

Bellefonte Nuclear Plant Units 3 & 4

COL Application

Part 7

Departures and Exemption Requests

Revision 3

**Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions**

A. STD and BLN Departures

This Departure Report includes deviations in the Bellefonte COLA FSAR from the information in the applicable Design Control Document (DCD), pursuant to 10 CFR Part 52, Appendix D, section VIII and section X.B.1.

The following Departures are described and evaluated in detail in this report.

<u>Departure Number</u>	<u>Description</u>
STD DEP 1.1-1	Administrative departure for organization and numbering for the FSAR sections
BLN DEP 2.3-1	EAB atmospheric dispersion value
BLN DEP 8.2-1	Unit 3 transformer area arrangement
BLN DEP 9.2-1	Service Water System (SWS) blowdown flow path
BLN DEP 18.8-1	Emergency Response Facility locations

A.1 Departures That Can Be Implemented Without Prior NRC Approval

<u>Departure Number</u>	<u>Description</u>
STD DEP 1.1-1	Administrative departure for organization and numbering for the FSAR sections
BLN DEP 8.2-1	Unit 3 transformer area arrangement
BLN DEP 9.2-1	Service Water System (SWS) blowdown flow path

Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions

Departure Number: STD DEP 1.1-1

Affected DCD/FSAR Sections: 2.1.1, 2.1.4, 2.2.1, 2.2.4, 2.4.1, 2.4.15, 2.5, 2.5.6, 9.2.11, 9.2.12, 9.2.13, 9.5.1.8, 9.5.1.9, 13.1, 13.5, 13.7, 17.5, 17.6, 17.7, 17.8 (Note the affected sections may vary in subsequent COL applications, but the departure is standard.)

Summary of Departure:

This FSAR generally follows the AP1000 DCD organization and numbering. Some organization and numbering differences are adopted where necessary to include additional material, such as additional content identified in Regulatory Guide 1.206.

Scope/Extent of Departure:

The renumbered sections associated with this Departure are identified in the FSAR (at the sections identified above).

Departure Justification:

An administrative departure is established to identify instances where the renumbering of FSAR sections is necessary to effectively include content consistent with Regulatory Guide 1.206, as well as NUREG-0800, Standard Review Plan.

Departure Evaluation:

This Departure is an administrative change that affects only section numbering of the indicated FSAR sections. Accordingly, it does not:

1. Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the plant-specific DCD;
2. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety and previously evaluated in the plant-specific DCD;
3. Result in more than a minimal increase in the consequences of an accident previously evaluated in the plant-specific DCD;
4. Result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD;
5. Create a possibility for an accident of a different type than any evaluated previously in the plant-specific DCD;
6. Create a possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously in the plant-specific DCD;
7. Result in a design basis limit for a fission product barrier as described in the plant-specific DCD being exceeded or altered; or
8. Result in a departure from a method of evaluation described in the plant-specific DCD used in establishing the design bases or in the safety analyses.

This Departure does not affect resolution of a severe accident issue identified in the plant-specific DCD.

Therefore, this Departure has no safety significance.

**Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions**

Departure Number: STD DEP 1.1-1 (continued)

NRC Approval Requirement:

This departure does not require NRC approval pursuant to 10 CFR Part 52, Appendix D, Section VIII.B.5.”

Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions

Departure Number: BLN DEP 8.2-1

Affected DCD/FSAR Sections: DCD Figure 1.2-2, Figure 12.3-1 (Sheet 2 of 16), Figure 12.3-2 (Sheet 2 of 15), Figure 12.3-3 (Sheet 2 of 16) / FSAR Figure 1.1-202, Figure 8.2-202

Summary of Departure:

In Revision 17 of the DCD the transformer area was rearranged to simplify the design. The transformer area contains the main stepup transformers, the unit auxiliary transformers, and the reserve auxiliary transformers. This rearrangement is implemented for BLN Unit 4; however, it is not implemented for BLN Unit 3. BLN Unit 3 retains the transformer area arrangement as presented in Revision 16 of the DCD. Retention of the transformer area arrangement as presented in Revision 16 of the DCD is a departure for BLN Unit 3 only.

Scope/Extent of Departure:

This Departure for Unit 3 is identified in the FSAR Section 1.2, as shown on Figure 1.1-202, and FSAR Section 8.2 as shown on Figure 8.2-201.

Departure Justification:

The DCD Revision 17 transformer area arrangement eliminates the need to cross the incoming and outgoing power lines between Unit 4 and the switchyard. However, the DCD Revision 17 transformer area arrangement for Unit 3 would result in the need to cross the incoming and outgoing power lines between Unit 3 and the switchyard. The DCD Revision 17 transformer area arrangement is not included in the BLN Unit 3 design. BLN Unit 3 design retains the transformer area arrangement presented in Revision 16 of the DCD. With these transformer area arrangements, the layout of the incoming and outgoing power lines between the switchyard and the units does not require crossing of the lines for either unit.

Departure Evaluation:

This Departure is associated with a non-safety-related system. It results in a suitable configuration for the power lines between the switchyard and the unit transformers and does not adversely impact the capabilities of the power system. Accordingly, it does not:

1. Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the plant-specific DCD;
2. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety and previously evaluated in the plant-specific DCD;
3. Result in more than a minimal increase in the consequences of an accident previously evaluated in the plant-specific DCD;
4. Result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD;
5. Create a possibility for an accident of a different type than any evaluated previously in the plant-specific DCD;
6. Create a possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously in the plant-specific DCD;
7. Result in a design basis limit for a fission product barrier as described in the plant-specific DCD being exceeded or altered; or
8. Result in a departure from a method of evaluation described in the plant-specific DCD used in establishing the design bases or in the safety analyses.

**Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions**

Departure Number: BLN DEP 8.2-1 (continued)

This Departure does not affect resolution of a severe accident issue identified in the plant-specific DCD.

Therefore, this Departure has no safety significance.

NRC Approval Requirement:

This departure does not require NRC approval pursuant to 10 CFR Part 52, Appendix D, Section VIII.B.5.

Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions

Departure Number: BLN DEP 9.2-1

Affected DCD/FSAR Sections: 9.2.1.2.1

Summary of Departure:

In the DCD, a small portion of the service water system (SWS) flow is normally diverted to the circulating water system (CWS). This blowdown is used to control levels of solids concentration in the SWS. Alternatively, the blowdown can be diverted to the waste water system. At Bellefonte, this blowdown is directed exclusively to the waste water system.

Scope/Extent of Departure:

This Departure is identified in the FSAR section 9.2.

Departure Justification:

The site-specific design of the service water system (SWS) will not blowdown to the circulating water system (CWS) as described in the DCD because of the long distance between the SWS and the CWS cooling towers. This change is acceptable because it meets the design objective of providing a blowdown path for the SWS. The change does not adversely affect any safety-related system, nor does it conflict with applicable regulatory guidance.

Departure Evaluation:

This Departure is associated with a non-safety-related system. It results in a suitable blowdown path for the SWS and does not adversely impact the SWS, CWS, or waste water system. Accordingly, it does not

1. Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the plant-specific DCD;
2. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety and previously evaluated in the plant-specific DCD;
3. Result in more than a minimal increase in the consequences of an accident previously evaluated in the plant-specific DCD;
4. Result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD;
5. Create a possibility for an accident of a different type than any evaluated previously in the plant-specific DCD;
6. Create a possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously in the plant-specific DCD;
7. Result in a design basis limit for a fission product barrier as described in the plant-specific DCD being exceeded or altered; or
8. Result in a departure from a method of evaluation described in the plant-specific DCD used in establishing the design bases or in the safety analyses.

This Departure does not affect resolution of a severe accident issue identified in the plant-specific DCD.

Therefore, this Departure has no safety significance.

**Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions**

Departure Number: BLN DEP 9.2-1 (continued)

NRC Approval Requirement:

This departure does not require NRC approval pursuant to 10 CFR Part 52, Appendix D, Section VIII.B.5.

**Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions**

A.2. Departures That Require NRC Approval Prior to Implementation

<u>Departure Number</u>	<u>Description</u>
BLN DEP 2.3-1	EAB atmospheric dispersion value
BLN DEP 18.8-1	Emergency Response Facility Locations

Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions

Departure Number: BLN DEP 2.3-1

Affected DCD/FSAR Sections: 2.0, 6.2.5, 6.5, 14.3, 15.0, 15.6.5, 15A.3, 16.1, and the Technical Specifications and associated Bases

Summary of Departure:

Revision 17 of the AP1000 DCD changed the exclusion area boundary (EAB) atmospheric dispersion (χ/Q) value to $5.1E-01 \text{ sec/m}^3$. The corresponding site characteristic atmospheric dispersion (χ/Q) value is $5.85E-04 \text{ sec/m}^3$. Since the DCD generic site parameter at the EAB does not bound the site characteristic, a plant-specific dose consequence analysis is necessary to determine the doses at the EAB.

Extent/Scope of Departure:

Key site parameters that are specified for the design of safety-related aspects of structures, systems, and components for the AP1000 are provided in Table 2.0-201. An actual site is acceptable if its site characteristics fall within the AP1000 plant site design parameters. Contrary to this requirement, the site characteristic exclusion area boundary (EAB) atmospheric dispersion (χ/Q) value for the BLN Units 3&4 exceeds the AP1000 site parameter. This Departure is identified in the FSAR Section 2.0, Chapter 6, Chapter 14, Chapter 15, and Chapter 16 and the associated plant specific Technical Specifications and Bases.

Departure Justification:

This departure is associated with the dose consequences of a design basis loss of coolant accident (LOCA). Because the BLN atmospheric dispersion (χ/Q) value is not bounded by the corresponding DCD site parameter, the LOCA EAB dose reported in the DCD is not applicable. Consequently, a site-specific LOCA dose analysis was performed to determine the EAB dose applicable to BLN. This site specific analysis also removed some conservatism in the core source term and the containment leak rate. The conservatisms removed from the core source term were: 1) reduction of the calorimetric power uncertainty to the AP1000 certified value of 1% (from 2% previously used in the dose analysis) and 2) removal of the excess conservatism for fuel cycle variations resulting in an approximate 4% reduction in the core source term. The containment leak rate used in the LOCA analysis was reduced from 0.10 wt%/day to 0.09 wt%/day.

These reductions in excess conservatisms are justified as follows:

1. Core source term.
 - a. Power uncertainty - This reduction in conservatism is acceptable because a 1% power uncertainty is included in the certified design. Site specific calculations have been completed to document the core source term with this power uncertainty. Utilizing this 1% power uncertainty margin is allowable and acceptable as documented in the certified design. The reduction in power uncertainty in the site specific calculation does not reduce the calculated minimum allowable margin of safety to an unacceptable level.

Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions

- b. Core design - A 4% conservatism was originally included in core source term calculations to provide margin for uncertainties in the predicted core designs. A site specific core source term calculation removing this conservatism has been completed for both the first three core loadings and an equilibrium core cycle that will be utilized for BLN Units 3&4. Refining the site specific core source terms based on a more detailed evaluation of the first three core loadings and an equilibrium core cycle does not reduce the calculated minimum allowable margin of safety assumed in the LOCA dose analysis used in the BLN 3&4 accident analysis to an unacceptable level .
2. Containment leak rate reduction assumption. The AP1000 utilizes a steel containment vessel design with a concrete shield building. The AP1000 has significantly fewer (approximately 60 % less than current Westinghouse 4-Loop PWR) mechanical and electrical penetrations than operating plants. This reduction in containment leak rate will be reflected in the BLN technical specifications. The overall allowable leakage rate requirements are based on maintaining the dose consequences of a LOCA below the regulatory limit. 10CFR Part 50, Appendix J, and NEI 94-01, "Industry Guideline for Implementing Performance-Based Option of 10CFR50 Appendix J" require the allowable Type A limits and cumulative Type B and C limits to be measured and monitored. This allows for appropriate corrective actions to be taken when the individual or cumulative leakages are approaching Administrative Limits to prevent exceeding the limits in the Site Specific Technical Specifications. The lower assumed and licensed Containment Leak Rate used in the BLN site-specific EAB LOCA dose analysis does not represent a reduction in the margin of safety assumed in the LOCA analysis.

The resulting post-LOCA EAB dose determined in the site-specific dose analysis is 23.8 rem TEDE which meets dose guideline of 25 rem TEDE given in 10 CFR 50.34. Therefore, this change is acceptable.

Departure Evaluation:

This departure and the associated removal of conservatisms in the core source term and containment leak rate do not:

1. Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the plant-specific DCD;
2. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety and previously evaluated in the plant-specific DCD;
3. Result in more than a minimal increase in the consequences of an accident previously evaluated in the plant-specific DCD;
4. Result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD;

Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions

5. Create a possibility for an accident of a different type than any evaluated previously in the plant-specific DCD;
6. Create a possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously in the plant-specific DCD;
7. Result in a design basis limit for a fission product barrier as described in the plant specific DCD being exceeded or altered; or
8. Result in a departure from a method of evaluation described in the plant-specific DCD used in establishing the design bases or in the safety analyses.

This departure does not affect resolution of a severe accident issue identified in the plant specific DCD. Therefore, this departure has no safety significance.

Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions

Departure Number: BLN DEP 18.8-1

Affected DCD/FSAR Sections: 18.8.3.5, 18.8.3.6, 12.5.2.2, 12.3, 9A, 1.2

Summary of Departure:

At Bellefonte, the Technical Support Center (TSC) is not located in the control support (CSA) as identified in DCD Subsection 18.8.3.5; the TSC location is as described in the Emergency Plan. Additionally, the Operations Support Center (OSC) is also being moved from the location identified in DCD Subsections 18.8.3.6 and 12.5.2.2 and as identified on DCD Figure 1.2-18; the OSC location is as described in the Emergency Plan.

Scope/Extent of Departure:

This departure is identified in FSAR Subsections 12.5.2.2, 18.8.3.5, and 18.8.3.6. Additionally, this departure is identified on FSAR Figures 1.2-201, 9A-201, 12.3-201, 12.3-202, and 12.3-203. These figures replace DCD Figures 1.2-18, 9A-3 (Sheet 1 of 3), 12.3-1 (Sheet 11 of 16), 12.3-2 (Sheet 11 of 15), and 12.3-3 (Sheet 11 of 16).

Departure Justification:

The referenced DCD states "The TSC is located in the control support area (CSA)." This is not the case for BLN. The TSC location is moved to a central location such that a single TSC can serve both BLN Units 3 and 4 as identified in the Emergency Plan. The referenced DCD also states "The ALARA briefing and operational support center is located off the main corridor immediately beyond the main entry to the annex building" and indicates that the OSC location is identified on Figure 1.2-18. However, the OSC is being moved to the control support area vacated by the move of the TSC in order to better utilize the now available space.

Departure Evaluation:

This Departure is for a non-safety-related system, and the alternate locations of the TSC and OSC meet applicable requirements. Relocating the TSC and OSC does not adversely affect their function and therefore this Departure does not

1. Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the plant-specific DCD;
2. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety and previously evaluated in the plant-specific DCD;
3. Result in more than a minimal increase in the consequences of an accident previously evaluated in the plant-specific DCD;
4. Result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD;
5. Create a possibility for an accident of a different type than any evaluated previously in the plant-specific DCD;
6. Create a possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously in the plant-specific DCD;
7. Result in a design basis limit for a fission product barrier as described in the plant-specific DCD being exceeded or altered; or
8. Result in a departure from a method of evaluation described in the plant-specific DCD used in establishing the design bases or in the safety analyses.

**Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions**

Departure Number: BLN DEP 18.8-1 (continued)

This Departure does not affect resolution of a severe accident issue identified in the plant-specific DCD.

Therefore, this Departure has no safety significance.

NRC Approval Requirement:

This departure requires NRC approval pursuant to 10 CFR Part 52, Appendix D, Section VIII.B.6.

**Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions**

B. BLN Exemption Requests

TVA requests the following exemptions related to:

- 1) Not used, and
- 2) Combined License Application Organization and Numbering
- 3) Containment leak rate technical specification, and
- 4) AP1000 DCD Tier 1 EAB atmospheric dispersion site parameter.

Discussion and justifications for each of these requests is provided in the following pages.

**Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions**

1) Fitness for Duty Program Description (10 CFR Part 26)

Withdrawn – this exemption is no longer required.

Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions

2) Combined License Application Organization and Numbering (Part 52, Appendix D)

Applicable Regulation(s): 10 CFR Part 52, Appendix D, Section IV.A.2.a

Specific wording from which exemption is requested:

IV. Additional Requirements and Restrictions

A. An applicant for a combined license that wishes to reference this appendix shall, in addition to complying with the requirements of 10 CFR 52.77, 52.78, and 52.79, comply with the following requirements:

1. Incorporate by reference, as part of its application, this appendix.

2. Include, as part of its application:

a. A plant-specific DCD containing the same type of information and using the same organization and numbering as the generic DCD for the AP1000 design, as modified and supplemented by the applicant's exemptions and departures;

Pursuant to 10 CFR 52.7 and 52.93 (as amended and promulgated effective Sept. 27, 2007), the Tennessee Valley Authority (TVA) requests an exemption from the requirement of 10 CFR 52, Appendix D, Section IV.A.2.a, to include a plant-specific DCD "containing the same type of information and using the same organization and numbering as the generic DCD for the AP1000 design...." While the Bellefonte Nuclear Plant (BLN) plant-specific DCD (i.e., the final safety analysis report) does contain the same type of information and generally follows the same organization and numbering as the generic DCD for the AP1000 design, some limited subsections of the FSAR (as identified in the departures report as item STD DEP 1.1-1) do not follow the "same organization and numbering as the generic DCD for the AP1000 design." TVA proposes to provide the plant-specific DCD (i.e., FSAR) with some administrative revisions to the organization and numbering of the AP1000 DCD.

Discussion:

The AP1000 Design Control Document (DCD) generally has an organization and numbering format that provides text by subject in general conformance with the Standard Review Plan (SRP) in effect at the time the DCD was written. Generally, Combined License information items are included at the end of a chapter, section, or subsection. In some cases, such as DCD Sections 2.1 and 2.2, the section may consist solely of a short description of topic and the Combined License information item subsection. This organization and numbering does not allow for the detailed discussion of these topics that is to be included in a complete FSAR section. As such, it is necessary to include numerous additional subsections to fully address the topic as identified in the guidance of Regulatory Guide 1.206 and the applicable SRP. In other cases, the organization and numbering must be modified slightly to allow for inclusion of plant-specific discussions within the appropriate section of the FSAR, such as including an additional water system description in Section 9.2. In these cases, the Combined License information item discussions are retained at the end of the DCD corresponding chapter, section, or subsection (to maintain the organization), but the numbering may be different.

These differences are well identified in the FSAR as STD DEP 1.1-1 at each location where the departure is taken and are considered to be purely administrative to support a logical construction of the document. Where the departure from the DCD organization and numbering is taken, the revised organization and numbering generally follows the guidance provided in Regulatory Guide 1.206 and the applicable SRP. As such, there are no significant departures from the expected organization and numbering of a typical FSAR, and the information is readily identifiable to facilitate NRC review.

In view of the above, we believe that it would be less efficient for both TVA and the NRC to comply with the portion of the regulation of 10 CFR Part 52, Appendix D, Section IV.A.2.a, that requires strict adherence to the "same organization and numbering as the generic DCD for the AP1000 design."

Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions

Accordingly, TVA hereby submits a request for an exemption from the regulations of 10 CFR 52, Appendix D, Section IV.A.2.a, pursuant to 10 CFR 52.7, "Specific Exemptions," and 10 CFR 52.93, "Exemptions and Variances."

Granting this request, which is authorized by law, would facilitate the NRC review of the BLN COL application. For this and other reasons, granting this exemption request will not present an undue risk to the public health and safety, and is consistent with the common defense and security.

Moreover, compliance with the current rule would cause undue hardship for TVA and would also be inefficient and burdensome for the NRC staff. That approach would require TVA to prepare, and NRC to review, information with an organization and numbering that is unfamiliar and inconsistent with the current guidance for format and content of a combined license application.

Additionally, compliance with Appendix D, Section IV.A.2.a is not necessary to achieve its underlying purpose. Most of the FSAR conforms to the organization and numbering of the referenced DCD. The exceptions are limited and do not lead to confusion regarding the incorporation of the DCD into the FSAR.

For these reasons, TVA requests approval of the requested exemption from current regulations of 10 CFR 52, Appendix D, Section IV.A.2.a, as identified herein and in the application departures report.

Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions

3) Containment leak rate technical specification

Applicable Regulation(s): 10 CFR 52, Appendix D, Subsection III.B

Specific wording from which an exemption is requested:

B. An applicant or licensee referencing this appendix, in accordance with Section IV of this appendix, shall incorporate by reference and comply with the requirements of this appendix, including Tier 1, Tier 2, (including the investment protection short-term availability controls in Section 16.3 of the DCD), and the Generic TS except as otherwise provided in this appendix.

Pursuant to 10 CFR 52.7 and 52.93 (as amended and promulgated effective Sept. 27, 2007), the Tennessee Valley Authority (TVA) requests an exemption from the requirement of 10 CFR 52, Appendix D, Subsection III.B to comply with the requirements of the Generic TS, specifically Generic TS 5.5.8.c (as provided in the AP1000 DCD, Chapter 16), in its application for a combined operating license for the Bellefonte Nuclear Plant (BLN). TVA proposes to provide a more stringent containment leakage rate specification in lieu of the Generic TS.

Discussion:

The allowable leakage rate given in the BLN Technical specifications is 0.09% per day as used in the safety analysis. This leakage rate, used in the evaluation of offsite doses resulting from accidents, is defined in 10 CFR 50, Appendix J, as L_a : the maximum allowable containment leakage rate at the calculated peak containment internal pressure (P_a) resulting from the limiting DBA. The allowable leakage rate represented by L_a forms the basis for the acceptance criteria imposed on containment leakage rate testing. L_a is assumed to be 0.09% per day in the safety analysis. This leakage rate is acceptable because it mitigates the consequences of a design basis accident such that the dose requirements of 10 CFR Part 50.34 (25 rem TEDE) are met. The containment Technical Specification 3.6, along with this leakage rate, satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

This exemption request was evaluated per Section VIII.C.4 of the design certification rule which requires that 1) the change will not result in a significant decrease in the level of safety otherwise provided by the design; 2) the exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security; 3) special circumstances are present as specified in 10 CFR 50.12(a)(2); and 4) the special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption. As shown below, each of these four criteria are satisfied.

- (1) As discussed above, the change does not have an adverse impact and therefore will not result in a significant decrease in the level of safety otherwise provided by the design.
- (2) The exemption is not inconsistent with the Atomic Energy Act or any other statute and therefore is authorized by law. As discussed above, the change does not have an adverse impact and therefore will not present an undue risk to the public health and safety. The change does not relate to security and does not otherwise pertain to the common defense and security.
- (3) Special circumstances are present as specified in 10 CFR 50.12(a)(2). Specifically, special circumstance (ii) is present, since application of Section 52.79(d)(1) and the AP1000 standard containment leakage rate in the DCD is not necessary to achieve the underlying purpose of the rules. The analysis described above shows that the reduced containment leakage rate does not affect the design.
- (4) The special circumstances outweigh any decrease in safety that may result from the reduction in standardization (due to the low frequency exceedance) caused by the exemption.

**Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions**

Specifically, the change does not have an adverse impact and does not affect the configuration of the plant or the manner in which the plant is operated.

As demonstrated above, this exemption request complies with the requirements in Section VIII.C.4 of the design certification rule for the AP1000.

Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions

4) AP1000 DCD Tier 1 EAB atmospheric dispersion value

Applicable Regulation(s): 10 CFR 52, Appendix D, Subsection III.B

Specific wording from which an exemption is requested:

B. An applicant or licensee referencing this appendix, in accordance with Section IV of this appendix, shall incorporate by reference and comply with the requirements of this appendix, including Tier 1, Tier 2, (including the investment protection short-term availability controls in Section 16.3 of the DCD), and the Generic TS except as otherwise provided in this appendix.

Pursuant to 10 CFR 52.7 and 52.93 (as amended and promulgated effective Sept. 27, 2007), the Tennessee Valley Authority (TVA) requests an exemption from the requirement of 10 CFR 52, Appendix D, Subsection III.B to comply with the requirements of the Tier 1 requirement, specifically Tier 1, Table 5.0-1, Site Parameter for the Site (Exclusion Area) Boundary (0-2 hour) atmospheric dispersion factor (as provided in the AP1000 DCD), in its application for a combined operating license for the Bellefonte Nuclear Plant (BLN). TVA proposes to provide a plant-specific dose consequence analysis using the site specific Site (Exclusion Area) Boundary atmospheric dispersion factor.

Discussion:

The AP1000 Tier 1 material in 5.0, Site Parameters, in Table 5.0-1 identifies the key site parameters that are specified for the design of safety-related aspects of structures, systems, and components for the AP1000. An actual site is acceptable if its site characteristics fall within the AP1000 plant site design parameters in Table 5.0-1. The atmospheric dispersion factor (χ/Q) given in Table 5.0-1 is $5.1 \times 10^{-4} \text{ sec/m}^3$. The BLN Units 3&4 site specific atmospheric dispersion factor (χ/Q) factor is $5.85 \times 10^{-4} \text{ sec/m}^3$. This site specific value is acceptable because analyses have demonstrated that the EAB doses resulting from a design basis LOCA are below the requirements of 10 CFR Part 50.34.

This exemption request was evaluated per Section VIII.A.4 of the design certification rule which requires that 1) the change will not result in a significant decrease in the level of safety otherwise provided by the design; 2) the exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security; 3) special circumstances are present as specified in 10 CFR 50.12(a)(2); and 4) the special circumstances outweigh any decrease in safety

- (1) As discussed above, the change does not have an adverse impact and therefore will not result in a significant decrease in the level of safety otherwise provided by the design.
- (2) The exemption is not inconsistent with the Atomic Energy Act or any other statute and therefore is authorized by law. As discussed above, the change does not have an adverse impact and therefore will not present an undue risk to the public health and safety. The change does not relate to security and does not otherwise pertain to the common defense and security.
- (3) Special circumstances are present as specified in 10 CFR 50.12(a)(2). Specifically, special circumstance (ii) is present, since application of Section 52.79(d)(1) and the site parameters in Tier 1 of the DCD is not necessary to achieve the underlying purpose of the rules. The analysis described above shows that the higher site-specific atmospheric dispersion values do not affect the design.
- (4) The special circumstances outweigh any decrease in safety that may result from the reduction in standardization (due to the low frequency exceedance) caused by the exemption. Specifically, the change does not have an adverse impact and does not affect the configuration of the plant or the manner in which the plant is operated.

Bellefonte Nuclear Plant, Units 3 & 4
COL Application
Part 7, Departures and Exemptions

As demonstrated above, this exemption request complies with the requirements in Section VIII.A.4 of the design certification rule for the AP1000.