Union of Concerned Scientists
ucsusa.org Two Brattle Square, Cambridge, MA 02138-3780 t 617.547.5552 f 617.864.9405
1825 K Street NW, Suite 800, Washington, DC 20006-1232 t 202.223.6133 f 202.223.6162
2397 Shattuck Avenue, Suite 203, Berkeley, CA 94704-1567 t 510.843.1872 f 510.843.3785
One North LaSalle Street, Suite 1904, Chicago, IL 60602-4064 t 312.578.1750 f 312.578.1751

January 19, 2017

William M. Dean, Director
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: Comments on Proposed Director's Decision for 10 CFR 2.206 Petition on Baffle Bolt Degradation at Indian Point

Dear Mr. Dean:

On behalf of the Union of Concerned Scientists (UCS), I submitted a petition pursuant to §2.206 in Title 10 of the Code of Federal Regulations (hereafter 10 CFR) to the Nuclear Regulatory Commission (NRC) on June 30, 2016, (ADAMS Accession No. ML16187A186) requesting that the NRC take three enforcement actions regarding baffle-former bolt degradation at the Indian Point Energy Center. By letter dated January 11, 2017 (ADAMS ML16320A269), Ms. Anne T. Boland of your staff provided me the Proposed Director's Decision on this petition and up to twenty-five (25) days to submit comments on it.

First, I appreciate the implied compliment from the NRC staff about my competence and capabilities. The staff took nearly 180 days to review the petition and draft the Proposed Director's Decision. When the NRC staff sends Requests For Additional Information (RAIs) to licensees, the licensees are typically provided 30 days, sometimes longer, to respond. But the staff recognizes that UCS is more productive then itself or its licensees and only needs a mere 25 days to respond. I appreciate this recognition, even if it might be unintended.

The Proposed Director's Decision acknowledged that I had submitted a letter dated January 10, 2017 (ADAMS ML17011A012) requesting that two of the three requested enforcement actions be withdrawn. Because the Proposed Director's Decision addressed all three enforcement actions requested in the petition, my comments will cover the NRC's responses to all three.

General Comments and Observations

Page 4 of the Proposed Director's Decision stated that baffle and former bolt cracking was identified in European plants as early as 1998 and that the NRC issued Information Notice 98-11 in 1998 to alert owners of U.S. reactors to the matter. The Proposed Director's Decision does not explain why the agency took a decade to issue this safety alert.

Page 4 of the Proposed Director's Decision further stated that U.S. owners are examining their baffle and former in accordance with EPRI's MRP-227-A. The Proposed Director's Decision did not mention that MRP-227-A was submitted to the NRC in 2008 (ADAMS ML120170453). The Proposed Director's Decision also does not explain why it took a decade for the industry to address the safety issue.

Page 4 of the Proposed Director's Decision further stated that the NC approved using MRP-227A for baffle and former bolt aging management. The Proposed Director's Decision did not mention that this approval came in the form of a Final Safety Evaluation Report (FSER) dated December 16, 2011—23 years after the cracking problem first surfaced in Europe, 13 years after the NRC alerted U.S. owners to the issue, and 3 years after the industry submitted MRP-227-A for approval.

Requested Enforcement Action #1: Issue an Order requiring the Indian Point licensee to inspect the baffle bolts and to install the downflow to upflow modification on Unit 2 during its next refueling outage.

UCS requested this enforcement action because the licensee's commitment to inspect the baffle bolts during next refueling outages and install the downflow to upflow modification during the next Unit 2 refueling outage were not legally enforceable.

The Proposed Director's Decision two facts that provide the regulatory footprint UCS sought through this requested enforcement action. First, the proposed decision noted that the commitments had been made as part of the corrective actions mandated by Appendix B to 10 CFR Part 50 for the bolt degradation. The NRC would be able to review deletion of or revision to the commitments and take regulatory action if appropriate. Second, the proposed decision cited EPRI Materials Reliability Program Letter 2016-022 dated July 27, 2016[1] (ADAMS ML16211A054) recommending that the seven reactors in Tier 1a, which includes Indian Point Units 2 and 3, conduct baffle and former bolt inspections during refueling outages.

The Proposed Director's Decision thus provided sound and reasonable bases for denying this requested enforcement action.

Requested Enforcement Action #2: Issue a Demand For Information requiring the Indian Point licensee to submit an operability determination to the agency regarding continued operation of Unit 3 until its baffle bolts can be inspected per MRP-227-A.

UCS requested this enforcement action because the bolt degradation issue identified on Indian Point Unit 2 could also afflict Indian Point Unit 3, which had not yet inspected its baffle bolts per MRP-227-A, and an Operability Determination was the NRC-accepted industry standard practice for addressing this potential.

The Proposed Director's Decision noted that the licensee completed an Operability Evaluation per procedure EN-OP-104 on July 11, 2016. The proposed decision further noted that NRC inspectors reviewed this Operability Evaluation and concluded that its adequately justified operating Unit 3 to its next refueling outage scheduled for spring 2017 when the baffle bolt inspections would occur.

The Proposed Director's Decision thus provided sound and reasonable bases for denying this requested enforcement action.

Requested Enfocement Action #3: Issue a Demand For Information requiring the Indian Point licensee to submit an evaluation of the performance, role and operating experience of the metal impact monitoring system in detecting and responding to indications of loose parts (such as head broken off baffle bolts) within the reactor coolant system.

UCS requested this enforcement action because the metal impact monitoring system could alert workers to the presence of loose parts within the reactor coolant system.

Page 13 of the Proposed Director's Decision stated:

> *Failure or degradation of BFBs* [baffle former bolts] *may result in loose parts in the form of broken bolt heads and locking bars. It should be noted that the clearances between the baffle plates and peripheral fuel assemblies are sufficiently small such that bolt heads cannot become*

[1] Note that this industry recommendation was issued nearly four weeks after the UCS petition was submitted.

> *loose parts within the reactor coolant system* ***unless the fuel is removed****. Therefore, if a bolt head fractures at the head-to-shank transition and separates from the bolt shank, the bolt head cannot fall out of its location, even if the locking bar fails.* [Boldface and underlining emphasis added by UCS]

As implied by the name, refueling outages typically include removing fuel from the reactor core. Consequently, it matters very little whether broken bolt heads or locking bars go missing immediately or when fuel is removed unless the missing parts are recovered before the reactor restarts. For upon restarting the reactor, the broken bolt heads and locking bars constitute loose parts.

The statement prepared April 4, 2016, by the licensee (ADAMS ML16117A593) stated:

> *Out of those more than 2000* [baffle and former] *bolts that were inspected, 227 of those bolts were found to have issues that require further analysis. Bolt heads were missing on two of those 227 bolts with identified issues; with the stem remaining in place. Ultrasonic testing found signs of degradation or other issues such as missing lock-bars.*

The licensee reported broken bolt heads and failed lock-bars that were missing. They must have removed fuel during the Indian Point Unit 2 refueling outage.

NRC Inspection Report dated May 12, 2016 (ADAMS ML16133A448) discussed the degraded baffle bolts, but does not state whether the missing parts had been recovered or had been evaluated to show they represented no potential hazard during the ensuing operating cycle.

In its Licensee Event Report (LER) dated May 31, 2016 (ADAMS ML16159A219), the owner reported the Unit 2 baffle bolt degradation to the NRC. The LER listed five corrective actions to be taken; none explicitly or implicitly stated that the missing bolt heads and missing lock-bars had been recovered or would be recovered. Hence, it seems reasonable to assume they remain loose parts within the Unit 2 reactor coolant system. In addition, UCS has not seen any indication that either the licensee or the NRC has evaluated the potential for these loose parts to cause harm either by impact or by obstruction (e.g., impeding the movement of a safety-related component).

The Proposed Director's Decision does note that reactor coolant activity is monitored and would indicate damage done to fuel rod(s) by loose parts impacts. This is certainly true. It is equally true that loose parts can cause damage to things within the reactor coolant system other than fuel rods and there is no reason to suspect that fuel rods would suffer the first damage.

Page 14 of the Proposed Director's Decision stated:

> *It is the NRC staff's position that the metal impact monitoring system 1) has limited effectiveness for detecting BFB degradation, 2) should not be considered as an alternate means for monitoring BFB performance online, and 3) may not be sufficiently sensitive to detect loose bolt heads and locking tab bars.*

UCS requested this enforcement action believing that operating experience would reveal the metal impact monitoring system to have no reliable role to play in this matter. UCS agrees with the NRC that the metal impact monitoring system at Indian Point is about as useful as an appendix in a mannequin. UCS no longer needs the operating experience information—the NRC's explicit position clearly shows that no one should place any credit and reliance in the metal impact monitoring system for anything other than occupying space.

The Proposed Director's Decision thus provided sound and reasonable bases for denying this requested enforcement action.

Conclusion

The Proposed Director's Decision provided sound and reasonable bases for denying all three enforcement actions requested in the UCS petition. We appreciate the effort taken by the NRC staff to consider our petitions and to provide solid reasons for denying it.

We point out that some of those reasons were not publicly available at the time we submitted our petition; nor could these reasons have been reasonably foreseen at that time. The 2.206 petition process provided the proper means for UCS to request additional measures be taken at Indian Point. The 2.206 petition process also provided the proper means for the NRC staff to determine those additional measures were not required (or had since been taken.)

Ms. Boland gave me 25 days to submit comments. It was not clear whether she meant 25 working days or 25 calendar days. But since I was able to provide comments in eight (8) calendar days, there's no need for clarification on the deadline.

Sincerely,

David A. Lochbaum
Director, Nuclear Safety Project
Union of Concerned Scientists
PO Box 15316
Chattanooga, TN 37415
423-468-9272, office
dlochbaum@ucsusa.org