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Southern Nuclear Operating Company
the southern electric system

January 12, 1996

Docket Nos. 50-348
50-364

10 CFR 50.55

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

Joseph M. Farley Nuclear Plant
Request for Use of Alternative Rules For Post
Repair/Replacement Hydrostatic Testing for ASME
Class 1, 2, and 3 Systems Based on ASME Code Case N-416-1

Ladies and Gentlemen:

In accordance with the provisions of 10 CFR 50.55a(a)(3)(i), Southern Nuclear Operating Company (SNC) proposes the performance of alternative tests and/or examinations in lieu of the hydrostatic pressure test currently required by the American Society of Mechanical Engineers (ASME) Section XI after repairs by welding on the pressure boundary or the attachment of replacements by welding. SNC proposes to implement the alternative rules of ASME Section XI, Code Case N-416-1 dated February 15, 1994, entitled "Alternative Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding, Class 1, 2, and 3, Section XI, Division 1." The alternative rules will continue to provide an acceptable level of safety and quality equivalent to that provided by the ASME Code.

SNC requests using the alternative as it will allow the performance of system leakage tests following maintenance and modification activities in lieu of hydrostatic pressure tests which will result in a net benefit for the plant. Undue hardships are generally encountered with the performance of hydrostatic testing. Since hydrostatic test pressures are higher than normal operating pressures, this type of testing frequently requires significant effort to set up and perform. Additionally, the need for special equipment and valve lineups can cause the testing to impact refueling outage schedules. Consequently, implementation of the alternative testing provisions of ASME Code Case N-416-1 can reduce personnel radiation exposure, outage schedules, and costs.

SNC is requesting to adopt the alternative rules of Code Case N-416-1 using the NDE requirements of the 1971 edition with summer 1971 addenda of ASME Section III Code and system leakage test requirements of the 1983 ASME Section XI Code currently committed to by FNP instead of the 1992 editions referenced in the Code Case. SNC has reviewed the code editions in question and finds no appreciable differences in the areas of interest to this relief request. The use of the 1992 edition would require modifying numerous plant, vendor and subcontractor procedures for administrative or editorial reasons only.

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SNC understands that certain utilities have been required to include a root pass liquid penetrant exam (PT) on all class 3 welds as an additional requirement to the ASME Code Case N-416-1 requirements. SNC believes that this additional NDE is inconsistent with existing ASME Section III examination requirements. Requiring a root pass PT on all class 3 welds imposes more stringent requirements on certain class 3 welds than on similar class 2 welds. For example, class 3 socket welds (>2 " - 1992 code) will require both a root pass PT and a final PT whereas similar class 2 socket welds only require a final PT. SNC also questions the usefulness of the root pass PT on all types of welds as a reliable means of detecting potential crack initiating weld root conditions such as lack of fusion, incomplete penetration and root concavity or convexity. SNC believes that the imposition of the additional NDE on the class 3 welds presents a hardship which does not result in a compensating increase in the level of quality or safety. SNC is therefore requesting the adoption of the alternative rules of the code case without any additional class 3 NDE requirements.

The Relief Requests and Code Case N-416-1 are attached for Nuclear Regulatory Commission (NRC) staff review. NRC approval is requested by March 13, 1996, in order to support activities associated with the 1996 Fall Unit 2 Refueling Outage, which is scheduled to begin in September, 1996.

Should you have any questions in this regard, please contact this office.

Respectfully Submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

Dave Morey

EFB:maf CC416-1R.DOC

Enclosures:

1. Unit 1 Relief Request
2. Unit 2 Relief Request
3. ASME Code Case N-416-1

cc: U. S. Nuclear Regulatory Commission, Washington, DC
B. L. Siegel, Licensing Project Manager, NRR

U. S. Nuclear Regulatory Commission, Region II
S. D. Ebneter, Regional Administrator
T. M. Ross, Senior Resident Inspector

RELIEF REQUEST

FNP-1

RR-47

COMPONENT OR RELIEF AREA: All ASME Class 1, 2, and 3 piping and components.

REQUIREMENT FROM WHICH RELIEF IS REQUESTED: The 1983 Edition through Summer 1983 addenda, Section XI, IWA-4400(a) requires that a system hydrostatic test be performed in accordance with IWA-5000 after a welded repair on a pressure retaining boundary.

BASIS FOR RELIEF: Relief is requested from performing this Code required post repair/replacement hydrostatic pressure test on Class 1, 2, and 3 welds. Alternative examinations are proposed.

ALTERNATE EXAMINATION: Alternative examinations delineated in Code Case N-416-1 may be performed in lieu of Code required hydrostatic tests.

These alternative examinations are as follows.

(1) Perform nondestructive examinations in accordance with the methods and acceptance criteria of the applicable subsection of the 1971 Edition with summer 1971 addenda of ASME Section III.

(2) Perform a VT-2 visual examination of the welds in conjunction with the system leakage test using the 1983 Edition with Summer 1983 addenda of ASME Section XI (IWA-5000).

(3) The use of Code Case N-416-1 will be documented in the applicable owners data report (NIS-2).

RELIEF REQUEST

FNP-1

RR-47

JUSTIFICATION FOR THE GRANTING OF RELIEF:

SNC has determined that hydrostatically testing post repair/replacement welds represents an undue hardship. Hardships are generally encountered with the performance of hydrostatic testing performed in accordance with the Code. For example, since hydrostatic test pressure would be higher than nominal operating pressure, hydrostatic pressure testing frequently requires significant effort to set up and perform. The need to use special equipment and the need for individual valve lineups can cause the testing to impact refueling outage schedules.

Piping components are designed for a number of loadings that would be postulated to occur under the various modes of plant operation. Section XI hydrostatic testing only subjects the piping components to a small increase in pressure over the design pressure and, therefore, does not present a significant challenge to pressure boundary conditions. Accordingly, hydrostatic pressure testing is primarily regarded as a means to enhance leakage detection during the examination of components under pressure, rather than solely as a measure to determine the structural integrity of the components.

The ASME Subcommittee Working Group on pressure testing concluded that no additional benefit is gained by conducting the existing system hydrostatic tests in place of the alternate rules which require a leak test at nominal operating pressure. The conclusion of the group was that hydrostatic testing does not necessarily verify structural integrity, and in fact, the slightly higher test pressures currently called for in the Code could result in operational difficulties as well as extended outages and increased costs.

Industry experience has demonstrated that hydrostatic test pressures do not usually propagate an existing flaw into a through-wall leak. This experience indicates that leaks in most cases are being found when the system is at normal operating pressure. This is largely due to the fact that hydrostatic pressure testing is infrequently performed, while system leakage tests at normal operating pressures are conducted a minimum of once each refueling outage for Class 1 systems, and each 40-month inspection period for Class 2 and 3 systems. In addition, leaks may be identified during system walkdowns by plant operators.

RELIEF REQUEST

FNP-1

RR-47

JUSTIFICATION FOR THE GRANTING OF RELIEF: (Continued)

SNC has determined that the nondestructive examinations and their associated acceptance criteria provide assurance of the structural integrity of the weld. The proposed alternative examinations will provide reasonable assurance that unallowable flaws are not present in the subject welds. Consequently, an acceptable level of quality and safety will be achieved and public health and safety will not be endangered by allowing the proposed alternative examination in lieu of the Code requirement.

RELIEF REQUEST

FNP-2

RR-47

COMPONENT OR RELIEF AREA: All ASME Class 1, 2, and 3 piping and components.

REQUIREMENT FROM WHICH RELIEF IS REQUESTED: The 1983 Edition through Summer 1983 addenda, Section XI, IWA-4400(a) requires that a system hydrostatic test be performed in accordance with IWA-5000 after a welded repair on a pressure retaining boundary.

BASIS FOR RELIEF: Relief is requested from performing this Code required post repair/replacement hydrostatic pressure test on Class 1, 2, and 3 welds. Alternative examinations are proposed.

ALTERNATE EXAMINATION: Alternative examinations delineated in Code Case N-416-1 may be performed in lieu of Code required hydrostatic tests.

These alternative examinations are as follows.

(1) Perform nondestructive examinations in accordance with the methods and acceptance criteria of the applicable subsection of the 1971 Edition with Summer 1971 addenda of ASME Section III.

(2) Perform a VT-2 visual examination of the welds in conjunction with the system leakage test using the 1983 Edition with Summer 1983 addenda of ASME Section XI (IWA-5000)

(3) The use of Code Case N-416-1 will be documented in the applicable owners data report (NIS-2).

RELIEF REQUEST

FNP-2

RR-47

JUSTIFICATION FOR THE GRANTING OF RELIEF:

SNC has determined that hydrostatically testing post repair/replacement welds represents an undue hardship. Hardships are generally encountered with the performance of hydrostatic testing performed in accordance with the Code. For example, since hydrostatic test pressure would be higher than nominal operating pressure, hydrostatic pressure testing frequently requires significant effort to set up and perform. The need to use special equipment and the need for individual valve lineups can cause the testing to impact refueling outage schedules.

Piping components are designed for a number of loadings that would be postulated to occur under the various modes of plant operation. Section XI hydrostatic testing only subjects the piping components to a small increase in pressure over the design pressure and, therefore, does not present a significant challenge to pressure boundary conditions. Accordingly, hydrostatic pressure testing is primarily regarded as a means to enhance leakage detection during the examination of components under pressure, rather than solely as a measure to determine the structural integrity of the components.

The ASME Subcommittee Working Group on pressure testing concluded that no additional benefit is gained by conducting the existing system hydrostatic tests in place of the alternate rules which require a leak test at nominal operating pressure. The conclusion of the group was that hydrostatic testing does not necessarily verify structural integrity, and in fact, the slightly higher test pressures currently called for in the Code could result in operational difficulties as well as extended outages and increased costs.

Industry experience has demonstrated that hydrostatic test pressures do not usually propagate an existing flaw into a through-wall leak. This experience indicates that leaks in most cases are being found when the system is at normal operating pressure. This is largely due to the fact that hydrostatic pressure testing is infrequently performed, while system leakage tests at normal operating pressures are conducted a minimum of once each refueling outage for Class 1 systems, and each 40-month inspection period for Class 2 and 3 systems. In addition, leaks may be identified during system walkdowns by plant operators.

RELIEF REQUEST

FNP-2

RR-47

JUSTIFICATION FOR THE GRANTING OF RELIEF:

SNC has determined that the nondestructive examinations and their associated acceptance criteria provide assurance of the structural integrity of the weld. The proposed alternative examinations will provide reasonable assurance that unallowable flaws are not present in the subject welds. Consequently, an acceptable level of quality and safety will be achieved and public health and safety will not be endangered by allowing the proposed alternative examination in lieu of the Code requirement.

Approval Date: February 15, 1994

See Numeric Index for expiration and any reaffirmation dates.

Case N-416-1
Alternative Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding, Class 1, 2 and 3
Section XI, Division 1

Inquiry: What alternative pressure test may be performed in lieu of the hydrostatic pressure test required by para. IWA-4000 for welded repairs or installation of replacement items by welding?

Reply: It is the opinion of the Committee that in lieu of performing the hydrostatic pressure test required by para. IWA-4000 for welded repairs or installation of replacement items by welding, a system leakage test may be used provided the following requirements are met.

(a) NDE shall be performed in accordance with the methods and acceptance criteria of the applicable Subsection of the 1992 Edition of Section III.

(b) Prior to or immediately upon return to service, a visual examination (VT-2) shall be performed in conjunction with a system leakage test, using the 1992 Edition of Section XI, in accordance with para. IWA-5000, at nominal operating pressure and temperature.

(c) Use of this Case shall be documented on an NIS-2 Form.

If the previous version of this case were used to defer a Class 2 hydrostatic test, the deferred test may be eliminated when the requirements of this revision are met.