



ENTERGY

Entergy Operations, Inc.

PO Box 8  
Worcester, MA 01606  
Tel: 508 721-6774

R. F. Burski

Manager  
Nuclear Safety  
Waterford 3

W3F1-92-0120

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QA

February 14, 1992

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Subject: Waterford 3 SES  
Docket No. 50-382  
License No. NPF-38  
Use of Helical Coil Threaded Inserts for  
Steam Generator Repair

Gentlemen:

Entergy Operations, Inc. requests approval for the use of helical coil (helicoil) threaded inserts, as defined by the ASME Boiler and Pressure Vessel Code Case N-496, "Helical Coil Threaded Inserts," (Attachment 1) in any steam generator manway cover stud holes that are found with damaged threads at Waterford 3 SES. In addition, it is requested that the scope of the exemption be expanded to envelope three helical coils that were installed on the steam generator primary side manway covers during Waterford 3's fourth refueling outage. This request is based on the allowance of proposed alternatives to the NRC accepted portions of the ASME code as specified in 10 CFR 50.55a(a)(3) and USNRC Regulatory Guide 1.147, Revision 8. Finally, Entergy Operations requests that the review of this exemption be expedited such that Waterford 3 may begin utilizing this repair technique- if necessary- during the outage scheduled to begin on February 17, 1992.

The potential need for helical coil threaded inserts was identified during contingency planning efforts to support Waterford 3's upcoming outage to repair Reactor Coolant System (RCS) leakage past the number one steam generator cold leg manway. Given RCS leakage past the manway cover, boric acid corrosion may make stud removal difficult. If alternative means (drilling, for example) are necessary to remove the studs, the potential exists that the threaded manway cover stud holes will be damaged in the process.

Because helical coil threaded inserts can restore a stud hole to its original diameter and load carrying capacity, they represent a superior alternative to more conventional stud hole repair techniques; their use minimizes radiological exposure to maintenance workers as well as impact on the outage schedule. For example, the proposed method avoids the need for oversized studs- necessary if a

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stud is drilled out and the threads are retapped- and thus simplifies future maintenance and prevents logistics complications. The superiority of a helicoil repair to the second alternative provided for in ASME Section XI- redrilling the hole after weld build-up- is even more pronounced. It is clear that welding on a pressure vessel in a field environment under severe radiological conditions would present extreme difficulties.

Combustion Engineering calculation CENC-1805, "Waterford Unit No. 3 Steam Generator Manways," dated March 15, 1988, confirms that helicoil threaded inserts may be installed in any or all of the closure stud holes in the steam generator primary or secondary side manway covers. The calculation is included as Attachment 2.

The need for prior approval from NRC for the use of helicoils was recognized by Waterford 3 personnel while preparing for the upcoming outage. Subsequent review confirmed that helicoils had been used to repair primary manway closures during the fourth refueling outage and that NRC had not approved their use. Currently helical coil threaded inserts are installed in the threaded closure holes associated with stud 10 on #1 Steam Generator hot leg primary manway and studs 18 and 19 on the #2 Steam Generator cold leg primary manway. The inserts were installed to repair damaged threads under Non-Conformance Repair packages 274421 and 274633, respectively.

Although a safety evaluation was conducted in accordance with 10 CFR 50.59, the provisions of 10 CFR 50.55a(a)(3) were not observed in that NRC approval was not obtained before the repairs were made. Waterford 3 Quality Notice (QN) 92-008 has been written to document the problem, determine the root cause, and identify necessary corrective actions.

Nevertheless, a review of the documentation associated with the steam generator repairs confirms that the three helicoils installed during the fourth refueling outage satisfy each of the criteria listed in ASME Code Case N-496.

In summary then, because the helical coil threaded inserts satisfy the criteria of 10 CFR 50.55a(a)(3), Entergy Operations, Inc. requests approval to use helical coil threaded inserts as necessary to support manway cover threaded hole repair. The proposed use of helical coil threaded inserts shall be in accordance with the conditions specified in ASME Boiler and Pressure Vessel Code Case N-496. Finally, Entergy Operations requests that this approval be extended to bound the helicoil threaded inserts installed during the fourth refueling outage in order to support plant startup following the outage.

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Should you have any questions regarding this matter, please contact T.W. Gates at (504) 739-6697.

Very truly yours,



RFB/TWG/ssf

Attachments:

- 1) Code Case N-496
- 2) Combustion Engineering Calculation CENC-1805
- 3) Waterford 3 Steam Generator Design Data

cc:

R.D. Martin, NRC Region IV  
D.L. Wigginton, NRC-NRR  
N.S. Reynolds  
R.B. McGehee  
NRC Resident Inspectors Office

## CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: March 14, 1991

*See Numerical Index for expiration  
and any reaffirmation dates.*

Case N-496

**E Helical-Coil Threaded Inserts  
Section XI, Division 1**

*Inquiry:* What rules apply to the use of helical-coil threaded inserts in pressure retaining items under Section XI, Division 1?

*Reply:* It is the opinion of the Committee that helical-coil threaded inserts may be used in pressure retaining items provided the following requirements are met:

(a) The installation of the helical-coil threaded insert shall be performed in accordance with IWA-7000 and IWB-7000, IWC-7000, or IWD-7000, as applicable.

(b) The helical-coil threaded insert shall satisfy the design requirements of the Construction Code for the specified loadings to be applied to the threaded

connection. For materials not listed in the Construction Code, primary stresses shall not exceed  $\frac{3}{4}$  of the minimum specified yield strength or  $\frac{1}{2}$  of the minimum specified tensile strength of the applicable material, whichever is lower.

(c) The helical-coil threaded insert shall be purchased in accordance with the Owner's Quality Assurance Program. The supplier shall be evaluated for compliance with NCA-3800 or 10CFR50, Appendix B.

(d) Helical-coil threaded inserts shall be supplied with a Certified Material Test Report that provides traceability to the item, material specification, grade or class, mechanical properties, and heat treated condition.

(e) Helical-coil threaded inserts shall be installed in accordance with the manufacturer's instructions. **E**

(f) Use of this Case shall be documented in the appropriate Owner's Report.