BALTIMORE
GAS AND
ELECTRIC

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February 10, 1994

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Request for Temporary Relief from ASME Boiler & Pressure Vessel Code Section XI Requirement IWA-5250

Baltimore Gas and Electric Company requests temporary relief from ASME Boiler & Pressure Vessel Code Section XI (1983 Edition), requirement IWA-5250, as allowed under 10 CFR 50.55a(a)(3)(i). We specifically request permission to delay the repair of the minor leakage identified at four locations on the bodies of the throttle valves for the Spent Fuel Pool Cooling (SFPC) Pumps. The delay is requested until the period of time in which the use of this system is minimized, i.e., following the Unit 1 refueling outage this spring, and prior to fuel off-load for the next scheduled Unit 2 refueling outage (spring 1995). The alternative proposed by this request will result in an acceptable level of quality and safety.

I. Component for Which Relief Is Requested

Temporary relief is requested for the bodies of the two 8-inch globe valves (0-SFP-150 and 0-SFP-155) which throttle flow from the SFPC Pumps. The valves are located at the outlet of Spent Fuel Pool Coolers Nos. 11 and 12. Four small leaks have been discovered in the weld prep area of these two valves (see Attachment 1 for location of defects). The SFPC System is common to both units. The design functions of this system are to remove decay heat from the fuel assemblies stored in the spent fuel pool and to ensure the spent fuel assemblies remain adequately covered at all times. In accordance with guidance provided in Regulatory Guide 1.26, the valves and piping in the SFPC System are Class 3 components subject to the requirements of ASME Section XI.

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II. Code Requirements for Which Relief Is Requested

ASME Boiler and Pressure Vessel Code Section XI (1983 Edition, through summer 1983 addendum), requirement IWA-5250, states:

"(a) The source of leakages detected during the conduct of a system pressure test shall be located and evaluated by the Owner for corrective measures as follows:

. . . (2) repairs or replacements of components shall be performed in accordance with IWA-4000 or IWA-7000, respectively."

III. Proposed Alternative Provides Adequate Level of Quality and Safety

Instead of conducting a repair at this time, we propose to perform periodic visual examinations (monthly) to ensure that the leakage from the throttle valves does not significantly increase. This will provide adequate assurance of safety until a Code repair or replacement can be made prior to fuel off-load for the next scheduled Unit 2 refueling outage (spring 1995).

IV. Supporting Information

A. Sequence of Events

While performing decontamination and general housekeeping on January 10, 1994, evidence of through-wall defects was found on the Spent Fuel Pool Cooler Outlet Throttle Valves, 0-SFP-150 and 0-SFP-155. The defects were evidenced by a very small amount of boric acid crystals on the weld prep areas on the valve bodies. The largest area of crystallization on the 8-inch valves was approximately 3/8-inch in diameter, and in fact, after removing the boric acid crystals from the valve bodies, the defects were barely visible to the naked eye. Valve 0-SFP-155 has three defects and valve 0-SFP-150 has only one. The weepage through all of the defects is not enough to be quantifiable (no drops are visible).

An initial operability assessment was performed based upon the following information:

- The valves were recently installed (December 1993) after passing a hydrostatic pressure test and a dye penetrant test at the vendor's facility. Subsequent to installation, a second hydrostatic and penetrant test were performed in accordance with our non-destructive testing program. The hydrostatic pressure test was run for 10 minutes in accordance with ASME Section XI, IWA-5213(d). The low weepage rate is consistent with very small discontinuities; such small discontinuities would not be detectable in the relatively short duration of a hydrostatic pressure test or a dye penetrant test.

- The rate of weepage from the defect is immeasurably small. Based on a visual inspection of the weepage sites under low power magnification, we verified the weepage is passing through the weld prep area on the cast valve body.

- The valves are fabricated from cast austenitic stainless steel procured to SA351, Grade CF8M. This grade of stainless steel is extremely tough, ductile and resistant to crack growth. This material will not fail in a brittle manner above a temperature of -200 F.

- This portion of the piping system is rated for 220 psi at 150 F and typically operates at 85 psi at 90 F with both trains of cooling in service during the summer. With one train of cooling, during the summer, the temperature is typically 95 F to 105 F. For those operating conditions, the discontinuities are unlikely to grow. Due to the nature of the defects, the high toughness of the valve material, and the low operating pressure, it was determined that catastrophic failure of the valves due to these discontinuities is not credible.

Based on these observations, an initial determination was made that the SFPC System, and in particular, the Spent Fuel Pool Cooler Outlet Throttle Valves, is able to perform its safety and non-safety functions. Therefore, the system was determined to be operable. However, because of the identified leakage in the valves, Technical Specification Action Statement 3.4.10.1.c, Structural Integrity of ASME Code Class 3 Components, was entered. This Action Statement does not restrict continued power operation. We intend to restore the structural integrity of the valves following the Unit 1 refueling outage, when the decay heat load in the spent fuel pool is minimized.

B. Safety Significance

As discussed above, the initial operability assessment determined that a catastrophic failure of the valves due to these discontinuities is not credible; however, the system design and operation were reviewed to assess the ability to perform the system functions if both valves did fail catastrophically. The design functions performed by this system are to cool the spent fuel assemblies and to ensure the spent fuel assemblies remain adequately covered at all times.

The SFPC System is designed to transfer the heat load from the spent fuel assemblies to the Service Water System through the Spent Fuel Pool Coolers. If both valves were to fail, the capability to transfer heat to the Service Water System would be lost. If both trains of SFPC are lost, removal of the decay heat load would be through evaporation and make-up. The capability exists to make-up the evaporated spent fuel pool water with borated water from the Refueling Water Tank by gravity feed. This make-up flow path is designed to Seismic Category I, Class 3 requirements and is physically independent of the SFP Cooler Outlet Throttle Valves. Alternative means of filling the spent fuel pool include use of the Demineralized Water hose connection as described in Operating Instruction (OI-24F), "Filling Spent Fuel Pool," and use of the Fire Water hose connection.

The spent fuel assemblies will remain covered at all times, as a result of inherent design features which prevent inadvertent draining of the pool below the minimum level required by the Technical Specifications. Technical Specification 3.4.9.11 requires that, at a minimum, 21.5 feet of water must be maintained over the top of

the irradiated fuel assemblies seated in the storage racks. The SFPC System is designed to prevent draining of the spent fuel pool below the level required by the Technical Specifications by terminating the spent fuel pool suction piping above the Technical Specification water level and by providing siphon breakers above the Technical Specification water level on the discharge piping.

In addition to evaluating the effects of a catastrophic failure of these valves on the ability of the SFPC System to perform its design functions, the effects of a failure of these valves on other systems was also evaluated. For this type of failure, the only mechanisms which could result in a consequential failure are flooding and spray effects. As discussed in our Updated Final Safety Analysis Report, Section 9.4.4, "System Operation and Reliability," flooding of the Emergency Core Cooling System equipment rooms on the lowest level of the Auxiliary Building can be prevented by shutting their watertight doors. The SFPC Pump motors are the only components within the immediate vicinity of the valves which could adversely affect other systems as a result of spray effects if the valves were to fail catastrophically. The 480 volt load centers feeding these pump motors are protected by circuit breakers, which are set to ensure selective coordination. The pump motor circuit breakers are set to trip before affecting the bus feeder breaker. These design features ensure flooding and spray effects resulting from a failure of these valves will not prevent other plant systems from performing their safety functions.

Therefore, even in the event of the incredible catastrophic failure of these valves, the design functions of the system will be met using alternative means, as provided in the system design and described in the system operating procedures.

C. Code-Requirement Performance Impact

The Code repair of the valve bodies requires taking one train of SFPC out-of-service at a time while repairs are performed. We entered our Unit 1 refueling outage on February 8, 1994. Since the entire core will be off-loaded into the spent fuel pool during this outage, we will require both trains of SFPC to be available at all times until the fuel is returned to the reactor vessel. There was insufficient time between the date the leaks were identified and the start of the Unit 1 outage to effect a Code repair or replacement of the valves; therefore, we propose postponing the repair of these valves until after the spent fuel pool cooling heat load is minimized. This will occur in the non-outage period following this spring's Unit 1 refueling outage, and ending with the off-loading of fuel for the 1995 Unit 2 refueling outage. Granting this relief will not have an adverse affect on quality or safety.

V. **Compensatory Actions**

In addition to routine tours performed each shift by Operations personnel, we will visually exam the valves monthly to verify that the leakage from 0-SFP-150 and 0-SFP-155 does not increase significantly. Should the weepage from the valves increase to an active leak, we will reevaluate our analysis.

VI. **Implementation Schedule**

A. Monthly visual examination to check for leakage from the valve body and routine tours by Operations personnel -- Currently in place.

B. Repair of the valves -- Following the 1994 Unit 1 refueling outage, and prior to fuel off-load for the 1995 Unit 2 refueling outage. Valve repair will be performed at the earliest opportunity after the necessary material is received on site, and the spent fuel pool heat load reaches a safe level.

SAFETY COMMITTEE REVIEW

The proposed relief request has been reviewed by our Plant Operations and Safety Review Committee and they concluded that the Spent Fuel Pool Cooler Outlet Throttle Valves, 0-SFP-150 and 0-SFP-155, will provide an adequate level of quality and safety until Code repairs as required by IWA-5250 can be made.

Should you have any questions regarding this matter, we will be pleased to discuss them with you.

Very truly yours,

J B Russell

for
R. E. Denton
Vice President - Nuclear Energy

RED/NH/dlm

Attachment: (1) Location of Defects of SFPC Throttle Valves

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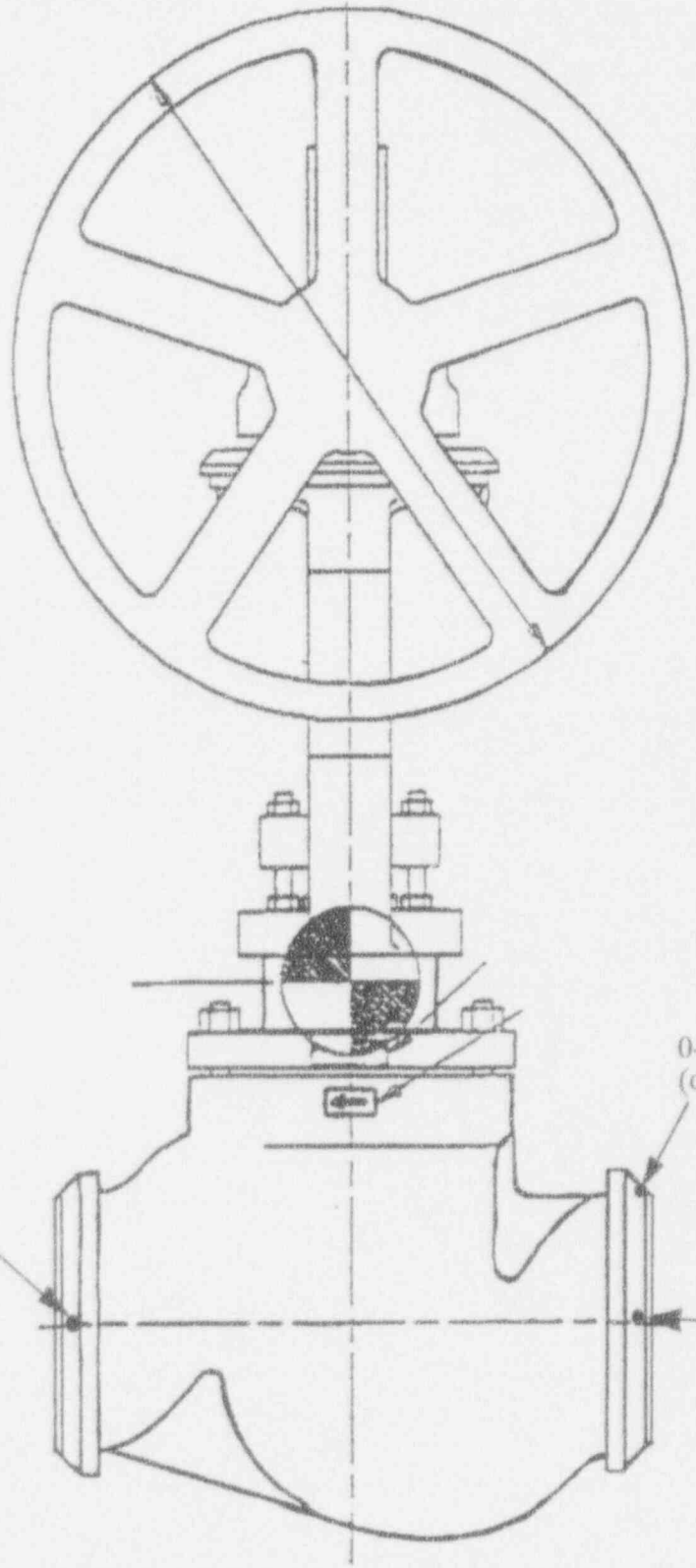
ATTACHMENT 1
LOCATION OF DEFECTS ON SFPC THROTTLE VALVES
(0-SFP-150 AND 0-SFP-155)



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