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

Joseph M. Farley Nuclear Plant
Request For Relief From ASME Code Compliance Section III Requirements
Block Valves In Series With Overpressure Protection Devices

Ladies and Gentlemen:

Pursuant to 10 CFR 50.55a(a)(3), Southern Nuclear Company (SNC) is hereby requesting relief for Farley Nuclear Plant (FNP), Units 1 and 2 from the requirements of 1968 ASME Section III, Article 9, Section N-910.8 and 1971 ASME Section III, Article NC-7000, Paragraph NC-7153. This relief would allow FNP to retain the installation of several block valves located in series with overpressure protection devices for the Volume Control Tank (VCT) and the Regenerative Heat Exchanger (RHE). The block valves are part of original standard designs provided by Westinghouse, facilitate maintenance of the components, and have strict administrative controls for maintaining an open flow path during plant operation to ensure overpressure protection is not defeated. A complete description of the relief request is provided in the enclosure.

If there are any questions, please advise.

Respectfully submitted,

D. Morey

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Enclosure

cc: Mr. S. D. Ebneter, Region II Administrator
Mr. B. L. Siegel, NRR Senior Project Manager
Mr. T. M. Ross, FNP Sr. Resident Inspector

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ENCLOSURE

Request for Relief from ASME Section III Requirements
Block Valves in Series with Overpressure Protection Devices

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I. COMPONENTS FOR WHICH RELIEF IS REQUESTED

Volume Control Tank

The components for which relief is being requested are manual block valves Q1(2)E21V311A, B and C for FNP Units 1(2). These block valves are installed in similar configurations on each unit. The block valves are installed in the discharge path of relief valve Q1(2)E21V261. The relief valve provides overpressure protection for the VCT, Q1(2)E21T004. The relief valve discharges to one of three available Recycle Hold-up Tanks (RHTs) so that the radioactive gas or liquid released will be contained within a closed system. The purpose of the block valves is to isolate individual RHTs for personnel safety during maintenance, to allow processing of individual RHT contents without uncontrolled discharges into an RHT, and to allow testing of individual RHTs without incapacitating the entire system or VCT overpressure protection.

Regenerative Heat Exchanger

The component for which relief is being requested is manual block valve Q1(2)E21V143 for FNP Unit 1(2). The block valves are installed in similar configurations on each unit. The block valve is in the discharge path of spring-loaded thermal relief check valve Q1(2)E21V114. The relief valve provides overpressure protection for the Regenerative Heat Exchanger (RHE) Q1(2)E21-H002 in the event of CVCS malfunction. The relief valve discharges to the reactor coolant system (RCS). The purpose of the block valve is to facilitate maintenance of the RHE. The valve also serves as the hydrotest boundary between Class 1 and Class 2 piping.

II. CODE REQUIREMENTS

The RHEs are constructed to the requirements of 1968 ASME Section III with Addenda through Winter 1970. The Unit 1 VCT is constructed to the 1968 ASME Section III with Addenda through Winter 1969 and the Unit 2 VCT is constructed to the 1971 Edition with Addenda through Summer 1972. Overpressure protection requirements are stipulated in Article 9 of 1968 ASME Section III and Article NC-7000 of 1971 ASME Section III.

II. CODE REQUIREMENTS continued

Section N-910.8 of Article 9 and Paragraph NC-7153 of Article NC-7000 allow installation of stop valves or similar devices on the inlet or discharge of relief valves, but requires positive "controls and interlocks". In response to a question concerning what is meant by the term "controls and interlocks", ASME Section III Code Interpretation III-1-80-67R, dated March 1, 1989, states that "controls and interlocks ... are pressure sensing devices which would activate the stop valve to provide fluid access to the relief valve, thereby assuring the pressure relieving function is met at all times". Interpretation III-1-80-67R also states that administrative controls such as operating procedures governing the use and application of the system may not be construed as "controls". Even though Interpretation III-1-80-67R is strictly applicable to later versions of ASME Section III, it may be conservatively applied to 1968 and 1971 ASME Section III.

Therefore, the location of a manual block valve in series with a pressure relieving device without the proper "controls and interlocks" does not conform to the ASME Section III requirements.

III. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

SNC is requesting relief from the "control and interlock" requirements of 1968 AS ME Section III, Article 9, Section N-910.8, and 1971 ASME Section III, Article NC-7000, Paragraph NC-7153 which state the following:

"Any stop valve or similar device on the inlet or discharge side of a protective device provided in conformity with N-910.7 shall be so constructed, positively controlled and interlocked that the requirements of N-910.1 will be complied with under all conditions of operation of the system". (1968 Section III)

"No stop valve or other device shall be placed relative to a pressure-relief device so that it could reduce the overpressure protection below that required by these rules, unless such stop valves are constructed and installed with positive controls and interlocks so that the relieving-capacity requirements of NB-7400 are met under all conditions of operation of both the system and the stop valves. Means shall be provided such that the operability of controls and interlocks can be verified by test". (1971 Section III)

IV. PROPOSED ALTERNATIVE TO CODE REQUIREMENTS

As an alternative to the ASME Section III requirements, SNC proposes to maintain the current, as-built configuration with the following administrative controls.

Volume Control Tank

1. One block valve (Q1(2)E21V311A, B or C) is always physically locked-open when the VCT is inservice in order to provide an open flow path for relief valve Q1(2)E21V261. Procedure FNP-1(2)-SOP-2.4 "Chemical and Volume Control, Boron Recycle System" specifies that the block valve for the on service RHT is locked-open during system operation.

2. Procedure FNP-1(2)-STP-64.1 "Non-Safeguards Systems Locked Valve Verification" verifies quarterly that the block valve (Q1(2)E21V311A, B, or C) for the on service RHT is locked-open when the VCT is aligned for service, thereby ensuring that a VCT flow path to an RHT is maintained.

Regenerative Heat Exchanger

1. Procedure FNP-1(2)-SOP-2.1A "CVCS Syste m Operating Procedure Checklist" specifies that block valves Q1(2)E21V143 are in the locked open position during CVCS system operation.

2. Procedure FNP-1(2)-STP-64.0 "Safeguards Systems Locked Valve Verification" verifies quarterly that block valves Q1(2)E21V143 are in the locked open position.

V. BASIS FOR RELIEF

Compliance with 1968 ASME Section III, Article 9, Section N-910.8 and 1971 ASME Section III, Article NC-7000, Paragraph NC-7153 is impractical for the subject block valves. This relief request is justified in accordance with 10 CFR 50.55a(a)(3)(i), 50.55a(a)(3)(ii), and 50.55a(f)(6)(i).

V. BASIS FOR RELIEF continued

1. Administrative controls are in place that specify and verify that the appropriate block valves are locked open prior to system operation and remain open when the VCT and RHE are operable, as discussed in Section IV. Restricted access to the RHE block valves inside containment makes the inadvertent closure of the locked RHE block valve highly unlikely. The administrative controls provide an acceptable alternative to the requirements of ASME Section III and provide an acceptable level of quality and safety meeting the intent of those requirements.

2. Compliance with Code requirements would result in a hardship or unusual difficulties without a compensating increase in the level of quality and safety. The block valve and relief valve configurations were part of the original standard design specified by the vendor. Denial of the relief request and compliance with Code requirements would result in costly backfit design modifications to install controls and interlocks for the subject block valves.

3. The current configuration provides an acceptable level of quality and safety. Misposition of these block valves, although not desirable, would not impair the capability of plant shutdown and operation of the emergency core cooling system. The following failure consequences of each of the current configurations have been evaluated and demonstrate that there are no adverse safety consequences.

VI. FAILURE CONSEQUENCES

VCT Block Valves

The VCT provides surge capacity to accommodate programmed pressurizer level changes. The VCT functions are not safety-related. Relief valve Q1(2)E21V261 discharges to one of three RHTs in the event of system malfunction to preserve the VCT integrity. Block valves Q1(2)E21V311A, B, and C are installed between the relief valve and the three parallel discharge lines to the RHTs with one block valve per discharge line. The relief valve does not have an active safety function and is not required to actively operate during or following an accident to perform a nuclear safety function.

VCT Block Valves continued

Due to the administrative controls described in Section IV, the inadvertent closure of block valves Q1(2)E21V311A, B, and C during power operation is unlikely. Nonetheless, if all three block valves are postulated to be inadvertently closed during power operation, the pressure relief function of relief valve Q1(2)E21V261 would be defeated. Without adequate relief capability, VCT overpressurization could potentially result in failure and release of RCS primary system liquid and gases to the auxiliary building.

Small-break loss-of-coolant-accidents (SBLOCAs) are evaluated in Chapter 15 of the FSAR, with the limiting case being a 3-inch diameter pipe break in the cold leg. The potential consequences of VCT rupture due to inadvertent closure of the VCT block valves are bounded by the SBLOCA analysis in that the letdown line feeding the VCT is 3-inch. In addition, any RCS fluid leakage coming from the letdown line would be further limited by the installed letdown orifices.

Actual RCS fluid leakage into the Auxiliary building would be minimized by the operation of isolation valves on the letdown system lines.

RHE Block Valves

The RHE is designed to recover heat from the CVCS letdown flow by reheating the charging flow, which reduces thermal effects on the RCS piping. The letdown stream flows through the shell of the RHE and the charging stream flows through the tubes. The RHE functions are not safety-related. To preserve the integrity of the RHE in the event of system malfunction, reactor coolant on the charging side of the heat exchanger may be relieved to the RCS through thermal relief (spring-loaded) check valve Q1(2)E21V114. Block valve Q1(2)E21V143 is installed upstream of relief valve Q1(2)E21V114. The relief valve does not have an active safety function and is not required to actively operate during or following an accident to perform a nuclear safety function.

Due to the administrative controls described in Section IV, the possibility of inadvertent closure of block valve Q1(2)E21V143 during power operation is extremely low. Nonetheless, if block valve Q1(2)E21V143 is postulated to be inadvertently closed during power operation, the pressure relief function of spring-loaded check valve Q1(2)E21V114 would be defeated. Without adequate relief capability, RHE overpressurization could potentially result in failure and a release of RCS primary system liquid and gases to the containment.

RHE Block Valves continued

Small-break loss-of-coolant-accidents (SBLOCAs) are evaluated in Chapter 15 of the FSAR, with the limiting case being a 3-inch diameter pipe break in the cold leg. The charging and letdown lines to and from the RHE are 3 inches in diameter thus a postulated rupture of the RHE is enveloped by the SBLOCA analysis described in FSAR Chapter 15.

Actual RCS fluid leakage into CTMT would be minimized by the normal operation of RCS boundary check valves and isolation valves on the normal and alternate charging lines and the Pressurizer auxiliary spray line.