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

Edwin I. Hatch Nuclear Plant - Unit 2
Reactor Building-to-Suppression Chamber Vacuum Relief System
Design Compliance with General Design Criterion 56

Ladies and Gentlemen:

On January 14, 1998, Southern Nuclear Operating Company (SNC) submitted a letter to NRC requesting an exemption from the requirements of General Design Criterion (GDC) 56 with respect to the Hatch Unit 2 reactor building-to-suppression chamber vacuum relief system design. Following discussions with the NRC Staff, SNC has reconsidered its exemption request and hereby withdraws its January 14, 1998, letter. SNC has concluded that the design of the Plant Hatch Unit 2 reactor building to suppression chamber vacuum relief system meets the design basis of GDC 56. As the basis for this conclusion, SNC adopts the analysis in the January 24, 1992, letter from the BWR Owners' Group (BWROG-92008).

The Plant Hatch Unit 2 reactor building-to-suppression chamber vacuum relief system consists of two lines that run from the reactor building atmosphere to the air space inside the suppression chamber. Each line has two valves in series. On the outboard side is a self-actuating check valve. The second valve is an air-operated butterfly valve. The vacuum breakers are designed to relieve vacuum conditions in the suppression chamber by bleeding air from the reactor building into the suppression chamber when 0.5 psid is applied across the seat. Each of the vacuum breaker lines provides 100% relief capacity and, for testing purposes, can be manually operated from the main control room. This is a standard design for many BWR/4s. Plant Hatch Unit 1 has the same design; however, as mentioned in our original exemption request of January 14, 1998, the Unit 1 construction permit was issued prior to May 21, 1971, so this issue does not apply to Plant Hatch Unit 1.

While the primary purpose of the Unit 2 vacuum breaker arrangement is to limit the negative pressure in the suppression chamber following an accident, a secondary purpose is to provide primary containment isolation capability. However, because the vacuum breakers' primary purpose is to provide a vacuum relief function, the air-operated butterfly valve is designed to fail-open upon a loss of air. This failure mode is in compliance with the portion of GDC 56 which states, "...upon loss of actuating power, automatic isolation valves shall be designed to take the position that provides greater safety." GDC 56 also states that "[e]ach line that connects directly to the containment atmosphere and penetrates primary reactor containment shall be provided with" in general, two "containment isolation valves . . . unless it can be demonstrated that the containment isolation provisions . . . are acceptable on some other defined basis." The GDC also

states that "[a] simple check valve may not be used as the automatic isolation valve outside containment." The air-operated butterfly valves are operable for design basis events where instrument air is credited or loss of offsite power is not assumed and, together with the check valves, provide redundant containment isolation for these events. For design basis events where a loss of offsite power is assumed and instrument air is not available, the containment isolation function will be provided by the check valves.

Based upon the items discussed below, the design of the Plant Hatch Unit 2 reactor building-to-suppression chamber vacuum relief system is reliable for the containment isolation function.

1. Realistically, check valves are passive components and, therefore, are much less likely to fail than active valves. A passive failure (along with the loss of air-operated butterfly valve operability) would be necessary to prevent isolation of either of the vacuum relief lines. As discussed in Subsection 3.3 of the BWROG January 24, 1992, letter, it is not necessary to assume single passive failures in fluid systems such as vacuum relief lines.

   There is disagreement between the NRC and the industry on this issue. Specifically, the NRC considers failure of a check valve an active failure as opposed to the industry view which considers it a passive failure. The BWROG letter of January 1992, points out that SECY 77-439 considers check valves to be passive components. Furthermore, the SECY also states that it is not necessary to assume passive failures in fluid systems such as vacuum relief lines. SECY 94-084 was later issued stating, "the staff normally treats check valves, except for those in containment isolation systems, as passive devices." However, SECY 94-084 was issued well after Plant Hatch Unit 2 was licensed. At the time of licensing, Plant Hatch Unit 2 complied with the GDC as well as guidance documentation on this issue.

2. The increase in containment pressure following a LOCA improves the seating capability of the check valves.

3. The check valves are leak-rate tested under the Plant Hatch Appendix J testing program.

4. The Plant Hatch Technical Specifications provide surveillance requirements for the vacuum relief system. The surveillances include verifying the normally-closed vacuum breaker is indeed closed as well as verifying the vacuum breaker closes after opening. The two surveillances are performed on a 92-day and an 18-month frequency, respectively.

5. Plant Hatch uses the non-interruptible essential instrument air system to supply air to the air-operated butterfly valves. The air is supplied by three station service air compressors (only one is normally running), two of which are supplied by safety-related power. These two compressor loads are shed from the safety-related bus upon a loss of offsite power; however, the compressors can be restarted manually to allow the butterfly valves, and other loads, to regain their motive force. Additionally, the non-interruptible essential instrument air system has a backup nitrogen supply through a valve supplied with safety-related power. Thus, a loss of air to the butterfly valves with a stuck-open check valve is an unlikely event.

6. The reactor building-to-suppression chamber vacuum breaker configuration complies with the General Electric design specification which states:

> "Lines which open into the suppression chamber, and whose branches do not terminate in dead end service capable of withstanding suppression chamber design conditions, shall utilize two remotely operated or self actuated valves . . . . Exceptions to the above are suppression chamber vacuum relief lines, which utilize self-actuated and power operated valves in series . . . ."

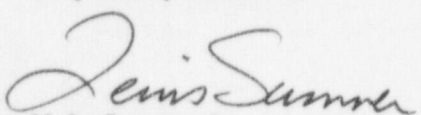
This specification provides the "other defined basis" permitted by GDC 56.

This issue was addressed by the NRC in a safety evaluation report for the Cooper Nuclear Station placed in the public document room on January 30, 1998, (Ref: TIA 95-010). That safety evaluation evaluated the Cooper design for the reactor building to torus vacuum breakers, which is similar to the Plant Hatch design, and determined that any hardware changes were unjustified from a cost-benefit standpoint.

In summary, SNC believes the Plant Hatch Unit 2 reactor building-to-suppression chamber vacuum relief system as currently configured is a reliable design. SNC requests that a letter approving this design configuration for Plant Hatch Unit 2 be issued by the NRC. Upon receipt of the letter, the Unit 2 FSAR will be updated on a routine basis to clarify the compliance with GDC 56.

If you have any questions or concerns, please contact this office.

Respectfully submitted,



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