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Energy to Serve Your WorldSM

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Docket Nos. 50-424
50-425

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

Ladies and Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT
REQUEST TO REVISE TECHNICAL SPECIFICATIONS
PRESSURIZER SAFETY VALVE SETPOINT AND TOLERANCE

In accordance with the requirements of 10 CFR 50.90, Southern Nuclear Operating Company (SNC) proposes to revise the Vogtle Electric Generating Plant (VEGP) Unit 1 and Unit 2 Technical Specifications (TS) Limiting Condition for Operation (LCO) 3.4.10, Pressurizer Safety Valves. The current LCO 3.4.10 requires three pressurizer safety valves to be operable with lift settings ≥ 2460 psig and ≤ 2510 psig. This is based on a nominal set pressure of 2485 psig with a tolerance of $\pm 1\%$. SNC proposes to revise LCO 3.4.10 to reduce the nominal set pressure by 1 % to 2460 psig and increase the tolerance to $\pm 2\%$. As a result, the revised LCO 3.4.10 would require three pressurizer safety valves to be operable with lift settings ≥ 2410 psig and ≤ 2510 psig. The Bases for TS 3.4.10 would be revised accordingly. (Note that Surveillance Requirement (SR) 3.4.10.1 would continue to require lift settings to be within $\pm 1\%$ following testing, consistent with NUREG-1431, and there is no change to the maximum lift setting limit of 2510 psig.) The proposed change will increase the margin for the lift settings for these valves, thereby reducing instances of the lift settings being discovered out of tolerance due to drift.

Since the proposed change will involve a change to the lift settings of the valves, SNC will implement the proposed change during refueling outages. The next scheduled refueling outage for Unit 1 is in the Fall of 1997 and for Unit 2 in the Spring of 1998. Therefore, SNC requests approval of the proposed change by September 1, 1997, to facilitate implementation during the upcoming Unit 1 refueling outage. For Unit 1, the proposed change would be implemented prior to or after initial entry into Mode 3 (in accordance with the provisions of the note to the Applicability for LCO 3.4.10) following the Fall 1997 refueling outage. The proposed change would be implemented for Unit 2 prior to or after initial entry into Mode 3 (in accordance with the provisions of the note to the Applicability for LCO 3.4.10) following the Spring 1998 refueling outage.

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Enclosure 1 provides the basis for the proposed change. Pursuant to 10 CFR 50.92, Enclosure 2 demonstrates that the proposed change does not involve a significant hazard consideration, and Enclosure 3 is a mark-up of the affected pages from the current VEGP Unit 1 and Unit 2 TS and the affected Bases pages.

Mr. C. K. McCoy states that he is a Vice President of Southern Nuclear Operating Company and is authorized to execute this oath on behalf of Southern Nuclear Operating Company and that, to the best of his knowledge and belief, the facts set forth in this letter are true.

SOUTHERN NUCLEAR OPERATING COMPANY

By: C. K. McCoy
C. K. McCoy

Sworn to and subscribed before me this 13th day of June, 1997.

Mary N. Bentley
Notary Public

My commission expires: May 6, 1999

CKM/NJS

Enclosures

xc: Southern Nuclear Operating Company
Mr. J. B. Beasley, Jr.
Mr. M. Sheibani
NORMS

U. S. Nuclear Regulatory Commission
Mr. L. A. Reyes, Regional Administrator
Mr. L. L. Wheeler, Licensing Project Manager, NRR
Mr. C. R. Ogle, Senior Resident Inspector, Vogtle

State of Georgia
J. D. Tanner, Commissioner, Department of Natural Resources

ENCLOSURE 1

VOGTLE ELECTRIC GENERATING PLANT REQUEST TO REVISE TECHNICAL SPECIFICATIONS PRESSURIZER SAFETY VALVE AND SETPOINT TOLERANCE

BASIS FOR PROPOSED CHANGE

Proposed Change

The current Vogtle Electric Generating Plant (VEGP) Unit 1 and Unit 2 Technical Specifications (TS) Limiting Condition for Operation (LCO) 3.4.10, Pressurizer Safety Valves, requires three pressurizer safety valves to be operable with lift settings ≥ 2460 psig and ≤ 2510 psig. These limits reflect a nominal set pressure of 2485 psig and a tolerance of $\pm 1\%$. The proposed change would revise the limits for the lift settings to ≥ 2410 psig and ≤ 2510 psig. The proposed new limits reflect a reduced nominal set pressure of 2460 psig and an increased tolerance of $\pm 2\%$. Surveillance Requirement (SR) 3.4.10.1 would continue to require lift settings to be within $\pm 1\%$ following testing, and no change is proposed for the maximum lift setting of 2510 psig.

Basis for Proposed Change

The proposed change to the current TS limits for pressurizer safety valve lift settings is based on a reduced nominal set pressure and an increased tolerance. The effects of the proposed change on the safety analyses have been evaluated and the results are discussed in the following paragraphs.

LOCA and LOCA-Related Evaluations

The change in the pressurizer safety valve (PSV) set pressure and tolerance has no effect on the LOCA peak clad temperature or LOCA forces. Pressurizer safety valves are not modeled in these analyses.

Steam Generator Tube Rupture Evaluation

The change in the pressurizer safety valve set pressure and tolerance has no effect on the steam generator tube rupture analysis. Pressurizer safety valves are not modeled in these analyses.

Non-LOCA Related Evaluation

The non-LOCA safety analyses conservatively model the pressurizer safety valve response for event mitigation. The analysis models consider both the valve set pressure and tolerance, as defined in the plant Technical Specifications (currently $\pm 1\%$ with a set pressure of 2485 psig), and the valve performance (e.g., valve accumulation and relief capacity). Depending on the transient being analyzed, it may be conservative to model either a maximum or minimum RCS pressure. The proposed change in the PSV tolerance from $\pm 1\%$ to $\pm 2\%$ with a reduction in the set pressure from 2485 psig to 2460 psig allows a decrease in the valve opening pressure and, thereby, provides earlier pressurizer relief and a reduced RCS pressure. The proposed change does not affect the maximum opening pressure assumed in

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the non-LOCA analyses. Therefore, only those transients for which it is conservative to minimize the RCS pressure are potentially impacted by the proposed tolerance change. The events, from Chapter 15 of the VEGP FSAR, which are potentially impacted include the following:

- Feedwater System Malfunction that Results in an Increase in Feedwater Flow (Section 15.1.2)
- Excessive Increase in Secondary Steam Flow (Section 15.1.3)
- Inadvertent Opening of a Steam Generator Relief or Safety Valve (Section 15.1.4)
- Steam System Piping Failure (Section 15.1.5)
- Turbine Trip [with respect to minimum DNBR only] (Section 15.2.3)
- Loss of Non-Emergency AC Power to the Plant Auxiliaries (Section 15.2.6)
- Loss of Normal Feedwater Flow (Section 15.2.7)
- Feedwater System Pipe Break (Section 15.2.8)
- Uncontrolled RCCA Bank Withdrawal at Power (Section 15.4.2)
- Startup of an Inactive Reactor Coolant Pump at an Incorrect Temperature (Section 15.4.4)
- Steamline Break with Coincident RCCA Withdrawal at Power (Section 15.4.9)
- Inadvertent Operation of the ECCS During Power Operation (Section 15.5.1)
- Inadvertent Opening of a Pressurizer Safety or Relief Valve (Section 15.6.1)

For each of the above events, with the exception of the inadvertent operation of the ECCS during power operation transient, automatic actuation of pressurizer power-operated relief valves (PORVs) is modeled to conservatively minimize RCS pressure. PORV relief is sufficient in these analyses, including the turbine trip analysis, to maintain pressurizer pressure below the revised minimum PSV opening pressure (of 2410 psig).

The current FSAR analysis of the inadvertent operation of the ECCS during power operation transient credits operator action at 7 minutes to make available one PORV for water relief, thereby preventing water relief through the PSVs. The analysis explicitly models a -1 % PSV set pressure tolerance. To support an increase in the negative tolerance to -2 % with respect to the reduced nominal set pressure of 2460 psig (-3 % with respect to the current nominal set pressure of 2485 psig), a revised analysis was performed. The revised analysis credits operator action within 10 minutes to make one PORV available with an additional conservative allowance for the PORV and block valves to stroke open. The analysis conservatively predicts that a pressurizer water solid condition may occur prior to the time that a PORV would be available and the resulting PSV discharge fluid conditions. In conjunction with this PSV water relief calculation, the ability of the PSVs to reseal following PORV actuation was evaluated. The evaluation concluded that for this event, and the predicted relief rate and fluid conditions, that the PSVs will reseal. That is, operator action within 10 minutes allows for water relief to be diverted from the PSV(s) to the open PORV, which thereby, terminates the PSV water relief. Therefore, the RCS will be isolatable following the transient and the event will not generate a more serious plant

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condition (i.e., the RCS pressure boundary remains intact). The Inadvertent ECCS Analysis performed for the revised PSV setpoint and tolerance also continues to address concerns identified in NSAL-93-013, Inadvertent ECCS Actuation at Power, dated June 30, 1993, and Supplement 1, Inadvertent ECCS Actuation at Power, dated October 28, 1994.

The VEGP FSAR also addresses the DNB consequences of an inadvertent operation of the ECCS during power operation event. The analysis verifying that the DNB design basis is met is not significantly affected by the relaxed PSV tolerance, and remains valid. In this analysis, the DNBR does not decrease below the initial value.

In summary, the non-LOCA safety analyses have been reviewed. For all non-LOCA events the applicable analysis acceptance criteria continue to be met; therefore, the increased PSV set pressure tolerance from a value of $\pm 1\%$ with a set pressure of 2485 psig to $\pm 2\%$ with a reduction in the valve set pressure from 2485 psig to 2460 psig is acceptable.

Containment Integrity Evaluation (Short Term/Long Term LOCA Release, Steam Line Break)

Changing the pressurizer safety valve set pressure and tolerance has no effect on the short term/long term LOCA or main steam line break containment integrity analyses. Additionally, the calculated mass and energy released from the break is not affected by changes to the PSV set pressure tolerance.

Radiological Consequences and Post-LOCA Hydrogen Generation Evaluation

Changing the pressurizer safety valve set pressure and tolerance has no effect on the radiological analyses.

PRA Evaluation

The Probabilistic Safety Assessment (PSA) and its success criteria are not sensitive to the specific safety valve setting or tolerance; the success or failure of the valve to open is more important. The same events currently assumed (such as station blackout) to result in valve actuation will continue to result in valve actuation for this relatively small change. Additionally, the lower valve setting does not increase the probability that an event will occur which will result in the valve opening. Therefore, the expected frequency of valve openings considered in the PSA will not increase and the lower valve lift setting and increased tolerance has no significant effect on the PSA.

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Emergency Operating Procedures (EOPs) Evaluation

The EOPs do not consider PSV set pressure or tolerance, thus changes to the set pressure or tolerance have no effect on the EOPs.

Safety Systems Setpoints Evaluation

The change in the pressurizer safety valve set pressure and tolerance has no effect on the Reactor Protection or Engineered Safety Features Systems trip setpoints.

Control Systems Evaluation

The proposed change has been evaluated for its impact on the NSSS control systems and the NSSS components and transients as follows. With a $\pm 2\%$ tolerance and a set pressure of 2460 psig, the PSV minimum actuation pressure could potentially be as low as 2410 psig. The pressurizer power operated relief valve (PORV) actuation setpoint is 2335 psig. Therefore, the margin between the PORV and PSV actuation setpoints could be as low as 75 psi, which is a reduction of 50 psi from the current 125 psi margin. Even with the 30 psi control tolerance, the actuation setpoint margin of 75 psi is considered adequate and the PORVs are expected to continue to actuate before the PSVs during Condition I transients. As such, the proposed change will not have any adverse effect on the control systems.

The pressurizer safety valves are assumed in the NSSS components design transients. The PSVs are credited and actuate for the loss of load upset condition design transients. The current loss of load design transient assumed a PSV set pressure of +3% above the original set pressure of 2485 psig. Therefore, the proposed change will not affect the loss of load design transient and the current design transient remains valid. Note that a reduction in the PSV setpoint is a benefit to the loss of load design transient. The PSVs are not modeled in any other design transients.

Mechanical Components and Systems Evaluation

The pressurizer safety valves provide overpressure protection for the RCS. The upper limit of overpressure protection is based on the surge of reactor coolant produced as a result of a transient from full load that produces the largest surge. The PSVs are sized on the basis of steam flow from the pressurizer to accommodate this surge at the set pressure and the accumulation defined by the ASME Code. No credit is taken for the relief capability provided by the power operated relief valves during this surge. The PSV setting will maintain the pressure below the ASME pressure limit of 110 percent of the pressurizer design pressure.

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The change in the lower limit of the PSV tolerance from -1% to -2% of 2460 psig does not challenge the upper limit of the overpressure protection. Any evaluations performed on an overpressure transient would conservatively assume the upper limit of the PSV tolerance as the pressure to which the RCS is subjected. The proposed change to the lower tolerance limit of the set pressure means that an overpressure transient may be terminated at a pressure that is lower than assumed in the analysis. It has also been determined that the design transients are not adversely affected because the limiting transients are not sensitive to the pressure tolerance decrease. Therefore, the primary system pressure boundary is not challenged by the PSV lower tolerance limit change.

The change in the upper limit of the PSV tolerance from +1% to +2% with a reduction in the nominal set pressure from 2485 psig to 2460 psig does not challenge the upper limit of the overpressure protection. Evaluations and analyses performed on overpressure transients assume a valve set pressure which bounds the upper limit of the revised PSV set pressure and tolerance. Although the lower valve set pressure would result in a lower qualified valve flow rate, the slightly lower valve flow rate would be more than compensated by the reduced valve opening pressure.

The change in pressurizer safety valve set pressure and tolerance was also reviewed to determine the effect on the thermal and hydraulic analysis described in FSAR section 3.9.N.3.3.1. The change to the set pressure and tolerance does not change the conclusions of the existing thermal hydraulic analysis for the pressurizer safety and relief system.

Pressurizer Safety Valve Operability

An analysis has been performed to document that the pressurizer safety valves will be operable for the initial steam pops followed by slightly subcooled water relief during a postulated inadvertent ECCS actuation event as described above under the Non-LOCA Related Evaluation. The analysis used the methodology documented in WCAP-11677, "Pressurizer Safety Valve Operation for Water Discharge during a Feedwater Line Break," as the basis for the justification. The data presented in the WCAP demonstrated that the Crosby Safety Valves could be cycled through subcooled water following steam discharges without deleterious effects.

The ECCS evaluation for VEGP centered on determining whether the amount of subcooling permitted stable valve lift, and if so, how many lifts can be expected during the water relief phase of the transient. Based on the evaluation, a stable performance is expected during the postulated water relief phase of the transient with a water temperature of 605 °F. The number of valve opening cycles during the water relief was two. In conclusion, the pressurizer safety valves at VEGP can be expected to mitigate the inadvertent ECCS transient without any concern for operability.

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Instrumentation and Control (I&C) Systems Evaluation

Since the increased PSV set pressure and tolerance does not change the mass and energy releases, the proposed set pressure and tolerance increase will have no effect on the instrumentation and control systems or the I&C equipment environmental qualification.

Conclusion

Based on the above, the proposed change can be implemented without adverse impact on the safety analyses, mechanical systems and components, and instrumentation and control systems.

ENCLOSURE 2

VOGTLE ELECTRIC GENERATING PLANT REQUEST TO REVISE TECHNICAL SPECIFICATIONS PRESSURIZER SAFETY VALVE AND SETPOINT TOLERANCE

SIGNIFICANT HAZARDS CONSIDERATION EVALUATION

Proposed Change

The current Vogtle Electric Generating Plant (VEGP) Unit 1 and Unit 2 Technical Specifications (TS) Limiting Condition for Operation (LCO) 3.4.10, Pressurizer Safety Valves, requires three pressurizer safety valves (PSVs) to be operable with lift settings ≥ 2460 psig and ≤ 2510 psig. These limits reflect a nominal set pressure of 2485 psig and a tolerance of $\pm 1\%$. The proposed change would revise the limits for the lift settings to ≥ 2410 psig and ≤ 2510 psig. The proposed new limits reflect a reduced nominal set pressure of 2460 psig and an increased tolerance of $\pm 2\%$. Surveillance Requirement (SR) 3.4.10.1 would continue to require lift settings to be within $\pm 1\%$ following testing, and no change is proposed for the maximum lift setting of 2510 psig.

Pursuant to 10 CFR 50.92, Southern Nuclear Operating Company (SNC) has reviewed the proposed change to determine if significant hazards consideration is involved. The proposed change, as defined below, has been reviewed and deemed not to involve any significant hazards considerations as defined by 10 CFR 50.92. The basis for this determination follows.

Evaluation

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

The increase in the PSV tolerance from $\pm 1\%$ with a setpoint of 2485 psig to $\pm 2\%$ and reduction in the nominal setpoint from 2485 psig to 2460 psig has the net effect of reducing the minimum lift setting allowed by the TS from 2460 psig to 2410 psig. The effects of this change have been evaluated for its impact on the assumed frequency of safety valve challenges and failures to reclose, and the proposed change was found to have a negligible impact. In other words, reducing the minimum lift setting does not significantly increase the probability of an inadvertent actuation of a safety valve during normal operation. Reducing the minimum lift setting does increase the potential that the PSVs may open during an event, but this change has been evaluated and does not adversely impact the consequences of any accident previously evaluated. No change to any equipment response or accident mitigation scenario has resulted, and there are no additional challenges to fission product barrier integrity. Therefore, the proposed change does not significantly increase the probability or consequences of any accident previously evaluated.

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SIGNIFICANT HAZARDS CONSIDERATION EVALUATION

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

The increase in the PSV tolerance from $\pm 1\%$ with a setpoint of 2485 psig to $\pm 2\%$ and reduction in the nominal setpoint from 2485 psig to 2460 psig does not create the possibility of a new or different kind of accident than any accident previously evaluated. No new accident scenarios, failure mechanisms, or limiting single failures are introduced as a result of this proposed change. The proposed revision to Technical Specification 3.4.10 does not challenge the performance or integrity of any safety-related systems. Therefore, the possibility of a new or different kind of accident is not created.

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

The proposed change to Technical Specification 3.4.10 does not involve a significant reduction in a margin of safety. The modification will have no effect on the availability, operability or performance of the safety-related systems and components. The increased PSV set pressure tolerance has been reviewed with respect to the accident analysis assumptions and requirements and evaluated or analyzed, as required. These evaluations and analyses determined that all applicable acceptance criteria continue to be met, thus the proposed increase in the PSV set pressure tolerance will not result in a significant reduction in the margin of safety associated with the acceptance criteria for the accident analyses.

The Bases of the Technical Specifications rely in part on the ability of the regulatory criteria being satisfied assuming the limiting conditions for operation for various systems. Conformance to the regulatory criteria for operation with the increased PSV set pressure tolerance is demonstrated, and the regulatory limits are not exceeded. Hence, the margin of safety as defined in the Bases for the Technical Specifications is not significantly reduced.

Therefore, there is no significant reduction in any margin of safety.

Conclusion

Based on the preceding information, it has been determined that the proposed increase in the PSV tolerance from $\pm 1\%$ with a set pressure of 2485 psig to $\pm 2\%$ with a reduction in the nominal set pressure to 2460 psig does not involve a significant hazards consideration as defined in 10CFR50.92(c).