

July 12, 2007

Mr. David A. Lochbaum
Director, Nuclear Safety Project
Union of Concerned Scientists
1707 H Street, NW Suite 600
Washington, DC 20006-3919

Dear Mr. Lochbaum:

Your petition request dated April 30, 2007, addressed to the Executive Director for Operations at the Nuclear Regulatory Commission (NRC), has been referred to me pursuant to 10 CFR 2.206 of the Commission's regulations. You requested the following actions:

1. Immediately Order the Davis-Besse reactor to shut down and remain shut down until the NRC completes an independent review of a recently submitted report [(Exponent report), which was performed for Davis-Besse by Exponent Failure Analysis Associates and Altran Solutions Corporation (Exponent)].
2. If the NRC's independent review determines that the small leak and fast corrosion rate scenario described in the FENOC [FirstEnergy Nuclear Operating Company]-submitted report is valid, immediately Order all pressurized water reactors (PWRs) in the United States to be shut down and remain shut down until the NRC approved either (a) an inspection scope and frequency based on the new scenario that provides protection against the Davis-Besse head damage or (b) an installed leak detection capability that would alert control room operators to small leakage from one or more CRDM [control rod drive mechanisms] nozzles so that repairs could occur prior to damage progressing to Davis-Besse depths.
3. If the NRC's independent review determines that FENOC has submitted yet another inaccurate report to the NRC, revoke the operating license for Davis-Besse.

The NRC staff spoke with you on May 3, 2007, regarding Item #1 of your petition request, concerning your request for immediate action to shut down Davis-Besse. The petition review board (PRB) denied that request and, by letter dated May 18, 2007, informed you of that decision (Agencywide Documents Access and Management System (ADAMS) Accession No. ML071300245).

By letter dated May 10, 2007, you submitted supplemental information to support your petition request (ADAMS Accession No. ML071340193).

In accordance with NRC Management Directive (MD) 8.11, the PRB met on May 16, 2007, to discuss Items #2 and #3 of your April 30, 2007, request, and the May 10, 2007, supplemental information you provided. On May 29, 2007, you were notified by telephone that the PRB's initial recommendation was to reject these two items for review under 10 CFR 2.206. At the

conclusion of the telephone call, you requested an opportunity to address the PRB at a public meeting, concerning Items #2 and #3.

You met with the PRB on June 18, 2007, to discuss Items #2 and #3 of your petition request. The transcript of that public meeting is available for review and has been made publicly available in ADAMS under Accession No. ML071840004.

Based on your petition request, your May 10, 2007, supplement, and the June 18, 2007, public meeting, the PRB has concluded that Items #2 and #3 of your submittal do not meet the criteria for consideration under 10 CFR 2.206, as explained below.

Item #2 of the April 30, 2007, Petition Request

As the basis for Item #2, you stated that, if the NRC's independent review validates the small leak and fast corrosion rate scenario, the immediate shutdown of vulnerable PWRs is warranted until adequate protection measures are instituted to handle this newly identified safety hazard.

The PRB has decided to reject Item #2 for review in the 10 CFR 2.206 process because the issue was the subject of NRC staff review and evaluation, for which a resolution was achieved. The NRC assessment of the Exponent report concluded that the current inspection requirements are adequate to ensure safety. The May 4, 2007, NRC staff assessment is available for review in ADAMS under Accession No. ML071240254. At this time, the NRC does not plan to perform a more intensive independent review of the Exponent report.

May 10, 2007, Supplement to 2.206 Petition Request

Your May 10, 2007, supplement raised the following two additional questions relative to your petition request.

- (1) Is primary water stress-corrosion cracking (PWSCC) the only failure mode leading to significant head wastage?
- (2) Is the probability of detection 100 percent when the NRC-mandated inspections are performed?

Regarding the first question, the NRC staff believes that PWSCC is the only reasonable failure mode for vessel head penetration nozzles or their attachment welds which could lead to the hypothetical conditions necessary for significant corrosion/erosion rates identified by the Exponent report.

Beyond the development of leaking cracks in vessel head penetration nozzles and associated welds, the only other possible mechanism of boric acid deposition on the head is leakage from a source above the head. While a few plants have experienced vessel head corrosion due to deposition of boric acid from over-the-head sources, the resulting corrosion has been relatively minor, and the heads have been returned to service following an appropriate safety analysis and any associated corrective actions.

Various degradation mechanisms were considered in establishing the current upper-head inspection requirements. However, the NRC believes that PWSCC is the only reasonable degradation mechanism that could cause the extent of cracking identified by the Exponent report as necessary to cause accelerated corrosion/erosion rates.

Regarding your second question on the probability of detection, the NRC notes that, while the probability of detection of any non-destructive examination technique cannot achieve absolute certainty, ultrasonic testing to satisfy the NRC upper-head volumetric inspection requirement, performance of the volumetric or surface leak path assessment, and visual inspection of the exterior of the reactor pressure vessel (RPV) head provide reasonable assurance of detection of PWSCC cracks in and/or leakage from vessel head penetration nozzles and support the conclusions of the NRC assessment that the Exponent report does not necessitate changes to the NRC required inspection program.

In summary, based on the above, your May 10, 2007, supplement raises no issues that would cause the NRC to change its assessment of the Exponent report regarding the adequacy of current head inspection requirements.

Item #3 of the April 30, 2007, Petition Request

Item #3 of your petition request asked the NRC to revoke the operating license for Davis-Besse if the NRC's independent review determines that FENOC has submitted an inaccurate report to the NRC.

As the basis for Item #3, you stated that, if the NRC's independent review invalidates the small leak and fast corrosion rate scenario, FENOC's unwillingness or inability to provide the NRC with complete and accurate information provides overwhelming *prima facie* evidence that it falls short of the NRC's reliable and trustworthy standard.

During the June 18, 2007, public meeting, the PRB asked for specific examples of inaccurate statements that were provided to the NRC. You identified two examples of inconsistent statements, and stated that one of the inconsistent statements must be untrue, as follows:

- (A) The Exponent report concludes that the Davis-Besse head corrosion event was unexpected, not foreseen or predicted. You stated that this conclusion conflicts with an October 1, 2003, presentation made by FENOC, wherein the licensee said that the condition at Davis-Besse resulted from breakdowns related to individuals, programs, management, and independent oversight.

This example does not meet the criteria in MD 8.11 for acceptance in the 2.206 process because it does not provide facts sufficient to constitute a basis for the requested action. The two statements are not contradictory and, therefore, they do not identify a violation of 10 CFR 50.9. However, there is an ongoing NRC review of the June 13, 2007, FENOC response to the May 14, 2007, Demand For Information. If the NRC determines that the licensee has provided materially inaccurate information, the NRC will take appropriate regulatory action.

- (B) In the fall of 2001, FENOC told the NRC that the Davis-Besse facility can keep running without inspections, but the Exponent report states that FENOC was entirely blameless in keeping Davis-Besse running without inspections.

This example meets the criteria in MD 8.11 for rejection because this issue has already been the subject of NRC review and evaluation, for which a resolution has been achieved. During the PRB public meeting, you acknowledged that the NRC had already addressed this matter in the April 2005 Notice of Violation and Proposed Civil Penalty issued to Davis-Besse.

For the reasons noted above, the PRB has decided not to review Item #2 or Item #3 in the 10 CFR 2.206 process.

No further action will be taken on this petition request. Thank you for bringing these issues to the attention of the NRC.

Sincerely,

/RA by J.Wiggins for/

J. E. Dyer, Director
Office of Nuclear Reactor Regulation

Docket No. 50-346

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See next page

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Acknowledgment letter: ML071870443
NRR-106

Incoming Accession No.: ML071210285
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