



Entergy Operations, Inc.
1340 Echelon Parkway
Jackson, MS 39213-8298
Tel 601 368 5758

Michael A. Krupa
Director
Nuclear Safety & Licensing

August 24, 2000

U. S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Mail Stop OP1-17
Washington, DC 20555-0001

Subject: Entergy Operations, Inc.
Alternative to ASME Code Requirements

Arkansas Nuclear One - Units 1 & 2
Docket Nos. 50-313 & 50-368
License Nos. DPR-51 & NPF-6

Waterford Steam Electric Station – Unit 3
Docket No. 50-382
License No. NPF-38

CNRO-2000-00027

In a telephone conference call conducted on August 10, 2000, the NRC staff requested that Entergy Operations, Inc. (Entergy) amend its recently submitted ASME Relief Request CEP-ISI-002, Rev. 0¹ to reference the appropriate ASME Code edition to be utilized. Attached is the requested amended relief request, which references the 1992 Edition of the ASME Code and further clarifies our request. Revision bars in the page margin denote the text additions.

This letter contains no commitments.

Should you have any questions regarding this submittal, please contact Guy Davant at (601) 368-5756.

Very truly yours,

A handwritten signature in cursive script that reads "Ron Byrd for MAK".

MAK/GHD/baa
attachment

cc: (see next page)

¹ Entergy letter CNRO-2000-00010 dated April 24, 2000, "Alternative to ASME Code Requirements"

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cc: Mr. C. G. Anderson (N-GSB)
Mr. C. M. Dugger (W-GSB-300)
Mr. G. J. Taylor (M-ECH-65)

Mr. T. W. Alexion, NRR Project Manager (ANO-2)
Mr. R. L. Bywater, NRC Senior Resident Inspector (ANO)
Mr. T. R. Farnholtz, NRC Senior Resident Inspector (W3)
Mr. N. Kalyanam, NRR Project Manager (W3)
Mr. E. W. Merschoff, NRC Regional Administrator, Region IV
Mr. W. D. Reckley, NRR Project Manager (ANO-1)

**RELIEF REQUEST
CEP-ISI-002, Rev. 0**

Component Number:	Bolted connections in systems borated for controlling reactivity
Code Class:	1, 2, 3
References:	IWA-5242(a), 1992 Edition
Examination Category:	B-P, C-H, D-B
Item Number:	All
Description:	System pressure test for insulated components
Unit/Inspection Interval	ANO-1 - third (3 rd) 10-year interval
Applicability:	ANO-2 – third (3 rd) 10-year interval Waterford 3 – second (2 nd) 10-year interval

I. Code Requirement

ASME Section XI, 1992 Edition, Subarticle IWA-5242(a) states that for systems borated for the purpose of controlling reactivity, insulation shall be removed from pressure-retaining bolted connections for a direct VT-2 visual examination. The VT-2 examination must be performed at system test pressure in accordance with IWA-5211.

II. Requested Authorization

Pursuant to 10 CFR 50.55a(a)(3)(i), Entergy proposes alternative examinations to removing insulation for VT-2 visual examinations of bolted connections in ASME Code Class 1, 2, and 3 borated systems during system pressure tests, as required by IWA-5242(a).

III. Proposed Alternative Examinations

Entergy proposes alternative examinations utilizing current material control programs and additional inspection activities as discussed below.

1. A system leakage test shall be performed on each insulated bolted connection in systems borated for the purpose of controlling reactivity, as required by IWA-5213(a), 1992 Edition, with the exception that the insulation need not be removed as required by IWA-5242(a). If evidence of leakage is detected either by discovery of active leakage or by evidence of boric acid crystals, the insulation shall be removed and the bolted connection examined in accordance with Entergy Relief Request ISI2-08, which was previously approved by the NRC.¹

¹ Letter dated April 7, 1998, "Relief Authorization for Alternative to the Requirements of ASME Section XI, Subarticle IWA-5250 Bolting Examination for Arkansas Nuclear One, Units 1 and 2, Grand Gulf

2. Per 1992 Edition Code requirements of IWA-5242(a), insulation at bolted connections in systems bled for the purpose of controlling reactivity shall be removed per the following schedules:
 - a. ASME Code Class 1 systems – once during each refueling outage
 - b. ASME Code Class 2 and Class 3 systems – once during each inspection period

However, the VT-2 visual examination for Class 1, 2, and 3 bolted connections may be performed at ambient conditions. The connection is not required to be pressurized. Any evidence of leakage shall be evaluated in accordance with Relief Request ISI2-08.

IV. Basis for the Proposed Alternative Examinations

Entergy proposes alternative examinations to the requirements of IWA-5242(a) during system pressure tests for the following reasons:

1. ASME Code Class 1, 2, and 3 systems bled for the purpose of controlling reactivity are large, extensive systems that extend into multiple plant areas and elevations. A large portion of the system pressure tests is tied to a required surveillance test or plant startup evolution. Scaffolding is required to access many of the bolted connections. In addition, many of these connections are located in difficult to access areas and in medium to high radiation areas. In order to identify leakage, the preferred time frame to perform this inspection is prior to beginning the surveillance test or at the beginning of the outage. Removing insulation during operation combined with scaffolding requirements result in increased personnel exposure, additional radwaste, and increased financial cost.
2. Visual VT-2 examinations of Class 1 systems, primarily the Reactor Coolant System (RCS) piping and components, are performed while raising temperature during plant startup. During such times, the RCS is at normal operating pressure of approximately 2250 psig with reactor coolant temperature between 350°F and 550°F. (These parameters are controlled by each plant's specific Technical Specifications and procedures for this condition.) Performing a visual VT-2 examination, installing insulation, and removing scaffolding at bolted connections under these operating conditions represents a personnel safety hazard. The VT-2 examination can be a critical path activity normally taking six to eight hours to perform. Since the majority of Class 1 piping is inside the containment building secondary shield wall, removing and reinstalling insulation along with disassembly of scaffolding may substantially increase the outage duration.
3. In response to NRC Generic Letter 88-05, "Boric Acid Corrosion Of Carbon Steel Reactor Pressure Boundary Components In PWR Plants," Entergy established a

program to inspect boric acid leaks discovered in the containment building and to evaluate the impact of those leaks on carbon steel or low alloy steel components. Per this program, evidence of leaks including boric acid crystals or residue is inspected and evaluated regardless of whether the leak was discovered at power or during an outage. Based on the evaluation, appropriate corrective actions are initiated to prevent recurrence of the leak and to repair, if necessary, any degraded materials or components.

4. To ensure that degradation mechanisms in stainless steels are mitigated, Entergy maintains a program for controlling materials (insulation, thread lubricant, etc.) that may come in contact with safety-related components, including bolting. This program ensures impurities are not present in concentrations that would promote development of stress corrosion cracking in stainless steel bolted connections.

At both ANO units and Waterford 3, the only carbon steel and low alloy pressure boundary components in systems borated for the purpose of controlling reactivity are clad with stainless steel. Specifically, these clad components are the reactor vessel, steam generators (primary side), pressurizer, and portions of the reactor coolant system piping. Other pressure boundary piping and components in borated systems within inservice inspection boundaries are constructed of stainless steel. There is substantial information, such as EPRI NP-5679, attesting to the resistance of stainless steels to boric acid corrosion.

V. Conclusion

10CFR50.55a(a)(3) states:

"Proposed alternatives to the requirements of (c), (d), (e), (f), (g), and (h) of this section or portions thereof may be used when authorized by the Director of the Office of Nuclear Reactor Regulation. The applicant shall demonstrate that:

- (i) The proposed alternatives would provide an acceptable level of quality and safety, or
- (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."

Entergy believes the proposed alternative examinations presented above provide an acceptable level of quality and safety for ensuring the integrity of bolted connections in systems borated for reactivity control. Therefore, we request the proposed alternative be authorized pursuant to 10CFR50.55a(a)(3)(i).