

RS-05-032

10 CFR 50.90

March 25, 2005

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

Clinton Power Station, Unit 1  
Facility Operating License No. NPF-62  
NRC Docket No. 50-461

Subject: Request for Technical Specification Change to Revise Secondary  
Containment Bypass Leakage Surveillance Requirement

- References:
- (1) Letter from Michael J. Pacilio (AmerGen Energy Company, LLC) to U. S. NRC, "Request for License Amendment Related to Application of Alternative Source Term," dated April 3, 2003
  - (2) Letter from Keith R. Jury (Exelon Generation Company, LLC) to U. S. NRC, "Additional Information Supporting the Request for License Amendment Related to Application of the Alternative Source Term," dated December 23, 2003
  - (3) Letter from Patrick R. Simpson (Exelon Generation Company, LLC) to U. S. NRC, "Request for Exemption from 10 CFR 50 Appendix J in Support of Request for License Amendment Related to Application of the Alternative Source Term," dated July 1, 2004

Pursuant to 10 CFR 50.90, "Application for amendment of license or construction permit," AmerGen Energy Company, LLC (AmerGen) hereby requests an amendment to Appendix A, Technical Specifications (TS), of Facility Operating License No. NPF-62 for Clinton Power Station (CPS), Unit 1. The proposed change revises TS Surveillance Requirement (SR) 3.6.1.3.8 to add a note excluding leakage through primary containment penetrations 1MC-101 and 1MC-102 from the secondary containment bypass leakage total specified in the SR.

In Reference 1, AmerGen requested a change to the TS to support application of an alternative source term (AST) methodology in accordance with 10 CFR 50.67, "Accident source term," with the exception that Technical Information Document (TID) 14844, "Calculation of Distance Factors for Power and Test Reactor Sites," will continue to be

used as the radiation dose basis for equipment qualification. AmerGen had indicated in Reference 1 that the dose consequences from leakage through the primary containment purge lines had been analyzed based on an assumed leakage through those lines. Since there are separate TS limits on these leak paths, and since dose consequences were evaluated separately, the leakage through the primary containment purge lines no longer needed to be considered in determining compliance with the primary containment leakage limit ( $L_a$ ) or with the secondary containment bypass leakage limit ( $0.08*L_a$ ).

In response to a request for additional information (Reference 2), it was determined that this constituted an exception to the requirements of 10 CFR 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," and therefore AmerGen submitted an exemption request in Reference 3. Subsequent to submittal of Reference 3, the NRC indicated that an Appendix J exemption request would not be an acceptable approach for resolution of this issue. Therefore, AmerGen has decided to submit an amendment request to revise the secondary containment bypass leakage SR.

Revising the secondary containment bypass leakage SR will allow CPS to utilize the flexibility provided by the assumptions used in the AST analysis (i.e., the increased leakage through the primary containment purge lines and the separate dose analysis for this leakage) and still remain in compliance with the requirements of 10 CFR 50, Appendix J (i.e., no need for an exemption to Appendix J). Therefore, this proposed change acknowledges the separate dose analysis performed for the primary containment purge lines as provided in Reference 1 while ensuring the secondary containment bypass leakage rate is measured and verified against the required limit as specified in the Primary Containment Leakage Rate Testing Program. Based on the related issues between the AST analyses and this proposed amendment request, approval of this proposed change is contingent on the approval of the CPS application of the AST in Reference 1.

In light of the above, AmerGen formally requests that the proposed 10 CFR 50, Appendix J exemption request provided in Reference 3 be withdrawn.

Attachment 1 to this letter provides the evaluation of the proposed change to TS SR 3.6.1.3.8 for the revision to the secondary containment bypass leakage rate testing. Attachments 2 and 3 provide a copy of the marked up and typed TS page, respectively. Attachment 4 contains copies of the marked up TS Bases pages provided for information only.

AmerGen is requesting approval of this change by December 31, 2005 with implementation within 60 days of issuance of the amendment. Approval by this date will allow sufficient time to revise the Primary Containment Leakage Rate Testing Program prior to the start of the next refueling outage in February 2006.

There are no regulatory commitments contained in this letter.

This proposed change has been reviewed by the CPS Plant Operations Review Committee and approved by the Nuclear Safety Review Board in accordance with the requirements of the Quality Assurance Program.

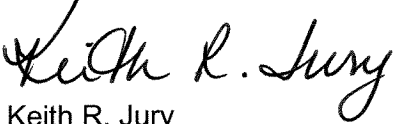
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AmerGen is notifying the State of Illinois of this application for amendment by transmitting a copy of this letter and its attachments to the designated State Official.

Should you have any questions related to this information, please contact Mr. Timothy A. Byam at (630) 657-2804.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 25<sup>th</sup> day of March 2005.

Respectfully,



Keith R. Jury  
Director – Licensing and Regulatory Affairs  
AmerGen Energy Company, LLC

Attachments:

1. Evaluation of Proposed Changes
2. Markup of Proposed Technical Specification Page
3. Retyped Technical Specification Page
4. Markup of Proposed Technical Specification Bases Page

cc: Regional Administrator – NRC Region III  
NRC Senior Resident Inspector – Clinton Power Station  
Illinois Emergency Management Agency – Division of Nuclear Safety

**ATTACHMENT 1**  
**Evaluation of Proposed Changes**  
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**1.0 DESCRIPTION**

This is a request from AmerGen Energy Company, LLC (AmerGen) to amend Appendix A, Technical Specifications (TS), of Facility Operating License No. NPF-62 for Clinton Power Station (CPS). The proposed change revises TS Surveillance Requirement (SR) 3.6.1.3.8 to add a note excluding leakage through primary containment penetrations 1MC-101 and 1MC-102 from the secondary containment bypass leakage total specified in the SR.

As described in Reference 1, AmerGen has performed a dose consequences analysis for leakage through the primary containment purge lines. The analysis assumed a leak rate of  $\leq 0.02 L_a$  for each penetration. Since a separate dose analysis had been performed for the primary containment purge lines, Reference 1 states that these penetrations no longer need to be considered in determining compliance with the secondary containment bypass leakage or the primary containment leakage rate limits. Further evaluation determined that compliance with the requirements of 10 CFR 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," requires consideration of these penetrations in the secondary containment bypass leakage and primary containment leakage rates. Therefore, it was determined that this change be proposed.

Implementation of this proposed change will provide operational flexibility by allowing CPS to utilize the additional margin to the regulatory dose limits provided by the implementation of alternative source terms (AST).

**2.0 PROPOSED CHANGES**

The proposed change revises the Note to TS SR 3.6.1.3.8 to read as follows.

"1. Leakage through penetrations 1MC-101 and 1MC-102 is excluded.

2. Only required to be met in MODES 1, 2, and 3."

In addition, the TS Bases will be revised to document the basis for the proposed Note. The Bases changes will be implemented in accordance with the CPS TS Bases Control Program defined in TS 5.5.11.

**3.0 BACKGROUND**

According to 10 CFR 50, Appendix J, the purpose of the leak test requirements is to ensure the following.

- (a) Leakage through the primary reactor containment or systems and components penetrating the containment does not exceed allowable leakage rates specified in the TS.
- (b) Integrity of the containment structure is maintained during its service life.

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In accordance with 10 CFR 50, Appendix J, Option B, paragraph III.B, performance of Type B and Type C containment leakage tests (i.e., local leak rate tests) are required. The Type B pneumatic tests detect and measure local leakage rates across pressure retaining, leakage-limiting boundaries while Type C pneumatic tests measure containment isolation valve leakage rates. These tests are required to be performed prior to initial criticality and periodically thereafter at intervals based on the safety significance and historical performance of each boundary and isolation valve. The intent of these tests is to ensure the integrity of the overall containment system as a barrier to fission product release to reduce the risk from reactor accidents. 10 CFR 50, Appendix J goes on to require that the tests must demonstrate that the sum of the leakage rates at accident pressure of Type B tests, and pathway leakage rates from Type C tests, is less than the performance criterion (i.e., maximum allowable primary containment leakage rate,  $L_a$ ) with margin, as specified in the TS.

The CPS primary containment purge lines (i.e., penetrations 1MC-101 and 1MC-102) are currently subject to leakage rate testing under TS SR 3.6.1.3.5. As stated in the Bases for SR 3.6.1.3.5, the current leakage rate acceptance criterion is  $\leq 0.01 L_a$  for each penetration. Historically, the leakage performance of penetrations 1MC-101 and 1MC-102 has been very good. There have been no failures to meet the required leakage limits for several cycles of operation.

However, as part of the AST analysis, the dose consequences from the leakage through the primary containment purge lines have been evaluated based on a leak rate of  $0.02 L_a$  for each penetration. The AST analysis, summarized in Reference 1, demonstrated that the consequences due to a loss of coolant accident (LOCA), including the assumed separate primary containment purge line leak rate and secondary containment bypass leakage, are within regulatory limits and are therefore acceptable. As a result, Reference 1 proposes a revised acceptance criterion of  $\leq 0.02 L_a$  as identified in the Bases for SR 3.6.1.3.5. Reference 1 goes on to state that since a separate dose analysis has been performed for the primary containment purge lines, these penetrations no longer need to be considered in determining compliance with the secondary containment bypass leakage path SR 3.6.1.3.8 limit of  $\leq 0.08 L_a$ . However, rather than take an exemption to the requirements of 10 CFR 50, Appendix J, AmerGen is requesting a change to the note for SR 3.6.1.3.8 to take credit for the additional leakage assumed in the AST analysis.

#### 4.0 TECHNICAL ANALYSIS

As discussed above, the dose consequences from leakage through the primary containment purge lines have been evaluated as part of the AST analysis. The analysis was based on a leak rate of  $0.02 L_a$  for each purge penetration. The AST analysis demonstrated that the consequences due to a LOCA, including the assumed separate primary containment purge line leak rate and secondary containment bypass leakage, are within regulatory limits and are therefore acceptable.

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The proposed change to SR 3.6.1.3.8 does not change the requirement to perform the ILRT per TS 5.5.13, "Primary Containment Leakage Rate Testing Program." The leakage through the primary containment purge lines will continue to be included in the containment leakage measured during the ILRT. The proposed change does not revise the acceptance criterion for the ILRT. CPS will also continue to test and evaluate the leakage through of the primary containment purge lines (i.e., penetrations 1MC-101 and 1MC-102) by implementation of TS SR 3.6.1.3.5. The results of the Type C testing on 1MC-101 and 1MC-102 will be evaluated against the specified 0.02  $L_a$  acceptance criterion assumed in the AST analysis. All remaining secondary containment bypass leakage will be evaluated against the 0.08  $L_a$  acceptance criterion specified in SR 3.6.1.3.8. The proposed change does not revise the TS requirement to perform leakage rate testing on the primary containment purge valves with resilient seals. The containment purge penetrations will continue to be leak tested in accordance with a separate TS SR and will be evaluated against specified acceptance criteria based on analysis.

The proposed change to TS SR 3.6.1.3.8 accounts for the revised LOCA analysis taking credit for the AST. The proposed change is based on the increase in the amount of leakage through the containment purge lines assumed in the AST LOCA analysis while also acknowledging the assumed secondary containment bypass leakage. Since the calculated doses remain within the regulatory limits for implementation of AST, then the proposed change is also acceptable.

## 5.0 REGULATORY ANALYSIS

### 5.1 No Significant Hazards Consideration

AmerGen Energy Company (AmerGen), LLC is requesting a revision to the Facility Operating License No. NPF-62 for Clinton Power Station (CPS), Unit 1. The proposed change revises the Note to Technical Specification (TS) Surveillance Requirement (SR) 3.6.1.3.8 to exclude the leakage through the primary containment purge penetrations from the secondary containment bypass leakage based on the assumptions used in the alternative source term (AST) LOCA analysis. Specifically, the AST LOCA analysis assumed an increased leakage through the primary containment purge lines.

AmerGen has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "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 amendment adds a note excluding the leakage through the primary containment purge lines from the secondary containment bypass

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leakage based on separate analysis of these paths using the assumptions in the alternative source term (AST) revision to the loss of coolant accident (LOCA) analysis.

The proposed change does not require modification to the facility. The proposed change in secondary containment bypass leakage does not affect the operation of any facility equipment, the interface between facility systems, or the reliability of any equipment. In addition, secondary containment bypass leakage does not constitute an initiator of any previously evaluated accidents. Therefore, the proposed amendment does not involve a significant increase in the probability of an accident previously evaluated.

The radiological consequences of the LOCA analysis using the primary containment purge line leakage as separate from the secondary containment bypass leakage, has been evaluated as part of the application of AST assumptions. The results conclude that the radiological consequences remain within applicable regulatory limits.

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

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 change does not affect the design, functional performance or operation of the facility. No new equipment is being introduced and installed equipment is not being operated in a new or different manner. Similarly, the proposed change does not affect the design or operation of any structures, systems or components involved in the mitigation of any accidents, nor does it affect the design or operation of any component in the facility such that new equipment failure modes are created. There are no setpoints at which protective or mitigative actions are initiated that are affected by this proposed action. No change is being made to procedures relied upon to respond to an off-normal event.

As such the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

Response: No.

Margins of safety are established in the design of components, the configuration of components to meet certain performance parameters, and in the establishment of setpoints to initiate alarms or actions. The proposed change



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adds a note excluding the leakage through the primary containment purge lines from the secondary containment bypass leakage based on separate analysis of these paths using the assumptions in the AST revision to the LOCA analysis. There is no change in the design of the affected systems, no alteration of the setpoints at which alarms or actions are initiated, and no change in plant configuration from original design.

The margin of safety is considered to be that provided by meeting the applicable regulatory limits. The AST analysis indicates that the doses following a LOCA remain within the regulatory limits, and therefore, there is not a significant reduction in a margin of safety. The AST analysis confirms the change continues to ensure that the doses at the exclusion area and low population zone boundaries, as well as the control room, are within the corresponding regulatory limits.

Therefore, operation of CPS in accordance with the proposed change will not involve a significant reduction in a margin of safety.

### **Conclusion**

Based on the above, AmerGen concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92, "Issuance of amendment," paragraph (c), and, accordingly, a finding of no significant hazards consideration is justified.

#### **5.2 Applicable Regulatory Requirements/Criteria**

The proposed change has been evaluated to determine whether applicable regulations and requirements continue to be met. AmerGen has determined that the proposed change does not require any exemptions or relief from regulatory requirements, other than the Technical Specifications, and does not affect conformance with any General Design Criteria (GDC) differently than described in the CPS Updated Safety Analysis Report (USAR). The proposed change ensures the leakage rate of the secondary containment bypass leakage paths is consistent with the accident analyses as described in the USAR.

CPS continues to be in compliance with the requirements of 10 CFR 50, Appendix J. Primary containment leakage testing will continue to be performed as required and the results will be evaluated to demonstrate that containment leakage does not exceed allowable leakage rates and that the integrity of the containment structure is maintained.

The original AST analysis utilized the assumptions and guidance provided by Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." No exceptions to the RG 1.183 were taken for the LOCA analyses. The LOCA analysis assumption for leakage through the primary containment purge lines that provide the basis for the proposed change is consistent with the RG 1.183 guidance.

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The dose consequences due to a LOCA assuming a 0.02 L<sub>a</sub> leakage through each primary containment purge line complies with the requirements of 10 CFR 50.67, "Accident source term," and the guidance of RG 1.183.

In conclusion, based on the considerations described 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 NRC 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.

This proposed change is based on the analyses completed in support of the CPS proposed application of an AST methodology. As described above, the AST analysis assumed a certain leakage through the primary containment purge lines and included a separate dose analysis for these penetrations. Therefore, review and approval of this proposed change is contingent on the approval of the CPS AST amendment request submitted in Reference 1.

## 6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use a facility component located within the restricted area, as defined in 10 CFR 20, "Standards for Protection Against Radiation," 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 significant increase in the amounts of any effluent 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, "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review," paragraph (c)(9). Therefore, pursuant to 10 CFR 51.22, paragraph (b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

## 7.0 REFERENCES

1. Letter from Michael J. Pacilio (AmerGen Energy Company, LLC) to U. S. NRC, "Request for License Amendment Related to Application of Alternative Source Term," dated April 3, 2003

**ATTACHMENT 2**  
**Markup of Proposed Technical Specification Page**

**CLINTON POWER STATION, UNIT 1**

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REVISED TECHNICAL SPECIFICATION PAGE

3.6-19

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.6.1.3.8 -----NOTE-----  <i>2.</i> Only required to be met in MODES 1, 2, and 3.            -----            Verify the combined leakage rate for all secondary containment bypass leakage paths is <math>\leq 0.08 L_a</math> when pressurized to <math>\geq P_a</math>.</p>	<p>In accordance with the Primary Containment Leakage Rate Testing Program</p>
<p>SR 3.6.1.3.9 -----NOTE-----            Only required to be met in MODES 1, 2, and 3.            -----            Verify total leakage rate through all four main steam lines is <math>\leq 112</math> scfh when tested at <math>\geq P_a</math>.</p>	<p>In accordance with the Primary Containment Leakage Rate Testing Program</p>
<p>SR 3.6.1.3.10 -----NOTE-----            Only required to be met in MODES 1, 2, and 3.            -----            Verify combined leakage rate through hydrostatically tested lines that penetrated the primary containment is within limits.</p>	<p>In accordance with the Primary Containment Leakage Rate Testing Program</p>

(continued)

*1. Leakage through penetrations IMC-101 and IMC-102 is excluded.*

**ATTACHMENT 3**  
**Retyped Technical Specification Page**

**CLINTON POWER STATION, UNIT 1**

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3.6-19

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.6.1.3.8 -----NOTE-----            1. Leakage through penetrations 1MC-101 and 1MC-102 is excluded.             2. Only required to be met in MODES 1, 2, and 3.            -----             Verify the combined leakage rate for all secondary containment bypass leakage paths is <math>\leq 0.08 L_a</math> when pressurized to <math>\geq P_a</math>.</p>	<p>In accordance with the Primary Containment Leakage Rate Testing Program</p>
<p>SR 3.6.1.3.9 -----NOTE-----            Only required to be met in MODES 1, 2, and 3.            -----             Verify total leakage rate through all four main steam line is <math>\leq 112</math> scfh when tested at <math>\geq P_a</math>.</p>	<p>In accordance with the Primary Containment Leakage Rate Testing Program</p>
<p>SR 3.6.1.3.10 -----NOTE-----            Only required to be met in MODES 1, 2, and 3.            -----             Verify combined leakage rate through hydrostatically tested lines that penetrated the primary containment is within limits.</p>	<p>In accordance with the Primary Containment Leakage Rate Testing Program</p>

(continued)

**ATTACHMENT 4**  
**Markup of Proposed Technical Specification Bases Page**

**CLINTON POWER STATION, UNIT 1**

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(For Information Only)

B 3.6-27

BASES

SURVEILLANCE  
REQUIREMENTS

SR 3.6.1.3.8 (continued)

leakage through the isolation device. If both isolation valves in the penetration are closed, the actual leakage rate is the lesser leakage rate of the two valves. This method of quantifying maximum pathway leakage is only to be used for this SR.

The Frequency is consistent with the Primary Containment Leakage Rate Testing Program. This SR simply imposes additional acceptance criteria. Secondary containment bypass leakage is considered part of  $L_a$ .

Insert #1

~~A Note is added~~ to this SR which states that these valves are only required to meet this leakage limit in MODES 1, 2 and 3. In the other conditions, the Reactor Coolant System is not pressurized and specific primary containment leakage limits are not required.

With regard to leakage rate values obtained pursuant to this SR, as read from plant indication instrumentation, the specified limit is considered to be a nominal value and therefore does not require compensation for instrument indication uncertainties (Ref. 9).

SR 3.6.1.3.9

The analyses in References 1, 2, and 3 are based on leakage that is less than the specified leakage rate. Leakage through all four main steamlines must be  $\leq 112$  scfh when tested at  $P_a$  (9.0 psig). The MSIV leakage rate must be verified to be in accordance with the assumptions of References 1, 2, and 3. A Note is added to this SR which states that these valves are only required to meet this leakage limit in MODES 1, 2, and 3. In the other conditions, the Reactor Coolant System is not pressurized and primary containment leakage limits are not required. The Frequency is required by the Primary Containment Leakage Rate Testing Program.

(continued)



Bases Insert #1 (page B 3.6-27):

Note 1 states that primary containment purge penetrations 1MC-101 and 1MC-102 are excluded from this SR verifying the secondary containment bypass leakage. The leakage through these penetrations is measured by SR 3.6.1.3.5 and the consequences associated with this leakage are evaluated separately as part of the LOCA analysis. Therefore, the leakage through the primary containment purge penetrations is excluded from the total secondary containment bypass leakage as verified in this SR. A second Note is provided