April 14, 2006

Mr. Bruce H. Hamilton
Vice President, Oconee Site
Duke Energy Corporation
7800 Rochester Highway
Seneca, SC 29672

SUBJECT: THIRD 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN REQUEST FOR RELIEF 04-ON-013 FOR OCONEE NUCLEAR STATION, UNITS 1 AND 2 (TAC NOS. MC5483 AND MC5484)

Dear Mr. Hamilton:

By letter dated December 21, 2004, Duke Energy Corporation (the licensee) submitted Inservice Inspection (ISI) Program Plan Request for Relief (RR) 04-ON-013, for the third 10-Year inspection interval at Oconee Nuclear Station, Units 1 and 2. The Nuclear Regulatory Commission (NRC) staff has completed its review of the request, and the staff's evaluation and conclusions are contained in the enclosed safety evaluation.

The NRC staff has determined that the licensee's proposed alternative provides an acceptable level of quality and safety. Therefore, the request for relief is authorized pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(a)(3)(i), for the third 10-year ISI interval at Oconee Nuclear Station, Units 1 and 2.

Sincerely,

/RA/
Evangelos C. Marinos, Branch Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-269 and 50-270

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
THIRD 10-YEAR INTERVAL INSERVICE INSPECTION
REQUEST FOR RELIEF 04-ON-013
OCONEE NUCLEAR STATION, UNITS 1 AND 2
DUKE ENERGY CORPORATION
DOCKET NUMBERS 50-269 AND 270

1.0 INTRODUCTION

The Nuclear Regulatory Commission (NRC) staff has reviewed and evaluated the information provided by Duke Energy Corporation (the licensee) in its letter dated December 21, 2004, which proposed its Third 10-Year Interval Inservice Inspection (ISI) Program Plan Request for Relief (RR) 04-ON-013, for Oconee Nuclear Station, Units 1 and 2 (ON1 and ON2).

2.0 REGULATORY REQUIREMENTS

Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.55a(g), requires that the ISI of American Society of Mechanical Engineers *Boiler and Pressure Vessel Code* (ASME Code) Class 1, 2, and 3 components be performed in accordance with Section XI of the ASME Code and applicable addenda, except where specific relief has been granted by the NRC pursuant to 10 CFR 50.55a(g)(6)(i). Section 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if: (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) shall meet the requirements, except the design and access provisions and the pre-service 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 ASME Code of record for the ON1 and ON2 third 10-year ISI program, which began on July 15, 1994, is the 1989 edition of Section XI of the ASME Code, with no addenda.

3.0 EVALUATION

Request for Relief No. 04-CN-013

Component Identification (As stated)

Relief is requested for portions of ASME Code Class 1 piping and components connected to the Reactor Coolant System (RCS) that are normally isolated from direct RCS pressure during normal operation.

These areas are isolated from the RCS by their configuration between two normally closed valves that remain closed when the unit is in Modes 3, 2, or 1.

There are four areas in Unit 1 and four identical areas in Unit 2 at Oconee Nuclear Station that were inadvertently not pressure tested during the performance of the Class 1 10-year pressure test. These four sections of pipe are identical configurations in each unit and are as follows:

Section 1: 1" pipe between isolation valves HP-490 and HP-497
Section 2: 1" pipe between isolation valves HP-491 and HP-498
Section 3: 1" pipe between isolation valves HP-492 and HP-499
Section 4: 1" pipe between isolation valves HP-493 and HP-500

ASME Code Requirements (As stated)

ASME Code, Section XI, Table IWB-2500-1, Examination Category B-P, Pressure Retaining Components, System Hydrostatic Test, all Class 1 components within the system boundary.

This test is to be conducted once during the 10 year interval, either at or near the end of the interval.

ASME Code Case N-498-1: Alternative Rules for 10-year system hydrostatic testing for Class 1, 2, and 3 systems, Section XI, Division 1.

It is the opinion of the committee that as an alternative to the 10 year system Hydrostatic test required by Table IWB-2500-1 Category B-P, the following rules shall be used:

1) A system leakage test (IWB-5221) shall be conducted at or near the end of each inspection interval, prior to reactor startup.

2) The boundary subject to test pressurization during the system leakage test shall extend to all Class 1 pressure retaining components within the system boundary.

3) Prior to performing the VT-2 visual examination, the system shall be pressurized to nominal operating pressure for at least 4 hours for insulated systems and 10

minutes for non-insulated systems. The system shall be maintained at nominal operating pressure during the performance of the VT-2 visual examination.

4) The test temperatures and pressures shall not exceed limiting conditions for the hydrostatic test curve as contained in the plant Technical Specifications.

5) The VT-2 visual examination shall include all components within the boundary identified in (a)(2) above.

6) Test instrumentation requirements of IWA-5260 are not applicable.

IWB-5221 System Leakage Test (As stated)

1) The system leakage test shall be conducted at a test pressure not less than the nominal operating pressure associated with 100% rated reactor power.

2) The system test pressure and temperature shall be attained at a rate in accordance with the heat-up limitations specified for the system.

The application of the above ASME Code requirements along with those of Code Case N-498-1 would require all Class 1 pressure retaining components within the system boundary to be pressurized and VT-2 visually examined.

Relief is requested to defer the 10-year interval pressure test on the four identified areas in Units 1 and 2 from the end of the third interval to the first refueling outage in the fourth interval.

In accordance with the requirements of 10 CFR 50.55a(a)(3)(i), relief is requested from the requirements of the 1989 ASME B&PV Code, Section XI, Category B-P, Table IWB-2500-1, footnote (6). This footnote mandates performance of the 10-year pressure test to be conducted at or near the end of each inspection interval.

Licensee's Proposed Alternative Examination and Basis for Relief Request (As stated)

The four identified areas in Unit 1 and Unit 2 were inadvertently omitted from the Class 1, 10-year pressure test, performed in the third interval but will be 10-year pressure tested during the next refueling outage which will be during the fourth interval.

Per the requirements of the 1989 ASME B&PV [Boiler and Pressure Vessel] Code, Section XI, Category B-P, Table IWB-2500-1, footnote (1), the four identified areas in Unit 1 and Unit 2 have received a VT-2 visual exam each refueling outage without being pressurized and have had no evidence of leakage. The next opportunity to pressurize these areas and perform a VT-2 visual exam will be during the next refueling outage.

If a leak were to develop in any of the four Unit 1 or Unit 2 areas described in this relief request, it could be detected by various means available to the operators. There are

area monitors which monitor the reactor building atmosphere and will alarm when the radiation levels reach set limits.

In addition, plant Technical Specification 3.4.13 requires that at least once every 72 hours, when above Mode 5, the reactor coolant system water inventory balance be performed. This Technical Specification limits the amount of unknown leakage to 1 gpm [gallon per minute]. If this limit is exceeded, then the source must be identified or the reactor must be placed in Mode 3 within 12 hours and Mode 5 in 36 hours.

Starting at Mode 3, during reactor shutdown for refueling outages, numerous inspections are made in the reactor building looking for indications of leakage. Each leak is evaluated and repaired.

Besides the area radiation monitors and water inventory monitoring, other leakage detection methods available include frequency of having to pump the reactor building normal sump. Increase frequency for pumping the normal sump would be an indication that there is a leak in the reactor building.

NRC Evaluation

ASME Code, Section XI, Table IWB-2500-1, Examination Category B-P, Pressure Retaining Components, requires a system hydrostatic test of all Class 1 components within the system boundary. This test is to be conducted once during the 10-year interval, either at or near the end of the interval. The licensee has invoked the use of ASME Code Case N-498-1 which allows a system leakage test to be conducted at or near the end of each inspection interval, prior to reactor startup. Prior to performing the VT-2 visual examination, the system shall be pressurized to nominal operating pressure for at least 4 hours for insulated systems and 10 minutes for noninsulated systems. The system shall be maintained at nominal operating pressure during the performance of the VT-2 visual examination.

The licensee requested relief for portions of ASME Code Class 1 piping and components connected to the RCS that are normally isolated from direct RCS pressure during normal operation. These areas are isolated from the RCS by their configuration between two normally closed valves that remain closed when the unit is in Mode 3, 2, or 1. The four identified areas for which relief is requested at ON1 and ON2 are: 1) the 1" pipe between isolation valves HP-490 and HP-497, 2) the 1" pipe between isolation valves HP-491 and HP-498, 3) the 1" pipe between isolation valves HP-492 and HP-499, and 4) the 1" pipe between isolation valves HP-493 and HP-500 of the RCS.

The subject four identified areas in ON1 and ON2 were inadvertently omitted from the Class 1, 10-year pressure test performed in the third interval. The licensee has proposed that the 10-year interval system leakage tests for these subject portions be performed during the first outage of the fourth 10-year ISI interval for ON1 and ON2; these tests were performed on

April 9, 2005[1], and October 22, 2005[1], respectively. Since the third 10-year ISI interval ended on January 1, 2004, there were no more than 10 ASME Code years between leakage tests.

The four subject areas in ON1 and ON2 have received an ASME Code-required VT-2 visual exam each refueling outage during the third 10-year ISI interval, including the last outage of the interval, without being pressurized. During these examinations, the licensee has found no evidence of leakage, such as boron residue or wet areas near the subject piping. The licensee noted that if a leak were to occur in any of the subject areas, it would be detected by various means available to the operators. There are area monitors that monitor the reactor building atmosphere and provide warning by alarm if the radiation levels reach set limits. In addition, at least once every 72 hours when the plant is above Mode 5, the plant Technical Specification (TS) 3.4.13 requires that the reactor coolant system water inventory balance be performed. The TS limits the amount of unknown leakage to 1 gpm. If this limit is exceeded, then the source must be identified or the reactor must be placed in Mode 3 within 12 hours and in Mode 5 in 36 hours.

During reactor shutdown for refueling outages starting at Mode 3, the licensee performs a number of inspections in the reactor building looking for indications of leakage. The licensee evaluates each leak and repairs it. In addition to the area radiation monitors and water inventory monitoring, other leakage detection methods available include the frequency with which the reactor building normal sump has to be pumped. An increase in the frequency of pumping the normal sump would be an indication that there is a leak in the reactor building.

The staff has reviewed the licensee's proposed alternative and has determined that it provides reasonable assurance of quality and safety. Taken together, the VT-2 visual examinations performed during shutdown during each outage, the various radiation and leakage monitoring equipment, and the TS requirement to perform a reactor coolant system water inventory balance every 72 hours provide confidence that the subject piping areas are leak tight and structurally sound.

4.0 CONCLUSIONS

For Relief Request No. 04-ON-013, the staff concluded that the licensee's proposed alternative provides reasonable assurance of quality and safety. The staff further concludes that the VT-2 visual examinations performed during shutdown during each outage of the third 10-year ISI interval, the various radiation and leakage monitoring equipment, and the TS requirement to perform a reactor coolant system water inventory balance every 72 hours provides confidence that the subject piping areas are leak tight and structurally sound. Therefore, the request for relief is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the third 10-year ISI interval at ON1 and ON2. All other requirements of the ASME Code, Section XI, for which relief has not been

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[1] The licensee submitted its alternative on December 21, 2004, prior to performing the system leakage testing in the first outage of the fourth 10-year ISI interval for ON1 and ON2.

specifically requested remain applicable, including third party review by the Authorized Nuclear Inservice Inspector.

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Date:

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