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TUCKMAN,M.S. Duke Power Co.
RECIP.NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)

SUBJECT: Requests relief from requirements of ASME Boiler & Pressure Vessel Code,Section XI,Subsection IWE,1992 Edition w/1992 addenda for Oconee Units 1,2 & 3,McGuire Units 1 & 2 & Catawba Units 1 & 2.

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April 6, 1998

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

ATTENTION: Document Control Desk

SUBJECT: Duke Energy Corporation

Oconee Nuclear Station - Units 1, 2, & 3
Docket Nos. 50-269, 50-270, and 50-287

McGuire Nuclear Station - Units 1 & 2
Docket Nos. 50-369 and 50-370

Catawba Nuclear Station - Units 1 & 2
Docket Nos. 50-413 and 50-414

Request for Relief from Requirements of the ASME Boiler and Pressure Vessel Code, Section XI in Accordance With 10 CFR 50.55a(a)(3)(ii)
Duke Energy Corporation Serial Number 98-GO-001

Pursuant to 10 CFR 50.55a(a)(3)(ii), Duke Energy Corporation requests relief from the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWE, 1992 Edition with the 1992 Addenda for Oconee Units 1, 2 and 3, McGuire Units 1 and 2, and Catawba Units 1 and 2.

Specifically, this request is for relief from the visual, VT-3 examination requirements for seals and gaskets of Class MC pressure retaining components and metallic liners of Class CC components, as specified in the ASME Boiler and Pressure Vessel Code, Section XI, 1992 Edition with the 1992 Addenda, IWE-2500, Table IWE-2500-1, for Examination Category E-D, Item Numbers E5.10 and E5.20.

A detailed relief request, including a background discussion and justification is included as an enclosure to this letter. Duke requests timely NRC review and approval of this relief request so that Containment Inservice Inspection Plans, which are under development, can be completed to support the

A047 1/1

implementation of Containment Inservice Inspections during plant refueling outages starting in September, 1998. A NRC response is requested by July 1, 1998 in order to allow sufficient time to amend the Duke plans that will implement this request. Questions regarding this request should be directed to J. S. Warren at (704) 382-4986.

Very truly yours,

M. S. Tuckman

MST/JSW

Attachment:
Duke Energy Corporation
Request for Relief
Serial Number 98-GO-001, Pages 1 through 7.

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Attachment

DUKE ENERGY CORPORATION

Oconee Nuclear Station Units 1, 2 and 3
McGuire Nuclear Station Units 1 and 2
Catawba Nuclear Station Units 1 and 2

Request for Relief from the Requirements of the ASME Boiler and Pressure Vessel Code, Section XI

Background:

Pursuant to 10 CFR 50.55a (a) (3) (ii), Duke Energy Corporation requests relief from the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWE, 1992 Edition with the 1992 Addenda for Oconee Units 1, 2 and 3, McGuire Units 1 and 2, and Catawba Units 1 and 2.

Visual VT-3 examination of seals and gaskets on airlocks, equipment hatches and other devices required to assure containment leak-tight integrity is required in accordance with Subsection IWE, IWE-2500, Table IWE-2500-1, Examination Category E-D, Items E5.10 and E5.20. Duke Energy Corporation believes that these visual examinations are impractical and that compliance with the specified requirements of Subsection IWE would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Duke Energy Corporation believes that existing surveillance requirements are sufficient to assure the leak-tight integrity of containment pressure retaining seals and gaskets.

I. System/Component(s) for Which Relief is Requested:

Seals and gaskets of Class MC pressure retaining components and metallic liners of Class CC components, Examination Category E-D, Item Numbers E5.10 and E5.20 of IWE-2500, Table IWE-2500-1, ASME Section XI, 1992 Edition, 1992 Addenda.

II. Code Requirement(s):

IWE-2500, Table IWE-2500-1 requires seals and gaskets on airlocks, hatches, and other devices required to

assure containment leak-tight integrity to be visually examined, VT-3, once each interval.

III. Code Requirement from which Relief is Requested:

Relief is requested from performing the Code required visual examination, VT-3, on the above identified metal containment seals and gaskets.

IV. Basis for Requesting Relief:

Duke Energy Corporation has determined that the following types of containment penetrations have seals and gaskets which may be subject to the requirements of IWE-2500, Table IWE-2500-1, Examination Category E-D. A description of these penetrations and their seals and gaskets is provided below.

1. Electrical Penetrations

D.G. O'Brien electrical penetration assemblies use a header plate (blind flange) bolted to a containment penetration nozzle flange and are sealed with redundant metal O-rings between the flange faces. Modules through which electrical conductors pass are welded to both sides of the header plate, and non-resilient hermetic glass seals are used within each module to seal individual electrical conductors which pass through. All of the header plate openings are interconnected by a series of channels within the header plate to facilitate local leak rate (Type B) testing. The dual O-ring configuration also allows for local leak rate testing to be performed.

Conax electrical penetration assemblies consist of one of the two following types:

- One type uses a header plate which is welded to a containment penetration sleeve. Electrical conductors are routed through modules which penetrate the header plate. The module connection to the header plate is sealed by compression fittings (ferrules) which compress seal material against the header plate. Midlock plugs are used to compress ferrules onto the header plate to seal spare openings.

Individual conductors are routed through the modules, and the ends of each module contain a resilient seal surrounding the conductors to maintain leak-tightness. A port in each module is aligned between the ferrules within the header plate opening, and all of the header plate openings are interconnected by a series of channels to facilitate local leak rate (Type B) testing.

- The second type uses a header plate (blind flange) which is bolted to a containment penetration nozzle flange and is sealed with redundant metal O-rings between the flange faces. The remaining details are similar to the first Conax type, and interconnected channels and the dual O-rings are provided to facilitate local leak rate (Type B) testing.

Viking electrical penetration assemblies use a header plate (blind flange) bolted to a containment penetration nozzle flange and are sealed with redundant metal O-rings between the flange faces. Modules through which electrical conductors pass are sealed to the header plate, and the modules are also sealed against a second header plate within the penetration assembly. The space between the header plates is configured to facilitate local leak rate (Type B) testing to verify the integrity of the module and conductor seals. The dual O-ring configuration also facilitates local leak rate (Type B) testing.

2. Mechanical Penetrations with Bolted Joints

Containment penetrations such as fuel transfer tube penetrations and some spare penetrations consist of bolted, flanged joints with gaskets or O-rings. These penetrations are designed to permit local leak-rate testing in accordance with 10CFR50, Appendix J to verify the integrity of the sealed or gasketed connection.

3. Equipment Hatches and Personnel Air Locks (including Emergency Personnel Air Locks at Oconee)

- Equipment Hatches utilize dual O-rings to seal the hatch cover to the Equipment Hatch penetration. The sealed joint is designed to

permit local leak-rate testing in accordance with 10CFR50, Appendix J after each closure, before returning to service.

- Personnel and Emergency Personnel Airlocks utilize an inner and outer door with dual gaskets or seals on each door to seal the airlock doors to the bulkheads on the containment penetrations. The airlocks also contain other gaskets and seals, such as those for sealing handwheel shafts, electrical penetrations, blank flanges, and equalizing pressure connections. The sealed joints on airlocks are designed to permit local leak-rate testing in accordance with 10CFR50, Appendix J and Technical Specifications.

Leak-tightness of containment pressure retaining seals and gaskets is verified by Type B tests in accordance with Option A of 10 CFR 50, Appendix J, as required by current Technical Specifications. On some electrical penetrations, internal compartments within the electrical penetration assembly are pressurized by N_2 or SF_6 gas, and the integrity of seals on these penetration compartments is verified by monitoring the gas pressure and determining the local leak rate to satisfy the Type B test requirements. Overall containment leakage is verified by Type A tests in accordance with Option B of 10 CFR 50, Appendix J. Although the Type A test does not verify individual penetration leakage, it does provide additional assurance that there is no significant leakage through the containment pressure boundary, which includes all sealed penetrations.

Examination of seals and gaskets would require the joints, which are proven adequate by pressure testing, to be disassembled. For electrical penetrations, this would involve determination of cables at electrical penetrations if enough cable slack is not available, disassembly of the joint, removal and examination of the seals and gaskets, re-assembly of the joint, re-termination of the cables if necessary, post maintenance testing of the cables, and a post maintenance Appendix J test of the penetration. This imposes the risk that equipment could be damaged, thus increasing the risk of potential leakage. The 1992 Edition, 1993 Addenda, of Section XI recognizes that disassembly of joints to perform these examinations is

not warranted and Examination Category E-D was modified to state that sealed and gasketed connections need not be disassembled solely for performance of examinations. However, without disassembly, most of the surface of the seals and gaskets would be inaccessible for visual examination. A visual examination of the seal or gasket will not ensure that the material is acceptable and that it will effectively seal the joint. This can only be determined by pressure testing, which is already required by 10 CFR 50, Appendix J. In addition, visual examinations on existing seals and gaskets after joint disassembly provides no benefit as most of these are replaced prior to joint reassembly.

For those penetrations that are routinely disassembled, a Type B test is required upon final assembly and prior to service. Since the Type B test will assure the leak tight integrity of primary containment, the performance of the visual examination would not increase the level of safety or quality. If an unacceptable leakage rate is determined by Type B testing after the connection is reassembled, corrective measures would be taken and the component would be retested to ensure leak tightness.

The visual, VT-3 examinations required by Subsection IWE for some seals on penetrations such as the fuel transfer tube will increase personnel radiological exposure, with no compensating increase in quality or safety.

Recently approved revisions to ASME Section XI, Subsection IWE have eliminated the visual examination VT-3 of seals and gaskets for many of the reasons described above. Although not yet published, these changes are expected in the next scheduled publication of the Code (1998 Edition).

Examination of containment accessible surfaces performed in accordance with the ASME Code, Section XI, IWE-2500, Table IWE-2500-1, Examination Category E-A may reveal indications of damage or degradation if it occurs on or adjacent to containment sealed or gasketed connections. If such degradation is detected, the provisions of 10 CFR 50.55a (b)(2)(x)(A) will require that an evaluation be performed to determine the acceptability of adjacent inaccessible areas, including the sealed or gasketed joint. In such cases, this evaluation may require that the connection be disassembled and examined, or may require that the

connection be leak tested to provide continued assurance of the integrity of these seals or gaskets.

Relief is requested in accordance with 10 CFR 50.55a (a)(3)(ii). Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Testing the seals and gaskets in accordance with 10 CFR 50, Appendix J will provide adequate assurance of the leak-tight integrity of containment pressure retaining seals and gaskets.

V. Alternative Examination(s):

The leak-tightness of containment pressure retaining seals and gaskets will be verified by leak rate testing in accordance with 10 CFR 50, Appendix J, as required by Technical Specifications. No additional alternatives to the visual, VT-3 examinations required in Table IWE-2500-1, Examination Category E-D, for Items E5.10 and E5.20 will be performed.

VI. Justification for the Granting of Relief:

ASME Section XI, 1992 Edition, 1992 Addenda, Table IWE-2500-1, Examination Category E-D, requires visual examination (VT-3) of containment seals and gaskets. Examination of most seals and gaskets require the joints, which are proven adequate through Appendix J testing, to be disassembled. This results in a hardship or unusual difficulty without a compensating increase in the level of quality and safety for those joints which are not routinely disassembled.

For sealed or gasketed joints which are routinely disassembled, the VT-3 visual examination provides little or no benefit and results in a hardship or unusual difficulty without a compensating increase in the level of quality and safety because most seals and gaskets are replaced when the joint is disassembled, and all joints are subject to local leak rate testing after reassembly.

VT-3 visual examinations of seals and gaskets do not ensure that these items, when reinstalled, will not leak. Also, the additional personnel radiological exposure for performance of some seal examinations is not justified, given the fact that the visual

examinations do not verify leak tightness. Leak rate testing in accordance with 10 CFR 50, Appendix J is sufficient to provide this assurance for all containment pressure retaining seals and gaskets.

Conditions observed on accessible surfaces of sealed or gasketed joints during the performance of the visual examinations required by the ASME Code, Section XI, 1992 Edition, 1992 Addenda, Table IWE-2500-1, Examination Category E-A which may indicate the presence of an unacceptable condition on inaccessible surfaces of sealed or gasketed joints shall be subject to the requirements of 10 CFR 50.55a (b)(2)(x)(A). This provision of 10 CFR 50.55a is sufficient to invoke appropriate visual examinations of sealed or gasketed joints when warranted. No other visual examinations of seals or gaskets are necessary to ensure containment leak tight integrity.

VII. Implementation Schedule

First inspection interval for IWE.

Evaluated By: _____
Date: 3-10-98

Reviewed By: D.E. Dellinger
Date: 3-11-98