

C. K. McCoy
Vice President
Vogtle Project

**Southern Nuclear
Operating Company, Inc.**
40 Inverness Center Parkway
P.O. Box 1295
Birmingham, Alabama 35201
Tel 205.992.7122
Fax 205.992.0403



July 18, 1997

LCV-0991-B

Docket Nos. 50-424
50-425

TAC Nos. M99006
M99007

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
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

By letter dated June 13, 1997 (LCV-0991), Southern Nuclear Operating Company (SNC) proposed 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. On June 26, 1997, a telephone conference was held between SNC and the NRC staff concerning the referenced proposed change. The following questions were raised, and our response is presented immediately following each question:

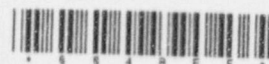
Question:

"You have included several heatup transients (e.g., loss of non-emergency power, loss of normal feedwater flow, and feedwater system pipe break) in the list of transients for which you have considered that it is conservative to minimize the RCS pressure by assuming the lifting of the pressurizer power operated relief valves (PORVs). Please provide the basis for this consideration."

Response:

The loss of non-emergency power and loss of normal feedwater events are heatup events that employ the acceptance criterion of no pressurizer filling to conservatively demonstrate ANS Condition II acceptance criteria. With respect to the RCS pressure transient, these events are bounded by the loss of load/turbine trip analysis which does not take credit for PORV actuation.

9707230347 970718
PDR ADOCK 05000424
P PDR



A0011/1

For the feedline break event, which is also a heatup transient, the conservative analysis acceptance criterion applied by Westinghouse is that no bulk boiling occurs in the primary system prior to the time that the heat removal capability of the steam generators, being fed auxiliary feedwater, exceeds the NSSS heat generation. This conservatively demonstrates that the ANS Condition IV acceptance criteria are met. Operation of the PORVs will result in a primary system pressure lower than the pressurizer safety valve lift setpoint during the transient. The lower RCS pressure, as a result of PORV operation, reduces the hot leg saturation temperature where bulk boiling occurs. The PORV operation will not be changed as a result of the pressurizer safety valve lift setpoint change and, hence, no revision to the safety analysis modeling of PORV operation is necessary. Therefore, the conservative analysis acceptance criterion referenced above is still met. This event is not limiting with respect to exceeding primary or secondary system pressure limits.

The following questions apply to the reanalysis of the inadvertent operation of the emergency core cooling system (ECCS) during power operation.

Question:

“Confirm that the PORVs at Vogtle are designed to safety grade standards (including electrical and instrumentation systems) to assure the automatic function of the PORVs for mitigation of a design basis event.”

Response:

The VEGP PORVs are designed to safety grade standards, the power supplies and instrumentation are Class 1E, and the valves, power supplies, and instrumentation are train related. The reanalysis of the inadvertent operation of the ECCS during power operation does not credit automatic actuation of the PORVs. In our letter LCV-0991, on page E1-2, where we refer to operator action to make one PORV available within 10 minutes, we are conservatively assuming that the operator must open the associated block valve and manually open the PORV from the control room.

Question:

“Describe emergency operating procedures associated with the event mitigation and operator training to support the 10 minute operator time assumed in your reanalysis.”

Response:

VEGP emergency operating procedures are based on the Westinghouse Emergency Response Guidelines (ERGs). The VEGP procedure for the E-0 ERG is the point of entry for the EOP network. In the case of an inadvertent ECCS during power operation, E-0 would be entered and steps performed until the step correlating to ERG E-0 step 20 was performed. In the VEGP procedure, this step verifies that the PORVs are SHUT and in AUTO, and in the “Response Not Obtained” (RNO) column, the procedural guidance is to:

- Ensure the PORVs are shut when pressurizer pressure is less than 2315 psig,

- Shut the block valve if the PORV is open and can't be shut, and
- Maintain RCS pressure below the pressure necessary to prevent lifting the pressurizer safety valve.

The automatic function of the PORVs is the expected response in the procedure. In addition, the procedure provides the direction for operator manual control of the PORVs, if it becomes necessary. The terminology and structure of the guidance in this step provides for the operators executing this procedure to continuously take this guidance into account for the duration that this procedure applies. This guidance is comprised of "continuous actions" for the operators which, in the case when RCS pressure is being controlled via manual actuation of the PORVs, is the procedural guidance for them to appropriately control RCS pressure for the duration of the procedure.

In general, the expected procedural sequence for an inadvertent ECCS at power is entry into the EOP network by entering the procedure for ERG E-0, which involves:

- Verification that the reactor is tripped and whether an SI has occurred or is necessary,
- Ensuring equipment has actuated per expectation,
- Checking RCS temperatures,
- Assessment of pressurizer PORVs and block valve status and performance,
- Assessment of RCP and Auxiliary Component Cooling Water status and performance,
- Checks for steam generator tube rupture (SGTR) and for RCS leakage into containment,
- Verification that RCS (i.e. subcooling, pressure, and pressurizer level) and secondary heat sink parameters are acceptable, and
- Transition to the ERG ES-1.1 ECCS termination procedure which provides for stopping of ECCS pumps and restoration of normal charging, letdown, and RCS and plant parameters; this restoration is followed by transition to normal unit operating and engineered safety feature (ESF) actuation recovery procedures.

Operators have recently completed training exercises on an inadvertent ECCS at power scenario, and, for each participating operating crew, operator response times for reaching the various steps were measured. VEGP participated in a Westinghouse Owners Group (WOG) program to verify operator response times; the intent of the program is to benchmark operator response times within WOG member utilities for those design basis events within which operator response is necessary. The WOG program description of the inadvertent

ECCS scenario on which the measurements of the VEGP operating crews were taken is as follows:

"Spurious safety injection signal with no other failures. The initial condition should be 100% power, equilibrium xenon, middle of life. Note that if there is no malfunction at your site for a spurious SI, then failure low of two pressurizer pressure channels should be used to initiate the signal. After the SI signal is received, the two pressurizer pressure channels should be restored for the operators to use. This scenario should be run until SI is terminated and normal charging and letdown is established."

In the performance of this scenario the measurements showed all the participating operating crews reaching the step in which the PORV alignment is verified in accordance with ERG E-0 step 20 in substantially less than 10 minutes. These measurements showed that the assumption made in the revised analysis of operator action within 10 minutes was sound. These measurements of the elapsed durations for operating crews to reach the ERG E-0 step 20 are considered valid because once Step 20 is reached, the operators are positioned to review the PORV and block valve configuration and ensure the proper automatic actuation of the PORV or take the action based on the RNO for the step to manually control the PORVs if necessary.

Question:

"Provide transient curves of the RCS pressure and pressurizer level."

Response:

The desired curves are provided as an attachment to this letter.

Question:

"Discuss the number of cycles that the PORVs will experience during the event and confirm that the PORVs could perform their function without damage."

Response:

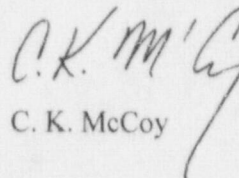
SNC has reviewed the equipment qualification test report for the VEGP PORVs to ascertain the cyclic performance rating. The qualification testing included 1000 cycles at pressure and elevated temperature. Subsequently, the valve was then tested at pressure at a rate of 20 cycles per minute, through 10,000 cycles. A performance test was performed at the completion of the cyclic aging testing and all performance requirements were met. Over a 30-minute period at the rate of 20 cycles per minute, the valve would have experienced about 600 cycles. Based on a review of analyses performed for a similar facility, this would more than envelope the cycling predicted for the PORVs in response to this event, assuming that the PORVs function automatically. Therefore, this type of service is well within the design basis of the VEGP PORVs, and they should be able to perform their function without damage. In addition, at other facilities where the PORVs may be air operated, air supply

capacity may be a concern with respect to PORV cycling. At VEGP, the PORVs are solenoid operated, so air supply capacity is not an issue.

As stated earlier in this letter, the automatic operation of the PORVs is the response expected by operators, however, VEGP analysis assumes operator action to manually control pressure which is supported by emergency procedures. Operators have demonstrated the capability to control pressure manually, but they would not control pressure as finely as the automatic circuit, so the number of cycles that the PORVs would experience in manual should be much less.

Finally, our application for license amendment stated that the proposed change would have no effect on the emergency operating procedures (EOPs). The EOPs do include a step to control RCS pressure to a certain value, and that value will need to be revised to reflect the change in pressurizer safety valve set pressure.

Sincerely,



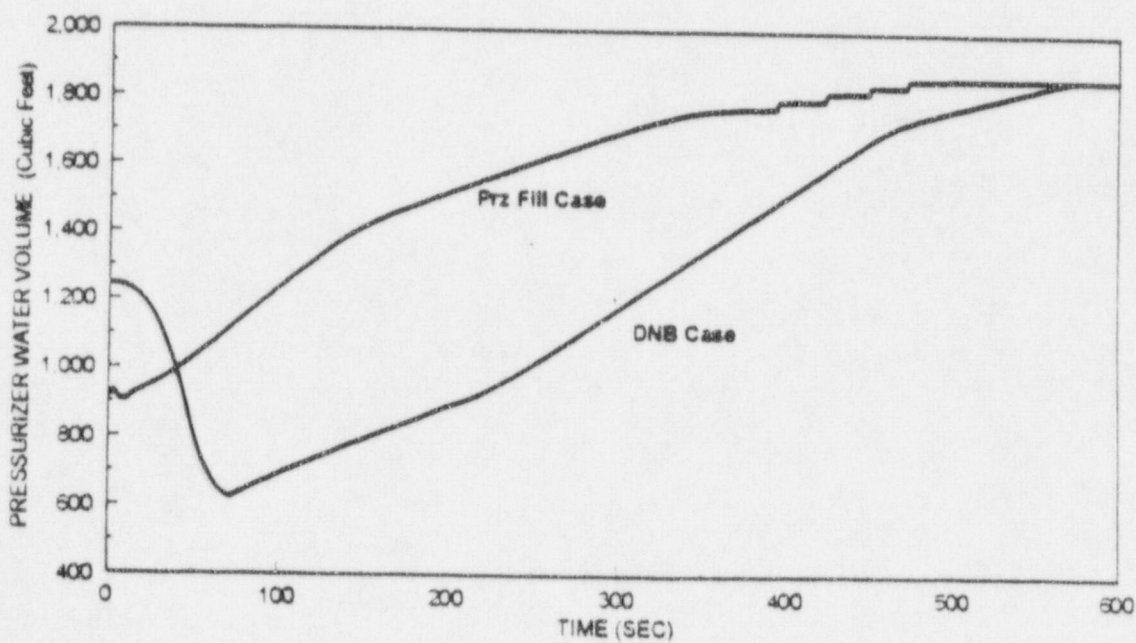
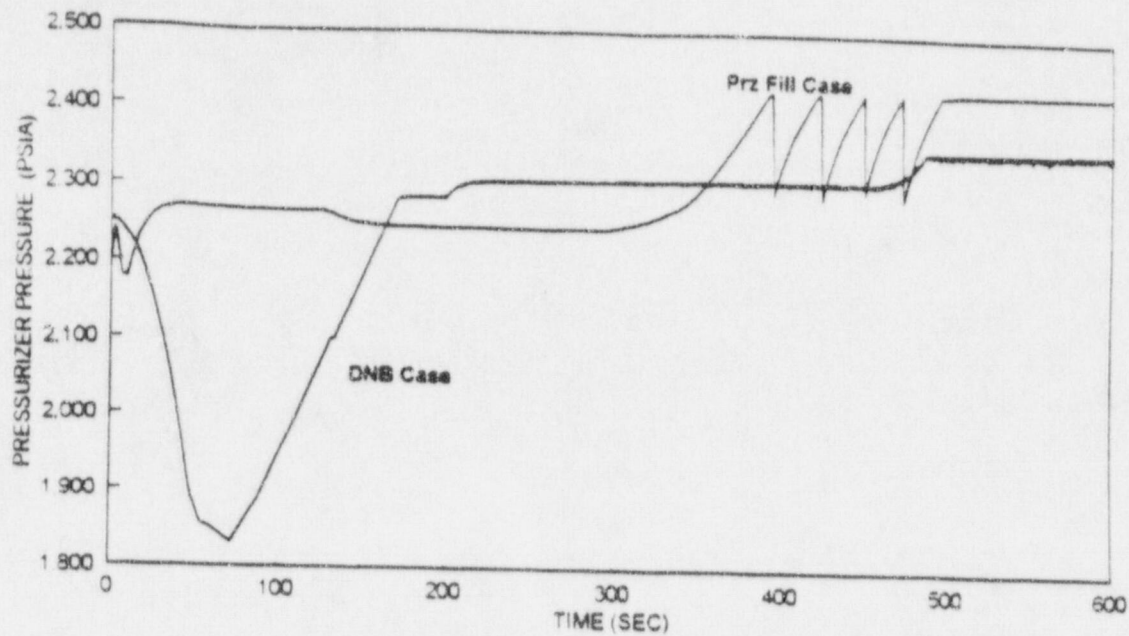
C. K. McCoy

CKM/NJS

Attachment

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



VOGTLE
ELECTRIC GENERATING
PLANT
UNIT 1 AND UNIT 2

INADVERTENT OPERATION OF ECCS DURING POWER
OPERATION

FIGURE 15.5.1-2