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10CFR 50.55a(a)(3)(i)



October 18, 2000

PSLTR: #00-0141

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

Dresden Nuclear Power Station, Units 2 and 3
Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237 and 50-249

Subject: Proposed Alternative Examination Requirements for Reactor Vessel
Closure Head Nuts and Pressure Retaining Bolting of Control Rod Drive
Housing

In accordance with 10 CFR 50.55(a)(3)(i), "Codes and Standards", Dresden Nuclear Power Station (DNPS) is submitting, for NRC approval, a proposed alternative to existing American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," for reactor pressure vessel inspection requirements. The alternatives proposed by DNPS are for visual examination of all safety related reactor vessel closure head nuts (i.e., Relief Request CR-13) and pressure retaining bolting of Control Rod Drive (CRD) Housing (i.e., Relief Request CR-20). Both Relief Requests are attached and demonstrate that the proposed alternatives would provide an acceptable level of quality and safety, as required by 10 CFR 50.55a(a)(3)(i).

DNPS plans to incorporate relief requests CR-13 and CR-20 during the third period of the Third Inservice Inspection Interval for both Units 2 and 3. For Unit 2, the third Inservice Inspection Interval began on March 1, 1992, and the projected end date is January 19, 2003. For Unit 3, the third Inservice Inspection Interval began on March 1, 1992, and the projected end date is October 31, 2002.

To support a fall outage for Unit 2, we are requesting approval of these proposed alternatives by June 1, 2001.

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Should you have any questions concerning this letter, please contact Mr. Dale Ambler at (815) 942-2920 extension 3800.

Respectfully,



Preston Swafford
Site Vice President
Dresden Nuclear Power Station

Attachments

- 1) Relief Request, CR-13, "Use of Alternative Examination Requirements, Examination Method, and Acceptance Standard for Reactor Vessel Closure Head Nuts"
- 2) Relief Request, CR-20, "Alternative Examination Requirements for Pressure Retaining Bolting of Control Rod Drive (CRD) Housings"

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Dresden Nuclear Power Station

ISI Program Plan
Dresden Nuclear Power Station Units 2 & 3, Third Interval

RELIEF REQUEST NUMBER: CR-13
Use of Alternative Examination Requirements, Examination Method, and
Acceptance Standard for Reactor Vessel Closure Head Nuts
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COMPONENT IDENTIFICATION

Code Class: 1

References: ASME Code Section XI Paragraph IWB-2500
ASME Code Section XI Table IWB-2500-1

Examination Category: B-G-1

Item Number: B6.10

Description: Use of Alternative Examination Requirements,
Examination Method, and Acceptance Standard for
Reactor Vessel Closure Head Nuts.

Component Numbers: All Reactor Vessel Closure Head Nuts

CODE REQUIREMENT

ASME Code Section XI Paragraph IWB-2500 states that components shall be examined and tested as specified in ASME Code Section XI Table IWB-2500-1.

ASME Code Section XI Table IWB-2500-1 requires a surface examination to be performed on reactor vessel closure head nuts.

BASIS FOR RELIEF

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative provide an acceptable level of quality and safety.

Table IWB-2500-1 of the 1989 Edition of ASME Code Section XI requires a surface examination to be performed on the reactor vessel closure head nuts. However, Table IWB-2500-1 does not provide the corresponding "Examination Requirements/Figure Number" and "Acceptance Standard". These provisions were still being developed at the time the 1989 Edition was approved.

The incomplete set of rules for the examination of reactor vessel closure head nuts does not allow Dresden Nuclear Power Station (DNPS) to implement an inspection program to verify the integrity of the pressure retaining bolting.

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BASIS FOR RELIEF (Continued)

The 1989 Edition of ASME Section XI, Category B-G-1, employs a VT-1 visual examination for nuts associated with Heat Exchangers, Piping, Pumps, and Valves

(Item Numbers B6.140, B6.170, B6.200, and B6.230, respectively). These Category B-G-1 requirements also provide an Acceptance Standard, IWB-3517, for the VT-1 examinations. In addition, the 1989 Addenda incorporated an Acceptance Standard, IWB-3517, for the VT-1 examinations of Reactor Vessel Closure Head Nuts. In the latest version of 10 CFR 50.55a, the NRC has approved the 1989 Addenda through the 1995 Edition with the 1996 Addenda. Accordingly, these rules are deemed by DNPS as an acceptable and complete set of rules to assure the integrity of reactor vessel closure nuts.

Based on the above, DNPS requests relief from the requirements specified in Table IWB-2500-1 of the 1989 Edition of ASME Section XI for reactor vessel closure head nuts.

PROPOSED ALTERNATE EXAMINATION

As an alternate examination, DNPS will perform a VT-1 visual examination of the surface of all reactor vessel closure head nuts, utilizing the acceptance criteria of IWB-3517, as delineated in the 1989 Edition of ASME Section XI.

APPLICABLE TIME PERIOD

Relief is requested for the third ten-year interval of the Inservice Inspection Program for DNPS Units 2 and 3.

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RELIEF REQUEST NUMBER: CR-20
Alternative Examination Requirements for Pressure Retaining Bolting of Control Rod Drive (CRD) Housings
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COMPONENT IDENTIFICATION

Code Class: 1

References: ASME Code Section XI Paragraph IWB-2500
ASME Code Section XI Table IWB-2500-1

Examination Category: B-G-2

Item Number: B7.80

Description: Alternative Examination Requirements for Pressure Retaining Bolting of Control Rod Drive (CRD) Housings

Component Numbers: CRD Housing Bolting, 2 in. and Less in Diameter (All 177 Control Rod Drive Housings in Units 2 and 3)

CODE REQUIREMENT

IWB-2500 states that components shall be examined and tested as specified in Table IWB-2500-1.

Table IWB-2500-1 requires a VT-1 visual examination to be performed on CRD housing bolting, 2 in. and less in diameter, when disassembled.

BASIS FOR RELIEF

Relief is requested for the use of Code Case N-547 with additional provisions in lieu of the aforementioned American Society of Mechanical Engineers (ASME) Section XI "Rules for Inservice Inspection of Nuclear Power Plant Components," requirements. Pursuant to 10 CFR 50.55a(3)(i), relief is requested on the basis that the proposed alternative will provide an acceptable level of quality and safety.

ASME Section XI, Table IWB-2500-1 currently requires a VT-1 visual examination to be performed on surfaces of bolts, studs, and nuts used in CRD housings when they are disassembled during the inspection interval. At Dresden Nuclear Power Station, cap screws are used for CRD housing bolting. Code Case N-547, which eliminates the requirement of VT-1 visual inspection of CRD housing bolting, was approved by the ASME Boiler and Pressure Vessel Code Committee on August 24, 1995. Code Case N-547 is not currently listed in the NRC approved ASME Code Cases provided in Revision 12 of

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BASIS FOR RELIEF (Continued)

Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability-ASME Section XI Division 1".

In March of 1989, General Electric (GE) issued Service Information Letter (SIL) 483 that addressed crack indications and corrosion pitting found in the shank directly below the cap screw head of CRD bolting. At the time, the cause of cracking was attributed to a general corrosion cracking mechanism assisted by a crevice and discontinuity in the fillet region directly below the cap screw head. At the time, it was also believed that crack growth was aggravated by manganese sulfide inclusions in the cap screw material.

Subsequent evaluations performed on cap screws from other Boiling Water Reactors (BWR) performed by Brookhaven National Laboratory as well as by Commonwealth Edison's System Materials Analysis Department Metallurgy Group determined that there was no crack mechanism. No active stress corrosion cracking or fatigue mechanism had been observed. The linear indications discovered were resulting from corrosion of pre-existing manufacturing defects.

In order to preclude the potential for problems with BWR CRD housing bolting, ComEd revised the procurement standard for CRD cap screws in 1991. The procurement standard requires shot peening of the head-to-shank radius and a wet fluorescent magnetic particle examination in accordance with ASME Code Section III, Paragraph NB-2545 with acceptance criteria of NB-2583 of the 1989 Edition of ASME Code Section III. In addition, as CRD assemblies are removed for maintenance, all of the removed cap screws are replaced with brand new cap screws. The removed cap screws are given a VT-1 examination and then discarded. If existing cap screws are to be reinstalled, they must first be cleaned and given a VT-1 examination. Due to the excessive cost associated with cleaning and examining reused cap screws, Dresden Nuclear Power Station (DNPS) has elected to continue the practice of replacement of the existing cap screws with brand new cap screws.

PROPOSED ALTERNATE PROVISIONS

As an alternative to the existing Section XI requirements, Dresden Station will adopt the provisions Code Case N-547 and discontinue performing VT-1 examination of CRD housing bolting. As an alternative provision, DNPS will continue to procure new cap screws that have received a surface examination that meets the acceptance criteria of the 1989 Edition of ASME Section III Paragraph NB-2545 from the supplier or original equipment manufacturer. Whenever a CRD is removed for maintenance, the existing cap screws shall be replaced with brand new cap screws and the existing cap screws discarded. If removed CRD cap screws are to be reused, they shall first be cleaned and

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given a VT-1 examination in accordance with IWB-2500-1 along with the acceptance criteria in IWB-3517

APPLICABLE TIME PERIOD

Relief is requested for the remainder of the third ten-year interval of the Inservice Inspection Program for DNPS Units 2 and 3.