

October 16, 2001

Mr. Douglas E. Cooper
Site Vice President
Palisades Plant
27780 Blue Star Memorial Highway
Covert, MI 49043-9530

SUBJECT: PALISADES PLANT - REQUEST FOR ADDITIONAL INFORMATION REGARDING
REPAIR OF CONTROL ROD DRIVE MECHANISM UPPER HOUSING
ASSEMBLIES (TAC NO. MB1740)

Dear Mr. Cooper:

By letters dated July 30, 31, and September 17, 2001, you requested Nuclear Regulatory Commission (NRC) approval to use American Society of Mechanical Engineers Code Case N-504-1, "Alternative Rules for Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping Section XI, Division 1," as an alternative repair technique for some of the control rod drive mechanism (CRDM) upper housing assemblies that have experienced transgranular stress corrosion cracking at the Palisades Plant. The alternative repair would utilize a full structural weld overlay design deposited over the upper-housing-to-eccentric-reducer weld (Weld No. 3) in the CRDMs.

During a public meeting on August 1, 2001, discussing your July 30, 2001, letter, the NRC staff stated that approval would require additional information regarding testing, inspection methods and results, metallurgical and root cause analyses, repair and reinspection plans, and other information. The NRC staff continues to await your submittal of a report detailing the destructive testing and root cause results for CRDM-21. The enclosure is our request for additional information regarding reinspection plans for repaired CRDMs. The enclosure also includes a concern expressed in Inspection Report 50-255/01-11 regarding Weld No. 1 located beneath the mating flange of the CRDM upper housings.

D. Cooper

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As discussed with members of your organization (L. Lahti and R. Gerling), by telephone on October 15, 2001, a mutually acceptable response date is November 5, 2001.

If you have questions concerning this letter, please contact me by phone at 301-415-3049 or by electronic mail at dsh@nrc.gov.

Sincerely,

/RA/

Darl S. Hood, Senior Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosure: Request for Additional Information

cc w/encl: See next page

D. Cooper

- 2 -

As discussed with members of your organization (L. Lahti and R. Gerling), by telephone on October 15, 2001, a mutually acceptable response date is November 5, 2001.

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Darl S. Hood, Senior Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosure: Request for Additional Information

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION
BY THE OFFICE OF NUCLEAR REACTOR REGULATION REGARDING
WELD OVERLAY REPAIR OF CONTROL ROD DRIVE MECHANISM UPPER HOUSINGS
PALISADES PLANT

The Nuclear Regulatory Commission (NRC) staff requests the following additional information regarding your proposed repair of control rod drive mechanism (CRDM) upper housings at the Palisades Plant that have experienced transgranular stress corrosion cracking. As discussed in your letters dated July 30 and 31, and September 17, 2001, some of these housings would be repaired by weld overlay pursuant to Relief Request No. 15 to use American Society of Mechanical Engineers (ASME) Code Case N-504-1.

1. The NRC staff is concerned for the quality and scope of non-destructive examinations (NDE) completed to date on CRDM housing Weld No. 1 (the first weld above the reactor head). Specifically, the NRC staff is concerned that the ultrasonic testing (UT) examinations completed to date do not provide reasonable assurance that significant cracks, if they exist in this weld, would have been detected. For Weld No. 1 (flange to pipe dissimilar metal weld - 316 stainless steel flange and Inconel pipe), you have conducted UT inspections of 20 accessible housings near the periphery of the vessel head. Because of the curved surface on the flange side of the weld, you were only able to scan from the pipe side during UT examinations. The NRC staff concluded, in Inspection Report 50-255/01-11, that this examination would not likely detect circumferentially oriented cracks in the weld material or flange side base material. This inspection report also documented that UT examinations of Weld No. 3 were not successful in identifying axial or circumferential indications that did not have substantial through-wall extent. Finally, you have not produced a technical basis to exclude Weld No. 1 from being susceptible to the cracking seen at Weld No. 3. Therefore, an adequate basis for the quality and scope of NDE examinations for Weld No. 1 has not been established.

In view of the above NRC staff concern, please indicate and justify your position regarding the quality and scope of NDE completed on Weld No. 1 to date. This discussion should include your basis for not performing an internal visual examination on a sample of CRDM housings at the Weld No. 1 location prior to restart of the plant. Also, provide your basis for the conclusion that you have satisfied the additional examination requirements of ASME Code, Section XI, paragraph IWB-2430(b).

2. Describe the qualified NDE inspections, using UT and radiographic test (RT) as a minimum, that will be performed to establish a baseline for future inspections of the flaws in the repaired welds after completion of the weld overlay repairs and prior to the restart of the plant.

ENCLOSURE

3. In a letter dated September 17, 2001, you propose the following plan for future inspections of weld overlay repairs:

In each future refueling outage, until such time as repaired CRDM upper housings are replaced, at least 10% [percent] of those housings for which weld overlay has been applied, but no fewer than 3 CRDM housings, will be inspected. The inspection shall consist of radiographic and ultrasonic testing, at a minimum, to ensure the integrity of the overlay and detect any unexpected crack propagation.

The NRC staff finds that all of the repaired CRDM housings not replaced after one operating cycle should be inspected during the first refueling outage that follows repair. The inspection shall consist of RT and UT, as a minimum, to ensure the integrity of the overlay and detect any unexpected crack propagation. A report describing the inspection results and providing an engineering evaluation of those results shall be submitted to the NRC staff within 60 days after the inspections have been performed. At least 6 months before the start of the next scheduled refueling outage, NMC shall submit, for the NRC's review and approval, a performance-based inspection plan for repaired CRDM housings not replaced. Please revise your future inspection commitment accordingly.

4. The NRC staff is concerned that cracks may occur in welds in repaired CRDM upper housings other than at the Weld No. 3 site during future operation. The existing inspection requirements of the ASME Code, Section XI, for vessel components may not provide for timely detection of the onset of cracking such as has recently been experienced at Palisades Weld No. 3 and earlier at Ft. Calhoun in the weld buildup area (Weld No. 5). Please describe your future inspection plans for all welds and the weld buildup area in the repaired Palisades CRDM upper housings.

Palisades Plant

cc:

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October 2001