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Docket Nos.: 50-424
50-425

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-001

Ladies and Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT
ADDITIONAL INFORMATION CONCERNING GL 96-06,
ASSURANCE OF EQUIPMENT OPERABILITY AND CONTAINMENT
INTEGRITY DURING DESIGN BASIS ACCIDENT CONDITIONS

By letters dated January 27, 1997 and October 28, 1998, Southern Nuclear Operating Company (SNC) provided information necessary to address the concerns identified in GL 96-06, Assurance of Equipment Operability and Containment Integrity During Design Basis Accident Conditions. Additional information was requested on July 27, 1999 relating to the containment penetrations that were identified as being susceptible to thermally-induced pressurization. The requested information is provided as Attachment 1.

Please contact this office if you have any questions.

Sincerely,

J. B. Beasley, Jr.

JBB/BHW

Attachment

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser
Mr. M. Sheibani
SNC Document Management

U. S. Nuclear Regulatory Commission
Mr. L. A. Reyes, Regional Administrator
Mr. Ramin R. Assa, Vogtle Project Manager, NRR
Mr. J. Zeiler, Senior Resident Inspector, Vogtle

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ATTACHMENT 1

Response to GL 96-06 RAI

The response to Generic Letter 96-06 identified pipe lines associated with 15 penetrations in each unit that are potentially susceptible to thermally-induced overpressurization. Procedures were implemented to ensure that isolation of the Reactor Coolant System Hot-Leg Sample Line or the Post-Accident Sampling System Return to Containment is performed only while the fluid is hot during normal operation. For the remaining 13 lines in each unit, interim operability assessments were performed based on an evaluation of isolation valve leakage or an evaluation of the maximum inelastic strain in the pipe. The NRC reviewed the response and requires additional information in order to complete its assessment of the operability of the affected systems and corrective actions.

1. NRC Request

Provide the following information for those penetrations found acceptable based on leakage through isolation valves:

a. Describe the applicable design criteria for the piping and valves. Include the required load combinations;

b. Provide a drawing of the valve. Provide the pressure at which the valve was determined to lift off its seat or leak and describe the method used to estimate this pressure. Discuss any sources of uncertainty associated with the estimated lift off or leakage pressure; and

c. Provide the maximum-calculated stress in the piping based on the estimated lift off or leakage pressure.

SNC Response

Four penetrations were determined to be acceptable based on leakage through isolation valves. The information requested for each penetration is described as follows.

Accumulator Sample Lines; Penetrations 72A, 72B, 73A, 73B

The design conditions for these sections of piping are 700 psig and 300 degrees Fahrenheit. The ANSI pressure temperature rating is 600 pounds. The required load combinations for the piping and valves are Pressure + Dead Weight + SSE.

The inboard containment isolation valves (tag numbers 1/2HV-10950, -10951, -10952, -10953) are 3/4" normally closed solenoid-operated globe valves with flow over the seat. A drawing of these valves is provided as

Figure 1. The outboard containment isolation valves (tag numbers 1/2-1204-U6-159, -160, -161, -162) are 3/4" normally closed manually operated globe valves.

The normal pressure and temperature for these sections of piping lines is 650 psig and 120 degrees Fahrenheit. An increase in fluid pressure between these valves would act against the underside of the inboard valve's seat. The maximum differential pressure required to lift the valve disc is 121 psid based on a calculation performed by the valve manufacturer. This is based on the worst case condition where spring forces are maximum and the seat diameter is minimum. There are no additional sources of uncertainty associated with this calculated pressure. Opening of the valve would tend to cause a small amount of leakage, which would relieve the expansion of the fluid into the corresponding accumulator (tag numbers 1/2-1204-V6-002, -003, -004, -005). Each of the accumulators are protected from over-pressurization by a relief valve (tag numbers 1/2PSV-8855A, B, C, D), with a setpoint of 700 (± 21) psig, which is vented to the containment atmosphere. The maximum-calculated stress in the piping is based on a pressure of 842 psig (700 + 21 + 121), a pipe outside diameter of 1.050 inches, and a pipe wall thickness of 0.113 inches; along with the required loading combinations. The calculated stress for these conditions is 33,198 psi. This value is less than the allowable stress of 36,720 psi at ASME Section III faulted conditions.

2. NRC Request

Provide the following additional information for those penetrations found acceptable based on engineering analysis:

a. Provide the applicable design criteria for the piping and the valves. Include the required load combinations;

b. Provide a drawing of the piping between the isolation valves. Include the lengths and thickness of the piping segments and the type and thickness of the insulation; and

c. Provide the maximum-calculated temperature and pressure for the pipe run. Describe, in detail, the method used to calculate these pressure and temperature values. This should include a discussion of the heat transfer model used in the analysis and the basis for the heat transfer coefficients used in the analysis.

SNC Response

Interim operability assessments were performed for 9 penetrations. The acceptability of these assessments was based on evaluation of the maximum inelastic strain in the pipe. However, we did not utilize engineering analysis to demonstrate that a penetration was acceptable on a long-term basis. Further evaluation of these penetrations determined that changes in system operations or modifications were required to alleviate the concerns of potential overpressurization.

Four penetrations were modified to add pressure relief valves between the inboard and outboard containment isolations valves to prevent thermally-induced overpressurization. These four penetrations are described below.

- Accumulator Test and Drain Line; Penetration 41
- Auxiliary Component Cooling Water (ACCW) Supply; Penetration 28
- Normal Containment Sump Pumps Discharge; Penetration 78
- Reactor Coolant Drain Tank (RCDT) Pump Discharge; Penetration 77

Procedures were modified to change system operations for five penetrations to drain any fluid from the piping after use to ensure that thermally-induced overpressurization is not possible under accident conditions. These five penetrations are described below.

- Steam Generator Wet Lay-Up Chemical Addition; Penetrations 11A, 12A, 69A, 69B
- Purification Water Supply to Refueling Cavity; Penetration 15

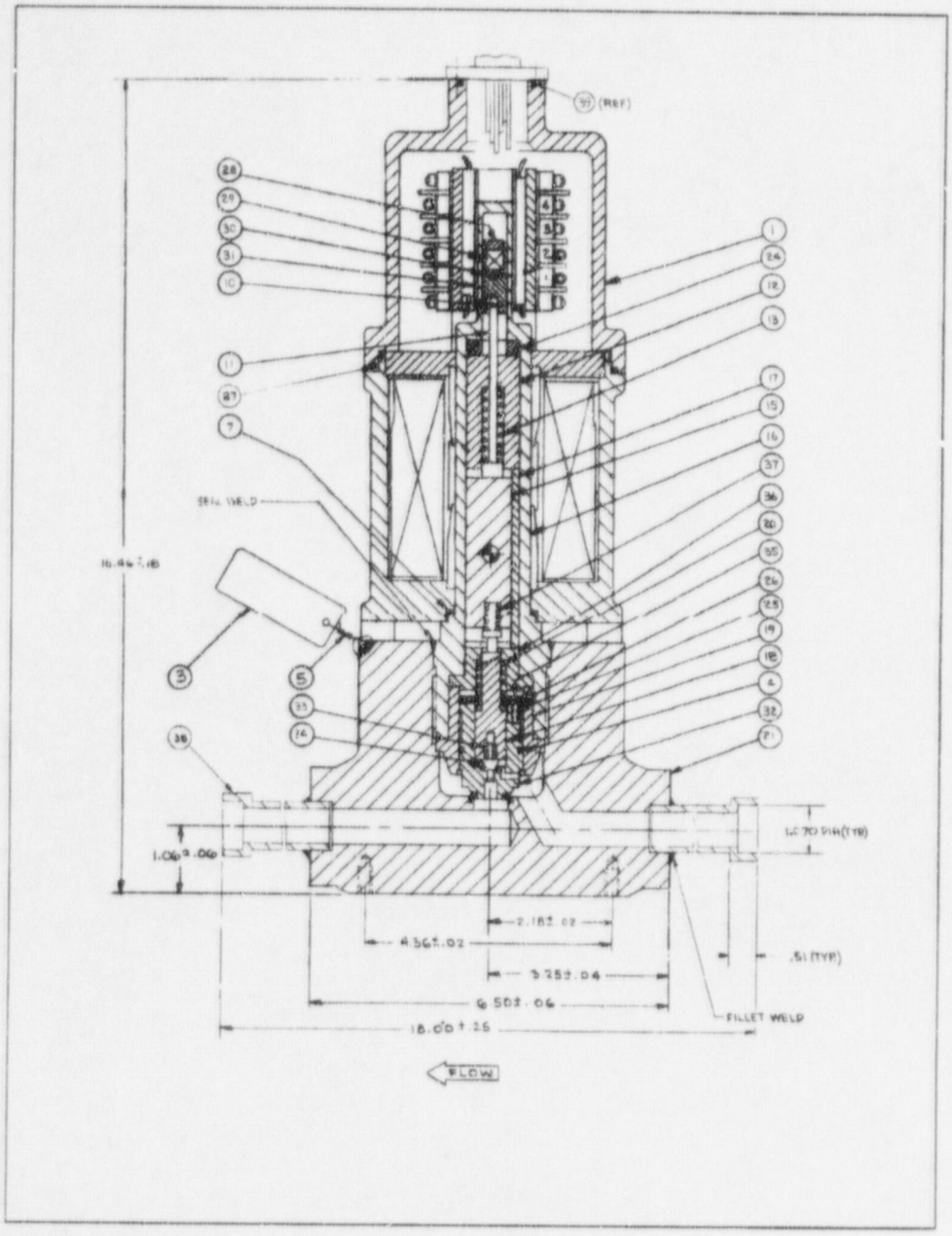

FIGURE 1
Accumulator Sample Line Inboard Containment Isolation Valve
Tag Numbers 1/2HV-10950, -10951, -10952, -10953
Penetrations 72A, 72B, 73A, 73B