

October 24, 2003

The Honorable Michael DeWine
United States Senator
37 West Broad Street, Suite 320
Columbus, Ohio 43215

Dear Senator DeWine:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to your September 3, 2003, letter to Mr. Dennis Rathbun requesting assistance in addressing correspondence you received from Cassa and Karl Brodbeck about the Davis-Besse Nuclear Power Station, Unit 1 (Davis-Besse). They requested responses to the following questions:

1. What was the reason for the delay in closing Davis-Besse in 2002?
2. Does the NRC support the "principle of immediate recall" to shut down a power plant which may have the same problem as other plants?
3. How often should NRC inspections take place?
4. Does NRC know how and when to prevent "strike three" at Davis-Besse?
5. Does NRC support the permanent closing of Davis-Besse?

The NRC staff has reviewed these questions and our responses are provided below.

Question 1: What was the reason for the delay in closing Davis-Besse in 2002?

The NRC staff's rationale for allowing continued operation of Davis-Besse beyond December 31, 2001, until February 16, 2002, was documented in a letter and evaluation to FirstEnergy Nuclear Operating Company (FENOC), the licensee for Davis-Besse, dated December 3, 2002 (ADAMS Accession No. ML023300539). The letter is publicly available in the NRC's Agencywide Documents Access and Management System (ADAMS), which is accessible from the NRC Web site (www.nrc.gov/reading-rm/adams.html). The following summarizes the pertinent information regarding the staff's position.

After the discovery of circumferential cracking in the control rod drive mechanism (CRDM) nozzles at Oconee Nuclear Station, Unit 3, in February 2001, the NRC issued NRC Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles," which required all pressurized water reactor (PWR) operators to report to the NRC on the structural integrity of the CRDM nozzles, including their plans for future inspections in order to assure the structural integrity of the reactor pressure vessel boundary. Plants with a similar operating history to Oconee Unit 3, including Davis-Besse, were expected to inspect their reactor pressure vessel (RPV) head penetrations by December 31, 2001, or provide a basis for an alternate date. A specific concern discussed in the bulletin was the potential for circumferential cracking of the CRDM nozzles, which might lead to separation of a CRDM nozzle from the pressure boundary, resulting in a loss-of-coolant accident (LOCA). FENOC requested an extension of the inspection deadline until its scheduled refueling outage beginning March 30, 2002. The NRC did not allow the plant to operate until March 30, 2002, but agreed

to permit operation until February 16, 2002, based on the information provided by the licensee, the analyses performed by the NRC staff, and a risk assessment by the NRC staff that showed the risk of nozzle failure remained acceptably low. The staff also requested that the licensee take compensatory measures to minimize possible crack growth during the short additional period of operation. The NRC's acceptance of FENOC's response to NRC Bulletin 2001-01 was documented in a letter to FENOC dated December 4, 2001 (ADAMS Accession No. ML013390021).

As described in the NRC's December 3, 2002, letter to FENOC, the NRC concluded that the likelihood of a LOCA at Davis-Besse due to CRDM nozzle ejection during the period of operation from December 31, 2001, to February 16, 2002, was acceptably small given the information we knew at the time. The NRC staff also concluded that, given the probabilities for such an event, the overall risk increase would be acceptably small and defense in depth would be preserved. This conclusion was based on the weight of evidence, including the structural margins to failure in nozzles in which circumferential cracks had been identified at other plants; a comparison of operating time of Davis-Besse with other similar units; the favorable inspection results from the 1996 Davis-Besse outage; and the NRC staff's review of probabilistic safety assessment calculations submitted by the licensee. The NRC staff further concluded that, while the structural margins of some CRDM nozzles had the potential to be reduced, sufficient margin remained to maintain safety and prevent a LOCA.

Based on findings from other plants of similar design to Davis-Besse, the staff believed it was likely that cracking also existed in the Davis-Besse CRDM penetrations. However, the staff had no direct evidence of cracking, such as visual observation or leak rate monitor indications. The staff concluded that even if cracking did exist, the extent of cracking would not significantly degrade structural integrity margins, thus satisfying the key considerations of maintaining margin and defense in depth. In summary, the staff concluded that CRDM cracking was likely to exist at Davis-Besse, but the degree of degradation was not expected to reduce safety margins or defense in depth sufficiently to constitute an unacceptable increase in risk during the short time from December 31, 2001, until February 16, 2002, during which Davis-Besse was allowed to continue to operate. The NRC was unaware that nozzle leakage or corrosion had occurred at Davis-Besse when it agreed to the time extension.

Question 2: Does the NRC support the "principle of immediate recall" to shut down a power plant which may have the same problem as other plants?

The NRC staff routinely reviews the potential generic implications of every safety concern of which it becomes aware. The staff systematically assesses and screens nuclear power reactor-related events, reports, and data to determine their significance and the need for additional evaluation or plant-specific actions. As necessary, the staff then develops, coordinates, and issues operational feedback to licensees for generic safety concerns identified from power reactor events and conditions. The staff is guided, in part, by the requirements of NRC Inspection Manual Chapter 0720, "Nuclear Regulatory Commission Generic Communications Regarding Nuclear Reactor Issues," and Manual Chapter 0970, "Potentially Generic Items identified by Regional Offices." Nevertheless, should the staff consider an issue to have significant generic safety implications, the NRC has authority to order any and all affected plants to be shut down in order to protect the public health and safety.

In regard to the generic safety implications of Davis-Besse for other nuclear power reactors, please note that the degradation of the Davis-Besse RPV head was found by FENOC as a result of inspections performed by the licensee in response to NRC Bulletin 2001-01. Subsequent to the discovery of the degradation at Davis-Besse, the NRC issued Bulletin 2002-01, which required PWR licensees to report on the condition of their RPV heads, past incidents of boric acid leakage, and the basis for concluding that their boric acid inspection programs were effective. NRC Bulletin 2002-02 later advised PWR licensees that more stringent inspection techniques may be necessary to detect nozzle cracks. On February 11, 2003, the NRC ordered all PWR operators to establish interim inspection requirements for RPV heads. The order requires specific inspections of the RPV head and associated penetration nozzles, depending on the licensee's susceptibility to primary water stress corrosion cracking. To date, there has been no evidence at other PWRs of the extensive corrosion of the RPV head like that found at Davis-Besse. Boiling-water reactors (BWRs), such as the Perry Nuclear Power Plant, are designed differently than PWRs and do not use boric acid for normal reactivity control and so are not susceptible to the degradation mechanism seen at Davis-Besse. The status of NRC review and oversight activities at Davis-Besse is available for public review on the NRC Web site (www.nrc.gov/reactors/operating/ops-experience/vessel-head-degradation.html). The Web site includes the status of NRC activities to address the generic safety implications of the Davis-Besse RPV head degradation for other plants. Correspondence from PWR licensees to the NRC in response to Bulletin 2002-01 and the NRC order may also be accessed from the NRC Web site.

Question 3: How often should NRC inspections take place?

Inspections are ongoing at nuclear reactor sites at various frequencies as specified by the NRC inspection program. The core of the NRC inspection program for nuclear power plants is carried out daily by resident (onsite) inspectors. At least two inspectors normally are assigned to each site. In addition, inspection specialists from the regional offices review plant security, emergency planning, radiation protection, environmental monitoring, periodic testing of plant equipment and systems, fire protection, construction activities, and other more specialized areas. During the course of a year, NRC specialists may conduct 10 to 25 routine inspections at each nuclear power plant, depending on the activities at the plants. Team inspections regularly review fire protection, plant design, and corrective actions. Special inspections may focus on a specific plant activity, such as maintenance or security, or inspectors may be sent to the plant to look at a specific operating problem or incident. The NRC inspection program for nuclear reactors is described on the NRC Web site (www.nrc.gov/reactors/operating/oversight/inspection-basics.html).

The NRC does not have the resources to inspect every activity; therefore, it uses a sampling program to determine how best to allocate its resources. The NRC draws conclusions about licensee performance and facility condition from a limited information base of direct inspection supplemented by information that is provided by licensees and others.

Question 4: Does NRC know how and when to prevent "strike three" at Davis-Besse?

As evidenced by the major effort the NRC has undertaken to oversee the plant's recovery actions, the NRC has demonstrated a strong commitment to public health and safety and has taken a number of actions to ensure that Davis-Besse will comply with NRC safety rules if

FENOC is permitted to restart the plant. FENOC's compliance with NRC regulations, license conditions, and licensing commitments is fundamental to the NRC's confidence in the safety of licensed activities. The licensee must demonstrate that corrective actions have been effectively implemented; that the Davis-Besse unit is in conformance with applicable NRC regulations, its license conditions, and its Updated Safety Analysis Report; and that applicable licensing commitments have been met before the NRC staff will consider a plant restart.

Davis-Besse will continue to receive enhanced NRC oversight if it is allowed to restart, as described in NRC Inspection Manual Chapter 0350, "Oversight of Operating Reactor Facilities in a Shutdown Condition With Performance Problems." After an acceptable post-restart period of operation of the plant, the NRC may determine to return to the routine reactor oversight process. The reactor oversight process is fully described on the NRC Web site (www.nrc.gov/reactors/operating/oversight.html). Basically, the process is a risk-informed, tiered approach to ensuring plant safety. The process focuses on the performance areas of reactor safety, radiation safety, and safeguards. Within each performance area are cornerstones that reflect the essential safety aspects of facility operation. Satisfactory licensee performance in the cornerstones provides reasonable assurance of safe facility operation and that the NRC's safety mission is being accomplished. The process provides a means of collecting information about licensee performance, assessing the information for its safety significance, taking appropriate NRC action, and ensuring that licensees take appropriate corrective actions. The NRC takes seriously its responsibility for protecting the public health and safety. It is NRC policy, as stated in the NRC Strategic Plan, that "[t]he protection of public health and safety remains paramount among our goals and will drive our decisions."

Question 5: Does NRC support the permanent closing of Davis-Besse?

The permanent shutdown of Davis-Besse would require revoking FENOC's operating license for the plant. Under the NRC's enforcement policy, as well as Section 186 of the Atomic Energy Act, the NRC's authority to revoke a license is discretionary. With regard to the damage to the reactor vessel head at Davis-Besse, the NRC's rules and guidelines neither require nor preclude revocation of the license. Revocation of the license would only be considered if the licensee was either unwilling, or was unable to come into compliance with the NRC's rules and regulations. Thus far, this has not been the case with respect to the Davis-Besse licensee. With regard to the need for immediate action, Davis-Besse is currently shut down and is subject to increased scrutiny through the NRC's enhanced oversight process. Thus, there is no immediate need to revoke the Davis-Besse operating license to protect the health and safety of the public.

The ongoing processes associated with Davis-Besse provide reasonable assurance that Davis-Besse, if approved for operation, will operate in a manner that will pose no undue risk to public health and safety. The NRC is conducting meetings with the licensee and the general public, at locations near the Davis-Besse facility, to discuss FENOC's corrective actions. The meetings with the general public provide opportunities for members of the public to ask the NRC staff questions and identify any concerns they may have.

The Honorable Michael DeWine

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Please be assured that before any decision is made regarding the restart of Davis-Besse, the NRC will make certain that the plant can and will be operated in a safe manner. If you have any questions, please contact Mr. Rathbun at 301-415-1776.

Sincerely,

/RA/

William D. Travers
Executive Director
for Operations

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Identical letter to be sent to:

The Honorable George V. Voinovich

ADAMS Accession Number: ML032680002 (Package)

ADAMS Accession Number: ML032590713 (Incoming)

ADAMS Accession Number: ML032600106 (Response) *Previously concurred

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The Honorable George V. Voinovich

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Sincerely,

/RA/

William D. Travers
Executive Director
for Operations

DISTRIBUTION FOR EDO #G20030548 RESPONSE TO SEN. DEWINE AND SEN.
VOINOVICH CONCERNING K. BRODBECK LETTER RE: DAVIS-BESSE NUCLEAR POWER
PLANT

DATED: October 24, 2003

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