | 2            |
| ...                                    | ...                    | ...          |
|                                        |                        |              |

**UFSAR Figure 6.4-2 (Sheet 2 of 2) Simplified Main Control Room Habitability System Piping and Instrumentation Diagram (REF) VES 002**

Revise Figure as shown below:



**UFSAR Figure 6.4-2 (Sheet 2 of 2) Simplified Main Control Room Habitability  
System Piping and Instrumentation Diagram (REF) VES 002**

Revise Figure as shown below:

**MAIN CONTROL ROOM**

