

10 CFR 50.55a

RS-02-187

October 25, 2002

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001Dresden Nuclear Power Station, Unit 2
Facility Operating License No. DPR-19
NRC Docket No. 50-237Subject: Request for Relief from Certain Requirements of 10 CFR 50.55a(g)(4)(ii)
Regarding Control Rod Drive Housing Welds (Relief Request Number
CR-25)

In accordance with 10 CFR 50.55a, "Codes and standards," paragraph (a)(3)(ii), Exelon Generation Company (Exelon), LLC requests temporary relief for Dresden Nuclear Power Station (DNPS), Unit 2 from certain requirements of 10 CFR 50.55a, paragraph (g)(4)(ii) concerning implementation of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, 1989 Edition, Section XI, Examination Category B-O, "Pressure Retaining Welds In Control Rod Housings," for the third inservice inspection (ISI) interval which ends on September 30, 2003. This relief is requested for certain Control Rod Drive (CRD) housing weld examinations. The proposed alternative is to perform the examinations at the next outage of sufficient duration, but no later than the next Unit 2 refueling outage, currently scheduled to begin in November 2003.

In June 2002, DNPS determined that certain CRD housing welds were not included in the ISI Program. The last scheduled opportunity to complete the third ISI interval examinations of these welds occurred during the last refueling outage, D2R17, completed on November 7, 2001. Upon determining that these welds were not included in the ISI program, DNPS initiated a corrective action program condition report and evaluated the impact of this condition on the operability of structures, systems, and components important to safety. DNPS concluded that there was reasonable assurance that these welds had maintained their structural integrity and that continued plant operation was acceptable.

The next scheduled opportunity to perform the examinations of these welds is refueling outage D2R18, which is scheduled to begin in November 2003. This is after the conclusion of the third inspection interval on September 30, 2003, which includes an extension of the third inspection period duration as permitted by IWB-2412(b).

DNPS is requesting this relief in accordance with 10 CFR 50.55a(a)(3), which states that proposed alternatives to the requirements of 10 CFR 50.55a, paragraphs (c), (d), (e), (f), (g), and (h) may be granted by the NRC. Paragraph (a)(3)(ii) allows NRC approval

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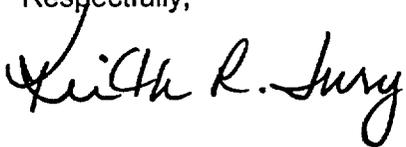
providing the applicant demonstrates that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. As detailed in the attachment to this letter, a plant shutdown to perform these examinations would be an economic hardship which would not result in a compensating increase in the level of quality and safety. Accordingly, this request meets the requirements of 10 CFR 50.55a(3)(ii).

Because the failure to examine these welds in previous inspection intervals represents a non-compliance with the applicable requirements, DNPS is requesting that the proposed relief be approved expeditiously, consistent with NRC resource availability.

The attachment to this letter provides justification for the proposed relief in accordance with the guidelines established in 10 CFR 50.55a.

Should you have any questions concerning this letter, please contact Mr. A. R. Haeger at (630) 657-2807.

Respectfully,



Keith R. Jury
Director - Licensing
Mid-West Regional Operating Group

Attachment

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Dresden Nuclear Power Station
Office of Nuclear Facility Safety - Illinois Department of Nuclear Safety

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COMPONENT IDENTIFICATION

Code Class: 1
References: IWB-2500
Table IWB-2500-1
Table IWB-2412
Examination Category: B-O
Item Number: B14.10
Description: Examination of Tube-to-Tube Welds in CRD Housings
Component Numbers: Peripheral Housing Welds

CODE REQUIREMENT

Dresden Nuclear Power Station (DNPS), Unit 2 is currently in the third ten-year inservice inspection (ISI) interval under the 1989 Edition of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI.

IWB-2412 requires examinations in each examination category be performed during each successive inspection interval.

Table IWB-2500-1, Examination Category B-O, "Pressure Retaining Welds in Control Rod Housings," requires that the welds associated with 10% of peripheral control rod drive (CRD) housings be examined. DNPS, Unit 2 has a total of 177 CRD housings, of which 32 are peripheral housings. Thus, the welds associated with 10% of 32, or four housings need to be examined in each interval.

BASIS FOR RELIEF

Each CRD housing tube contains two circumferential welds. One weld connects the CRD housing tube to the flange at the lower end of the housing (i.e., tube-to-flange). The second weld is an intermediate circumferential weld within the housing tube (i.e., tube-to-tube).

The required tube-to-tube welds associated with the CRD housings have not been examined at DNPS, Unit 2. In accordance with 10 CFR 50.55a, "Codes and standards," paragraph (a)(3)(ii), relief is requested on the basis that compliance with the requirement would cause a hardship or unusual difficulty without a compensating increase in the level of quality and safety. Specifically, as detailed below, requiring a plant shutdown during the current inspection interval to examine the tube-to-tube welds would cause an economic hardship without a compensating increase in the level of quality and safety.

Examination of the tube-to-flange welds has been completed on four CRD housing tubes during the third ten-year inspection interval. In June 2002, DNPS determined that the tube-to-tube welds were not included in the ISI Program. The last scheduled opportunity to complete the third ISI interval examinations of these welds occurred during the last refueling outage, D2R17, completed on November 7, 2001. The next scheduled opportunity to perform the examinations of these welds is refueling outage, D2R18, which is scheduled to begin in November 2003. This is after the conclusion of the third inspection interval on September 30, 2003.

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DNPS has evaluated the impact of not examining the tube-to-tube welds. The following provides reasonable assurance that the structural integrity of these welds is not compromised.

- Previous DNPS and industry experience has shown no degradation on these welds and similar welds.

Industry inspection history is provided in the Boiling Water Reactor Vessel and Internals Project (BWRVIP) document, BWRVIP-47 (Reference 1). No degradation of these welds is reported in this document. This document addresses potential failure locations in lower plenum components and recommends an inspection program to ensure long term structural integrity. No additional inspections beyond that of ASME Section XI are recommended.

Previous DNPS Unit 3 examinations of the tube-to-tube welds and previous Unit 2 and 3 examinations of the tube-to-flange welds, which are similar welds in similar service conditions, have been completed successfully. DNPS is required to examine a total of sixteen CRD housing welds (four tube-to-tube welds and four tube-to-flange welds on each unit) during each inspection interval. Of these sixteen welds, twelve have been examined to date. All twelve of the completed surface (liquid penetrant) examinations have met ASME Section XI acceptance criteria and have shown no degradation. Four tube-to-tube welds were examined as required for DNPS, Unit 3 during its current refueling outage, D3R17. Eight of the tube-to-flange welds (Units 2 and 3) have been examined.

- Previous experience with the leakage testing of the reactor coolant pressure boundary testing performed every outage and leakage monitoring during normal plant operation has not identified any leakage occurring through the subject welds.

Visual (VT-2) examinations have been performed in conjunction with the system leakage test of the reactor coolant pressure boundary performed each refuel outage with the reactor at operating pressure. No evidence of leakage has been identified at these locations. In addition, cracking at these locations would result in leakage into the drywell floor drain sump, which provides a reliable means of determining leakage trends in the drywell. The leakage collected in the drywell floor drain sump is considered unidentified leakage. In accordance with DNPS Technical Specifications, an increase in unidentified leakage requires investigation and appropriate actions.

Therefore, through-wall leakage would have been detected prior to plant startup following refueling outages. During normal operation, means of leakage detection exist such that necessary corrective measures can be taken.

- These welds experience minimal thermal cycling.

During plant operation, operating conditions in the CRD housings are stable with continuous flow of cooling water through the control rod drives. Thermal cycling occurs only during startup and shutdown cycles of the reactor.

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- There are no significant stresses experienced by these welds.

The control rod housing tube is supported by the attachment to the reactor vessel. The housing tube is free to grow vertically since the housing or flange is not constrained in the vertical direction. The weld is outside of the reactor vessel penetration and radial growth is not prohibited.

There are no other loads on the housing to create bending stresses on this weld. The weight of the CRD housing is insignificant. The only significant operating load on the CRD housing is the load induced due to reactor internal operating pressure. The control rod housing tube is supported by the attachment to the reactor vessel. There are no additional restraints and attachments on the drive housings that would restrict movement during normal operation thereby inducing stresses into the weld.

The peak stresses caused by vibration of the CRD housings would occur at the connection to the reactor vessel and not at the tube-to-tube weld. The control rod housing tube is supported by the attachment to the reactor vessel. Any stresses induced would be transferred to the vessel attachment.

- Intergranular Stress Corrosion Cracking (IGSCC) susceptibility is low for these welds.

The CRD housings are constructed with type 304 stainless steel, which can experience IGSCC. However, the tube-to-tube welds were shop welds with the housings supplied as a single unit to be attached to the reactor vessel. The cooling water supplied to the control rod drives is approximately 120 °F. Temperature of the housings is monitored by thermocouples approximately eleven feet from the tube-to-flange welds. Cooling flow through each individual drive can vary and recorded temperatures at the thermocouple typically are below 250 °F, but range from 100-300 °F. This temperature range is at the low end of the range for IGSCC susceptibility.

In conclusion, since there is reasonable assurance that the tube-to-tube welds have structural integrity, and that the requested relief is only for a period of approximately 60 days, the need to perform an unscheduled plant shutdown to inspect these welds would present an economic hardship without a compensating increase in the level of quality and safety.

PROPOSED ALTERNATE EXAMINATION

DNPS will examine the Unit 2 tube-to-tube welds required by ASME Section XI at the next available opportunity. The next scheduled opportunity to perform the required examinations is the next Unit 2 refueling outage, which is scheduled to begin in November 2003, approximately 60 days following the end of the current inspection interval. DNPS will examine these welds during any outage of sufficient duration that occurs prior to the next Unit 2 refueling outage.

APPLICABLE TIME PERIOD

Relief is requested from the requirement to examine the subject welds during the third ten-year interval of the Inservice Inspection Program for DNPS, Unit 2, which concludes on September

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30, 2003. The relief will cover the period from the end of the third ten-year interval until the subject welds are examined.

REFERENCE

1. BWR Vessel and Internals Project, "BWR Lower Plenum Inspection and Flaw Evaluation Guidelines (BWRVIP-47)," EPRI TR-108727, dated December, 1997