April 2, 2002

Mr. William R. McCollum, Jr.
Vice President, Oconee Site
Duke Energy Corporation
7800 Rochester Highway
Seneca, SC 29672

SUBJECT: OCONEE NUCLEAR STATION, UNITS 1, 2 AND 3, RE: INSERVICE INSPECTION PROGRAM REQUEST FOR RELIEF NO. 01-001, VOLUMETRIC COVERAGE LIMITATIONS (TAC NOS. MB1706, MB1707 AND MB1708)

Dear Mr. McCollum:

By letter dated April 5, 2001, as supplemented by letter dated March 20, 2002, you requested relief from certain American Society of Mechanical Engineers Boiler and Pressure Vessel Code (Code), Section XI, volumetric examination requirements at Oconee Nuclear Station, Units 1, 2 and 3. We conclude that following the Code requirements would result in a significant burden. Therefore, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g)(6)(i), we grant the relief for the third inservice inspection interval for Oconee Nuclear Station, Units 1, 2 and 3. Our Safety Evaluation is enclosed.

Sincerely,

/RA/

Richard J. Laufer, Acting Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos.: 50-269, 50-270 and 50-287

Enclosure: As stated

cc: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

INSERVICE INSPECTION PROGRAM

REQUEST FOR RELIEF NO. 01-001

OCONEE NUCLEAR STATION, UNITS 1, 2 AND 3

DUKE ENERGY

DOCKET NOS. 50-269, 50-270 AND 50-287

1.0 INTRODUCTION

The Inservice Inspection (ISI) of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Class 1, Class 2, and Class 3 components is to be performed in accordance with Section XI of the ASME Code and applicable edition and addenda as required by Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g), except where specific relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). 10 CFR 50.55a(a)(3) states in part that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if the applicant demonstrates that: (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) will meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The ISI code of record for Oconee Nuclear Station, Units 1, 2 and 3, third 10-year ISI interval is the 1989 Edition of the ASME Code.

By letter dated April 5, 2001, as supplemented by letter dated March 20, 2002, Duke Energy (the licensee) requested relief under Request for Relief No. 01-001, for Oconee, Units 1, 2 and 3 from the volumetric examination coverage requirements for examination categories B-D, B-J, C-B and C-F-1 welds. Data was supplied for Unit 1 welds, while for Units 2 and 3, relief is requested in advance of performing the examinations by using similar design as the basis for the examination limitations.

2.0 INSERVICE INSPECTION PROGRAM REQUEST FOR RELIEF NO. 01-001, VOLUMETRIC EXAMINATION LIMITATIONS FOR CODE CATEGORIES B-D, B-J, C-B AND C-F-1 WELDS

2.1 Code Requirements for which Relief is Requested

Examination Category B-D welds, Figure IWB-2500-7, defines the examination volume to be scanned in order to obtain 100 percent coverage. Examination Category B-J welds,

Figure IWB-2500-8, defines the examination volume to be scanned in order to obtain 100 percent coverage. Examination Category C-B welds, Figure IWB-2500-4, defines the examination volume to be scanned in order to obtain 100 percent coverage. Examination Category C-F-1 welds, Figure IWB-2500-7, defines the examination volume to be scanned in order to obtain 100 percent coverage.

2.2 Licensee's Proposed Alternative to Code

The licensee will continue to use the most current ultrasonic examination (UT) techniques available to obtain maximum coverage for future examinations. For similarly designed welds on Units 2 and 3, if the examination coverage is less than the coverage obtained on Unit 1 welds, separate relief requests will be submitted.

2.3 Licensee's Basis for Relief

The licensee has determined that conformance to the volumetric coverage requirements is impractical for Oconee, Units 1, 2 and 3. Furthermore, the licensee considered that the amount of coverage obtained and the alternatives discussed herein, provided adequate assurance of structural integrity of the welds.

The following table lists the percent coverage obtained and the reason for the inability to obtain 100 percent examination of the volume. For each weld listed, the UT was limited to one sided scanning, and in some cases, partial scanning in the other direction. In the case of austenitic type welds, (Code Category B-J and C-F), a one-sided examination through the weld to inspect the far side is a best effort examination. Current ultrasonic technology is not capable of reliably detecting or sizing flaws on the far side of austenitic weld configurations. This is due to the attenuative properties of austenitic welds which make detection of flaws on the far side difficult to obtain.

Weld Identification	Category	**Coverage**	**Limitation Description**
1-PZR-WP33-1	B-D	37.1%	Nozzle Configuration/Lugs
1-PZR-WP26-1 and 2 1-PZR-WP26-1 and 2 Inner Radius	B-D B-D	26.41% 61.82%	Nozzle Configuration Ratio of OD to Vessel Thick.
1-SGA-WG23-1	C-B	31.58%	Nozzle Configuration
1-A2 to Safe End Weld 1-PIA2-9	B-J	59.15%	Nozzle Configuration
1LP-47 to Pipe Weld 1-53A-02-65L	C-F-1	61%	Valve to Pipe Configuration

1HP-194 to Pipe Weld 1-51A-04-01C	C-F-1	61.24%	Valve to Pipe Configuration
1HP-118 to Elbow Weld 1-51A-01-118A	C-F-1	59.56%	Scanning Surface Limitation
1HP-135 to Pipe Weld 1-51A-02-20B	C-F-1	58.10%	Valve to Pipe Configuration
Tee to Pipe Weld 1HP-193-17	C-F-1	60.40%	Scanning Surface Limitation
Pipe to Flange Weld 1-51A-02-16BH	C-F-1	58.10%	Scanning Surface Limitation
1HP-110 to Elbow Weld 1-51A-01-101A	C-F-1	60.16%	Scanning Surface Limitation

Code Category B-D and C-B welds were examined to the maximum extent practical using ultrasonic techniques qualified in accordance with the requirements of ASME Section XI, Appendix VIII, Supplements 2 and 3 of the 1995 Edition with the 1996 Addenda as administered by the performance demonstration initiative. The licensee also states that the areas with weld limitations will be pressure tested and a visual examination will be performed each outage to assure continued integrity of the pressure boundary.

In addition to the pressure testing the licensee assures continued weld soundness during operation by monitoring the reactor coolant system with a variety of methods such as using the leakage monitoring system, performing mass balances, monitoring the air for radioactive particulates, and monitoring for changes of level in the reactor building normal sump and checking for a loss of level in the letdown storage tank. The licensee also stated that these welds were rigorously examined through radiography and liquid penetrant examinations during construction which further assures soundness.

3.0 EVALUATION

Both Appendix VIII and ASME Section V, Article 4, subarticle T-424.1, require that the weld volume be scanned in two directions by moving the UT search unit over the examination surface. Figures IWB-2500-4, 7 and 8 define the volume of the subject welds that require scanning in two directions.

A review of the submitted nondestructive testing data reports show instances where the examinations were limited to either one side or one side with partial coverage on the other, thereby limiting 100 percent scanning of the required volume in two directions. Redesign of the welds would involve significant expenditures in rewelding, replacement, preservice examination and dose accumulation. On this basis, the staff considers it impractical to redesign the subject welds in order to complete a two-sided examination because there would not be a significant increase in the level of quality and safety commensurate with the cost.

The performance of preservice inspection nondestructive testing and the inservice monitoring of the structural integrity of the welds through leakage monitoring and post-outage pressure test provide reasonable assurance of the welds' structural integrity. The performance of the limited volumetric examinations on each weld also provides reasonable assurance that any active degradation mechanism would be identified, if it existed.

In addition to the listed welds, the licensee is requesting relief from the volumetric coverage requirements for the same welds for Oconee, Units 2 and 3. The Oconee units are either

identical or symmetrical to each other and share the same ISI program plan. In most instances, the inability to meet the percentage coverage requirements on Unit 1 are present on the same welds for Units 2 and 3. The licensee proposes to submit relief requests for any of the welds whose coverage is less than obtained for the Unit 1 welds. (A similar approach was taken in the staff's letter dated May 29, 1997.) The staff has evaluated this request and considers this approach, which minimizes multiple requests for identical conditions, to be sound and applicable and, therefore acceptable.

4.0 CONCLUSION

The staff concludes that requiring the licensee to redesign the weldments in Oconee, Units 1, 2 and 3 to increase code coverage would result in a significant burden. Furthermore, the examinations performed provide reasonable assurance of structural integrity of the subject components. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i) for Oconee, Units 1, 2 and 3 third Inservice Inspection interval. Granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest given due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

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Date: April 2, 2002

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