EDO Principal Correspondence Control

FROM: DUE: 06/05/07

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FINAL REPLY:

David A. Lochbaum
Union of Concerned Scientists

TO:

Reyes, EDO

FOR SIGNATURE OF : ** GRN ** CRC NO:

Dyer, NRR

DESC:

2.206 - Protection Against Control Rod Drive Mechanism (CRDM) Nozzle Leakage Fast Corrosion Scenario or More FirstEnergy Falsehoods

DATE: 05/01/07

ASSIGNED TO: CONTACT:

NRR Dyer

SPECIAL INSTRUCTIONS OR REMARKS:

ROUTING:

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Template: EDO-001

ERIDS: EDO-01

Union of Concerned Scientists
Citizens and Scientists for Environmental Solutions

April 30, 2007

Luis A. Reyes
Exeuctive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: PETITION PURSUANT TO §2.206 – PROTECTION AGAINST CONTROL ROD DRIVE MECHANISM (CRDM) NOZZLE LEAKAGE FAST CORROSION SCENARIO OR MORE FIRSTENERGY FALSEHOODS

Dear Mr. Reyes:

FirstEnergy Nuclear Operating Company (FENOC), the licensee for the Davis-Besse nuclear power plant, recently submitted a report to the Nuclear Regulatory Commission (NRC) about the hole in the reactor vessel head caused by leakage from cracked control rod drive mechanism (CRDM) nozzles. Consultants paid by FENOC prepared this report, available in ADAMS under ML070860211.

The report concludes that the reactor vessel head damage was not likely caused by a small leak over a multi-year period as had been previously submitted to the NRC on April 18, 2002 (available in ADAMS under ML021130029 or ML031040196). The new FENOC-submitted report, prepared as we understand it to help FENOC win a $200 million insurance claim (see FENOC letter available in ADAMS under ML071030138 or ML070950293) concludes that significant leakage did not initiate until the October or November 2001 timeframe and the leakage from that point until subsequent shutdown in February 2002 caused the corrosion producing the hole in the reactor vessel head.

If the new leak-to-hole scenario is correct, not only might FENOC get its $200 million insurance check but millions of Americans might lose their insurance against a loss-of-coolant-accident caused by CRDM nozzle leakage. For the NRC-mandated scope and frequency for CRDM nozzle and reactor vessel head inspections is based in large part on the old leak-to-hole scenario. If the new leak-to-hole scenario is valid, the scope and frequency of CRDM nozzle and reactor vessel head inspections is very likely inadequate. Davis-Besse's experience would demonstrate its inadequacy by going from CRDM nozzle leak to reactor vessel head hole in about 18 weeks. Inspections performed no more often than once every 18 months is clearly deficient protection against such a rapidly developing threat.

If the new leak-to-hole scenario is incorrect, FENOC probably loses its $200 million insurance claim but pads its lead as corporation providing the most false information to the NRC. Whatever lead it had amassed, the new invalid report expands that margin.

Neither outcome is palatable. If the report is right, Americans across the country are exposed to unnecessarily high risk. If the report is wrong, Ohioans are once again duped by a deceitful FENOC.

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EDO --G20070297

Therefore, pursuant to §2.206 of Title 10 to the Code of Federal Regulations, the Union of Concerned Scientists petitions the NRC to:

1. Immediately Order the Davis-Besse reactor to shut down and remain shut down until the NRC completes its independent review of the recently submitted report.

2. If the NRC's independent review determines that the small leak and fast corrosion rate scenario decribed in the FENOC-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 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.

JUSTIFICATION FOR PETITIONED ACTIONS

The first requested action is warranted because public safety is threatened no matter what the NRC's independent review of the recent report concludes. If the NRC's review concludes that the report accurately described the fast corrosion rates that can result from a small leak from the reactor coolant pressure boundary, then the "like" replacement of the original reactor vessel head at Davis-Besse with one purchased from the defunct Midland nuclear plant creates the small hazard. When questions arose during the extended outage at Davis-Besse about the integrity of bottom-mounted instrumentation (BMI) nozzles due to rust-colored stains on the lower portion of the reactor vessel, FENOC answered these questions by installing the FLUS system (see slide 10 on FENOC's presentation dated May 6, 2003, to the NRC about restart, available in ADAMS under ML031280087) that could alert control room operators to the initiation of a very, very minor leak from the BMI nozzles in the bottom head. No such warning system exists to warn the operators about a very, very minor leak from the CRDM nozzles in the replacement head. The existing NRC-mandated scope and frequency of CRDM nozzle and reactor vessel head inspections provides scant protection against the ~18 week small leak to large corrosion hole scenario described in the recent FENOC report. Hence, an immediate shut down of Davis-Besse is warranted to protect public health and safety should the NRC's independent review of the recent report validate this scenario.

On the other hand, if the NRC's review of FENOC's report concludes that the scenario is invalid, that determination would implicitly, at least, confirm that FENOC has yet again submitted an inaccurate report to the NRC about Davis-Besse. On April 21, 2005, the NRC proposed a record $5.45 million fine to FENOC for numerous violations at Davis-Besse (letter available in ADAMS under ML051090552). The NRC's letter transmitting the record fine stated:

> *OI* [the NRC's Office of Investigations] *determined that the apparent violations involved the licensee's willful failure to: ... (5) maintain and submit to the NRC, complete and accurate information.*

For a company to provide incomplete and inaccurate information to the NRC is unacceptable. For a company that has been severely sanctioned just two years ago for providing incomplete and inaccurate information to the NRC to provide more incomplete and inaccurate to the NRC moves beyond unacceptable to intolerable. Hence, an immediate shut down of Davis-Besse is warranted to protect public health and safety should the NRC's independent review of the recent report invalidate this scenario.

The second requested action is only applicable if the NRC's independent review validates the small leak and fast corrosion rate scenario described in the FENOC report. That NRC validation would have the unfortunate effect of invalidating the basis for the current scope and frequency for CRDM nozzle and reactor vessel head inspections, even for PWRs with replacement reactor vessel heads. Immediate shut down of the PWRs and their continued shut down is warranted until adequate protection measures against this newly identified threat to public safety has been developed and implemented. The adequate protection measures include, but are not limited to, (1) installing a FLUS-like system to monitor the integrity of the CRDM nozzles and warn the operators upon initiation of a small leak, (2) installing a remote camera system to monitor the area of the CRDM nozzles so operators can detect the initiation of a small leak, or (3) assuming that any and all unidentified leakage inside the reactor containment may be coming from CRDM nozzle cracking, thus involving the 6-hour limiting condition of operation for reactor coolant pressure boundary leakage.

UCS is aware of the letter dated April 2, 2007, the NRC's Regional Administrator sent to FENOC asking questions about the recent report and its findings (letter available in ADAMS under ML070930162). Apparently, the report's authors informed the NRC during one or more conference calls that the report's findings do "*not contain information that would constitute a current safety concerns for the Davis-Besse facility or for other operating reactors*" because, among two other factors, "*the critical aspect of nozzle failure identified in the report was the accelerated crack growth rate associated with a specific heat number of nozzle material.*" But as the NRC documented in its Regulatory Issue Summary 2003-13, "NRC Review of Responses to Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity,"" (available in ADAMS under ML032100653):

> *From the review of the Bulletin 2002-01 responses and the audits, the staff determined that many plants have not taken steps to identify locations that are susceptible to cracking. These locations would include any areas in the reactor coolant pressure boundary where PWSCC can potentially occur as well as locations susceptible to other potential degradation mechanisms based on plant-specific and industry experience.*

In other words, the exercise failed to ascertain that other reactor vessel heads might have CRDM nozzles with the same specific heat number or with a different specific heat number that is equally or perhaps even more susceptible. Instead, plant owners relied on the periodic inspections of CRDM nozzles for cracks and the bare-metal reactor vessel heads for damage. The findings from the recent report, if determined by NRC to be valid, undermine the scope and frequency of the mandated inspections and – as the NRC's own summary reports – there is no plant-specific susceptibility analyses to fall back on. Hence, the immediate shut down of the vulnerable PWRs is warranted until adequate protection measures are instituted to handle this newly identified safety hazard.

The third requested action is only applicable if the NRC's independent review invalidates the small leak and fast corrosion rate scenario described in the FENOC report. That NRC invalidation would have the unfortunate effect of confirming a theme that FENOC lacks the prerequisite integrity and trustworthiness to be entrusted with operation of an inherently hazardous endeavor like the Davis-Besse nuclear power reactor. Trustworthiness is rightly a hallmark standard in the nuclear power industry and NRC's regulations. For example, §26.10 in 10 CFR requires that workers at nuclear power plants perform their tasks in a reliable and trustworthy manner. This regulation requires NRC licensee to develop and administer fitness-for-duty programs that:

> *Provide reasonable assurance that nuclear power plant personnel, transporter personnel, and personnel of licensees authorized to possess or use formula quantities of SSNM, will perform their tasks in a reliable and trustworthy manner and are not under the influence of any substance, legal or illegal, or mentally or physically impaired from any cause, which in any way adversely affects their ability to safely and competently perform their duties.* (See http://www.nrc.gov/reading-rm/doc-collections/cfr/part026/part026-0010.html)

If an unreliable and untrustworthy individual cannot work inside the fences of a nuclear power plant, it logically holds that an unreliable and untrustworthy company cannot operate a nuclear power plant. 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. Hence, FENOC's license to operate Davis-Besse must be revoked.

We look forward to your prompt resolution of this important public health matter.

Sincerely,

David Lochbaum
Director, Nuclear Safety Project
Washington Office
(202) 331-5430