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SUBJECT: Forwards request 97-GO-001,rev 1,seeking approval to use alternative to ASME Boiler & Pressure Vessel Code,Section XI.

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August 7, 1997

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Subject: Duke Energy Corporation
Oconee Nuclear Station, Units 1, 2, and 3
Docket Nos. 50-269, 50-270, 50-287

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

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

Request to use an Alternative to the
ASME Code, Section XI
Duke Energy Corporation Serial Number 97-GO-001,
Revision 1

Attached is a Duke Energy Corporation request to use an alternative to the ASME Boiler and Pressure Vessel Code, Section XI. This request, Serial Number 97-GO-001, Rev. 1, seeks NRC approval to use this alternative at Oconee, McGuire, and Catawba Nuclear Stations. Initially this request, 97-GO-001, was submitted to the NRC by Duke letter dated June 20, 1997. Revision 1 removes all references to Code Case N-566. Submittal of this revision was discussed with representatives of the NRC Staff and INL during an August 6, 1997 conference call.

Duke Energy Corporation would like to initially implement this alternative during the End-of-Cycle Outage Number 17 on Oconee Unit 1. In order to meet this schedule, it is requested that the NRC review and approve 97-GO-001, Rev. 1 by September 12, 1997.

Please direct questions on this request to J. S. Warren at (704) 382-4986.

A047
1/1

Very truly yours,

M. S. Tuckman

MST/JSW

Attachment:
Duke Energy Corporation
Request for Alternative
ASME Boiler and Pressure Vessel Code, Section XI
Serial Number 97-GO-001, Revision 1

xc w/att: L. A. Reyes
NRC Regional Administrator, Region II

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M. A. Scott
NRC Senior Resident Inspector (ONS)

S. M. Shaeffer
NRC Resident Inspectors (MNS)

Attachment

DUKE ENERGY CORPORATION

Request for Alternative

ASME Boiler and Pressure Vessel Code, Section XI

Background:

Pursuant to 10 CFR 50.55a (a) (3) (i), Duke Energy Corporation requests the use of an alternative to the 1989 Edition of Section XI of the ASME Boiler and Pressure Vessel Code (Code) for Oconee Units 1, 2, and 3; McGuire Units 1 and 2; and Catawba Units 1 and 2.

The 1989 Edition of Section XI,(no addenda), paragraph IWA-5250(a)(2) states "if leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100." Duke Power Company previously requested, and was granted, NRC approval to use the 1990 Addenda as an alternative. The 1990 Addenda allows only the one bolt closest to the leak to be removed and visually examined for corrosion by a VT-3 inspector.

I. Systems/Components for Which Alternative is Requested:

All Class 1, 2, and 3 systems/components subject to IWA-5000 pressure testing.

II. Code Requirement:

Section XI of the ASME Code, 1989 Edition with 1990 Addenda, Subsection IWA-5250(a)(2) states: "If leakage occurs at a bolted connection, one of the bolts shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100. The bolt selected shall be the one closest to the source of leakage. When the removed bolt has evidence of degradation, all remaining bolting in the connection shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100."

III. Requirement for Which Alternative Is Requested:

Relief is requested from the mandatory requirement to remove the bolt closest to the source of leakage when leakage is detected at a mechanical connection.

IV. Basis for Requesting Alternative:

Removal of pressure retaining bolting at mechanical connections for visual, VT-3 examination and subsequent evaluation, in locations where leakage has been identified, is not always the most discerning course of action to determine the acceptability of the bolting. The Code requirement to remove, examine, and evaluate bolting in this situation does not allow the owner to consider other factors which may indicate the acceptability of mechanical joint bolting.

Other factors which should be considered when evaluating bolting acceptability when leakage has been identified at a mechanical joint include, but are not limited to: joint bolting material, service age of joint bolting materials, location of the leakage, history of leakage at the joint, evidence of corrosion with the joint assembled, and corrosiveness of process fluid.

Performance of the pressure test while the system is in service may identify leakage at a bolted connection that, upon evaluation, may conclude the integrity and pressure retaining ability of the joint is not challenged. It would not be prudent to negatively impact the availability of a safety system by removing the system from service to address a leak that does not challenge the system's ability to perform its safety function.

A situation frequently encountered at Duke Energy Corporation is the complete replacement of bolting materials (studs, bolts, nuts, washers, etc.) at mechanical joints during plant outages. When the associated system piping is pressurized during plant start up, leakage may be identified at these joints. The root cause of this leakage is most often due to thermal expansion of the piping and bolting materials at the joint and subsequent fluid seepage at the joint gasket. Proper retorquing of the joint bolting, in most cases, stops the leakage. Removal of the joint bolting to evaluate for corrosion would be unwarranted in this

situation due to the new condition of the bolting materials.

V. Alternative Examinations:

When leakage is identified at bolted connections by Visual, VT-2 examination during system pressure testing, an evaluation will be performed to determine the susceptibility of the bolting to corrosion and assess the potential for failure. The evaluation will, at a minimum, consider the following factors:

1. Bolting materials
2. Corrosiveness of process fluid leaking
3. Leakage location
4. Leakage history at connection or other system components
5. Visual evidence of corrosion at connection (while connection is assembled)
6. Service age of bolting materials

When the pressure test is performed on a system that is in service or that Technical Specifications require to be operable, and the bolting is susceptible to corrosion, the evaluation shall address the connection's structural integrity until the next component/system outage of sufficient duration. If the evaluation concludes the system can perform its safety related function, removal of the bolt closest to the source of the leakage and a Visual, VT-3[1] examination of the bolt will be performed when the system or component is taken out of service for a sufficient duration (to accomplish other system maintenance activities).

For bolting that is susceptible to corrosion, and when the initial evaluation indicates that the connection cannot conclusively perform its safety function until the next component/system outage of sufficient duration, the bolt closest to the source of the leakage will be removed, and a Visual, VT-3 examination will be evaluated in accordance with IWA-3100(a).

[1] The acceptance criteria for Visual, VT-1 will be used to assess the acceptability of the bolting.

VI. Justification for Granting Alternative:

The purpose of the Code required corrective action to remove bolts and visually examine them for degradation, as stated in IWA-5250(a)(2), is to ensure joint integrity. In addition to removing bolts and performing a Visual, VT-3 examination, Section V above states alternative methods to ensure joint integrity of bolted connections. These alternative methods have been determined to provide an acceptable level of quality and safety.

VII. Implementation Schedule:

Oconee Unit 1 is currently scheduled to begin refueling outage EOC17 on September 18, 1997. Duke Energy Corporation requests that approval be granted to permit use of this alternative examination at that time.