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Docket Nos.: 50-424  
50-425

NL-04-0992

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

Vogtle Electric Generating Plant  
Response to Request for Additional Information Regarding  
Request to Revise Technical Specifications and  
Pressure and Temperature Limits Report

Ladies and Gentlemen:

On February 26, 2004, Southern Nuclear Operating Company (SNC) submitted a proposed change to revise the Vogtle Electric Generating Plant (VEGP) Unit 1 and Unit 2 Technical Specifications (TS) related to the Pressure and Temperature Limits Report (PTLR). In conjunction with this change, SNC submitted revised PTLRs for Unit 1 and Unit 2 for review and approval by the NRC. In addition, SNC submitted TS Bases changes associated with the proposed changes to the TS for information.

On March 31 and April 12, 2004, SNC received facsimiles of Requests for Additional Information (RAI) from the staff concerning the VEGP February 26, 2004, submittal containing 3 RAIs and 1 RAI, respectively. The SNC responses to these RAIs are enclosed. As a result of one of these responses, we are revising our submittal of February 26, 2004. This revision does not alter the conclusion that the proposed changes do not involve a significant hazards consideration as defined by 10 CFR 50.92.

As stated in the initial SNC submittal of February 26, 2004, SNC requests approval of the proposed license amendment by February 15, 2005, so that the revised limits can be implemented for the start-up of Unit 1 following the refueling outage, currently scheduled for March 2005. The proposed changes will be implemented within 90 days of issuance of the amendment.

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Mr. J. T. Gasser states he is a Vice President of Southern Nuclear Operating Company, 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.

This letter contains no NRC commitments. If you have any questions, please advise.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY



Jeffrey T. Gasser

Sworn to and subscribed before me this 8<sup>th</sup> day of July, 2004.

  
Notary Public

My commission expires: 11/10/06

JTG/DRG/daj

Enclosures:    Enclosure 1 – Response to Request for Additional Information  
                  Enclosure 2 – Mark-up of Changes  
                  Enclosure 3 – Final TS Changes  
                  Enclosure 4 – RCS Vent Size Calculations

cc:    Southern Nuclear Operating Company  
      Mr. J. B. Beasley, Jr., Executive Vice President  
      Mr. W. F. Kitchens, General Manager – Plant Vogtle  
      Mr. K. R. Holmes, Performance Analysis Supervisor – Plant Vogtle  
      RType: CVC7000

U. S. Nuclear Regulatory Commission  
Dr. W. D. Travers, Regional Administrator  
Mr. C. Gratton, NRR Project Manager – Vogtle  
Mr. J. Zeiler, Senior Resident Inspector – Vogtle

State of Georgia  
Mr. L. C. Barrett, Commissioner – Department of Natural Resources

**Enclosure 1**

**Vogtle Electric Generating Plant  
Response to Request for Additional Information Regarding  
Request to Revise Technical Specifications and  
Pressure and Temperature Limits Report**

**Vogtle Electric Generating Plant  
Response to Request for Additional Information Regarding  
Request to Revise Technical Specifications and  
Pressure and Temperature Limits Report**

**1. NRC Request**

**Regarding the pressure vessel fluence methodology in the Pressure Temperature Limits Report (PTLR), WCAP-14040A Rev. 4 is referenced, but it is not sufficient because it uses Bugle-93 which is no longer in use (currently Bugle-96 is used). Please reference an acceptable pressure vessel fluence methodology.**

**SNC Response**

Question 1 was withdrawn after confirmation that the fluence methodology discussed in WCAP-14040-A Rev. 4 is Bugle-96.

**2. NRC Request**

**Generic Letter (GL) 96-03 states that the PTLR should reference RG 1.190, which describes methodologies that the NRC staff accepts for vessel fluence calculations. In Technical Specification (TS) Section 5.6.6, please reference RG 1.190 and WCAP-15067 and WCAP-15159 which are the sources of your fluence values used in the calculation of the PT curves. In total these references define your methodology.**

**SNC Response**

Enclosure 2 contains the proposed marked-up page that revises TS 5.6.6 c. by adding a new item 3 that states: "The PTLR will contain the complete identification for each of the TS referenced Topical Reports used to prepare the PTLR (i.e., report number, title, revision, date, and any supplements)."

Enclosure 3 contains the proposed clean pages incorporating this revision into TS 5.6.6. It should be noted that the proposed VEGP Unit 1 and 2 PTLRs reference WCAP-15067 and WCAP-15159, respectively, and WCAP-14040-A, Rev. 4 references Reg Guide 1.190.

**3. NRC Request**

**Please Identify the calculations you performed that justify lowering the minimum Reactor Coolant System vent size from 2.4 inch<sup>2</sup> to 1.5 inch<sup>2</sup>.**

**SNC Response**

Enclosure 4 contains a summary of the calculations which justify lowering the Reactor Coolant System vent size.

**Vogtle Electric Generating Plant  
Response to Request for Additional Information Regarding  
Risk Informed Inservice Inspection Program Submittal**

**4. NRC Request**

The licensee is proposing to change Technical Specification (TS) 5.6.6.c, regarding the Reactor Coolant System Pressure-Temperature limits Report (PTLR)," to adopt wording similar to the Standard Technical Specifications (STS) (changing from listing license amendment number and date of issuance to approved topical reports with no date, just report number and title). This change is consistent with the STS. However, the STS contains a reviewers note that states: "Identify the Topical Report(s) by number and title or identify the Nuclear Regulatory Commission (NRC) Safety Evaluation report for a plant specific methodology by NRC letter and date. The PTLR will contain the complete identification for each of the TS referenced Topical Reports used to prepare the PTLR (i.e., report number, title, revision, date, and any supplements)."

Reference 1 in the proposed PTLR does not contain the complete information requested in the TS reviewers note. Therefore, the proposed PTLR should be revised. In addition, the staff has been requesting licensees to include the following statement in TS 5.6.6.c when adopting the STS format: "The PTLR will contain the complete identification for each of the TS referenced Topical Reports used to prepare the PTLR (i.e., report number, title, revision, date, and any supplements)."

The staff believes that this statement is necessary to reinforce the requirement that only Topical Reports reviewed and approved by the NRC can be used to generate the PTLR. Since the complete citation of the Topical Report is not listed in TS 5.6.6, the complete citation should be listed in the PTLR and a statement documenting this fact should be in TS 5.6.6.c.

**SNC Response**

Enclosure 2 contains the proposed marked-up page that revises TS 5.6.6 c. by adding a new item 3 that states: "The PTLR will contain the complete identification for each of the TS referenced Topical Reports used to prepare the PTLR (i.e., report number, title, revision, date, and any supplements)."

Enclosure 3 contains the proposed clean pages incorporating this revision into TS 5.6.6. It should be noted that the proposed VEGP Unit 1 and 2 PTLRs reference WCAP-15067 and WCAP-15159, respectively, and WCAP-14040-A, Rev. 4 references Reg Guide 1.190.

**Enclosure 2**

**Vogtle Electric Generating Plant  
Technical Specification Mark-up**

5.6 Reporting Requirements

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5.6.5 Core Operating Limits Report (COLR) (continued)

- d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

5.6.6 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)

- a. RCS pressure and temperature limits for heatup, cooldown, operation, criticality, and hydrostatic testing as well as heatup and cooldown rates shall be established and documented in the PTLR for the following:

LCO 3.4.3 "RCS Pressure and Temperature (P/T) Limits"

- b. The power operated relief valve lift settings required to support the Cold Overpressure Protection Systems (COPS) shall be established and documented in the PTLR for the following:

LCO 3.4.12 "Cold Overpressure Protection Systems"

Insert 1

- c. ~~The RCS pressure and temperature limits for Unit 1 shall be those previously reviewed and approved by the NRC in Amendment No. 87 to Facility Operating License NPF-68. The RCS pressure and temperature limits for Unit 2 shall be those previously reviewed and approved by the NRC in Amendment No. 65 to Facility Operating License NPF-81. The acceptability of the P/T and COPS limits are documented in NRC letter "Vogtle Electric Generating Plant, Units 1 and 2—Acceptance for Referencing of Pressure Temperature Limits Report," February 12, 1996. Specifically, the limits and methodology are described in the following documents:~~

- ~~1. Amendment No. 87 to Facility Operating License No. NPF-68, Vogtle Electric Generating Plant, Unit 1, June 8, 1995.~~
- ~~2. Amendment No. 65 to Facility Operating License No. NPF-81, Vogtle Electric Generating Plant, Unit 2, June 8, 1995.~~

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5.6 Reporting Requirements

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5.6.6 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR) (continued)

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| <p>3. Letter from C. I. Grimes, NRC, to R. A. Newton, Westinghouse Electric Corporation, "Acceptance for Referencing of Topical Report WCAP-14040, Revision 1, 'Methodology Used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves,'" October 16, 1995.</p> <p>4. Letter from C. K. McCoy, Georgia Power Company, to U.S. Nuclear Regulatory Commission, Attention: Document Control Desk, "Vogtle Electric Generating Plant, Pressure and Temperature Limits Report," Enclosures 1 and 2, January 26, 1996.</p> |
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- d. The PTLR shall be provided to the NRC upon issuance for each reactor vessel fluence period and for any revision or supplement thereto.

5.6.7 EDG Failure Report

If an individual emergency diesel generator (EDG) experiences four or more valid failures in the last 25 demands, these failures and any nonvalid failures experienced by that EDG in that time period shall be reported within 30 days. Reports on EDG failures shall include the information recommended in Regulatory Guide 1.9, Revision 3, Regulatory Position C.4, or existing Regulatory Guide 1.108 reporting requirement.

5.6.8 PAM Report

When a Report is required by Condition G or K of LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

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(continued)



**Insert 1:**

The analytical methods used to determine the RCS pressure and temperature limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:

1. WCAP-14040-A, Rev. 4, "Methodology Used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves."
2. WCAP-16142-P, Rev. 1, "Reactor Vessel Closure Head/Vessel Flange Requirements Evaluation for Vogtle Units 1 and 2."
3. The PTLR will contain the complete identification for each of the TS referenced Topical Reports used to prepare the PTLR (i.e., report number, title, revision, date, and any supplements).

**Enclosure 3**

**Vogtle Electric Generating Plant  
Final Technical Specification Change**

5.6 Reporting Requirements (continued)

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5.6.5 Core Operating Limits Report (COLR) (continued)

- d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

5.6.6 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)

- a. RCS pressure and temperature limits for heatup, cooldown, operation, criticality, and hydrostatic testing as well as heatup and cooldown rates shall be established and documented in the PTLR for the following:

LCO 3.4.3 "RCS Pressure and Temperature (P/T) Limits"

- b. The power operated relief valve lift settings required to support the Cold Overpressure Protection Systems (COPS) shall be established and documented in the PTLR for the following:

LCO 3.4.12 "Cold Overpressure Protection Systems"

- c. The analytical methods used to determine the RCS pressure and temperature limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:

1. WCAP-14040-A, Rev. 4, "Methodology Used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves."
2. WCAP-16142-P, Rev. 1, "Reactor Vessel Closure Head/Vessel Flange Requirements Evaluation for Vogtle Units 1 and 2."
3. The PTLR will contain the complete identification for each of the TS reference Topical Reports used to prepare the PTLR (i.e., report number, title, revision, date, and any supplements).

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5.6 Reporting Requirements

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5.6.6 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR) (continued)

- d. The PTLR shall be provided to the NRC upon issuance for each reactor vessel fluence period and for any revision or supplement thereto.

5.6.7 EDG Failure Report

If an individual emergency diesel generator (EDG) experiences four or more valid failures in the last 25 demands, these failures and any nonvalid failures experienced by that EDG in that time period shall be reported within 30 days. Reports on EDG failures shall include the information recommended in Regulatory Guide 1.9, Revision 3, Regulatory Position C.4, or existing Regulatory Guide 1.108 reporting requirement.

5.6.8 PAM Report

When a Report is required by Condition G or K of LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

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**Enclosure 4**

**Vogtle Electric Generating Plant  
RCS Vent Size Calculation Sheets**

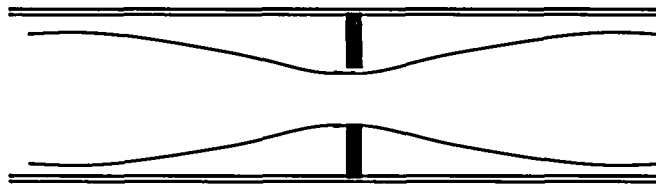
## Vogtle Units 1 and 2 RCS Vent Calculation Summary

This calculation determined the minimum RCS vent size for the Vogtle Units 1 and 2 Cold Overpressure Protection System (COPS). The RCS vent size is based on the COPS analysis requirement of an RCS vent capable relieving 685 gpm water flow at 722 psig at 60°F.

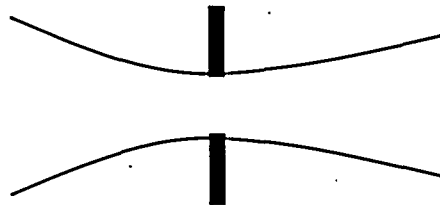
This requirement is based on the mass injection (MI) flow rate at the lowest 10CFR50 Appendix G limit. The lowest 10CFR50 Appendix G limit is 722 psig at 60°F, which bounds both units. The required relieving flow rate of 685 gpm, which bounds both units, is based on a MI from 2 centrifugal charging pumps and 1 normal charging pump.

Three separate methods were used to determine the size of the required RCS vent diameter.

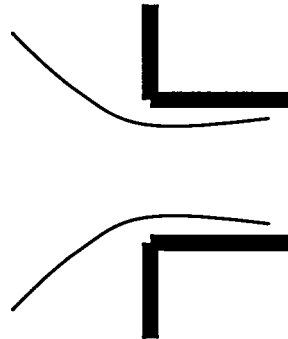
The first method performed an orifice calculation to obtain the minimum vent area. Using this method, it was assumed that the orifice is installed within the pipe (as shown below) and there is some pressure recovery across the opening.



The other two methods assume that there is no pressure recovery and that the expansion takes place to the atmosphere. Method two performs an orifice calculation to determine the orifice diameter. This method assumes that the fluid is contained in an infinite vessel and is released to the atmosphere through the orifice, as shown below.



The third method treats the vent as a discharge to the atmosphere by means of a pipe stub. This method models the fluid flowing into and out of a sharp edged pipe stub to the atmosphere, as shown below.



### Assumptions

1. For methods 1 and 2, it was assumed that the vent is obtained by partially opening a three-inch schedule 160 flowpath.
2. The density of water was assumed to be an average of 62.5 lbm/cu ft for the water at 60 degrees Fahrenheit.
3. Since the water is subcooled at atmospheric conditions, the flow can be modeled as a single phase liquid flow.
4. For the Reynolds number values being considered, values for the orifice flow coefficient  $C$  range from 0.6 to 0.75. Therefore, calculations using methods 1 and 2 were performed assuming a  $C$  value of 0.6, thus providing the largest possible minimum required vent size that may be needed to allow for uncertainty.
5. For method 3, it was assumed that both the entrance to and exit from the pipe is sharp edged. As can be seen on page 14 of Reference 1, the  $K$  value for this pipe would then be 1.5, since the value for the entrance and exit are added together.
6. The total loss coefficient for method 3 is  $K + fL/D$ . The value of  $f$  will be based on 1-inch piping. This is conservative since the calculated vent diameter is greater than 1.0 inch.
7. The method 3 calculation assumed the friction losses associated with 10 feet of pipe, consistent with TS 3.4.12 b., in addition to entrance and exit losses.

## Results

Method	RCS vent size required to relieve 685 gpm at 722 psig
1	.9827 in <sup>2</sup>
2	1.1178in <sup>2</sup>
3	1.284 in <sup>2</sup>

## Conclusion

A vent size of 1.5 in<sup>2</sup> will bound all 3 methods considered and ensure the required relief capacities can be obtained.

## Reference:

1. Crane, Co., "Flow of Fluids Through Valves, Fittings, and Pipe," Technical Paper No. 410, 1979.