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TAC No.
MA 9860



Union of Concerned Scientists

August 29, 2000

Mr. Darl S. Hood, Senior Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: COMMENTS ON PROPOSED CHANGE TO THE OPERATING LICENSE EXPIRATION DATE FOR THE PALISADES NUCLEAR PLANT

Dear Mr. Hood:

By letter dated April 27, 2000, Consumers Energy Company submitted an 18-page license amendment request to revise the expiration date for the Palisades Nuclear Plant from March 14, 2007, to March 24, 2011. In the safety analysis included in that submittal, the very first issue addressed by Consumers Energy Company was the lifetime of the reactor vessel at Palisades.

In the *Federal Register* published on May 17, 2000, (Volume 65, Number 96), the NRC noticed this license amendment request and gave the public until June 16, 2000, to file a request for a hearing with respect to issuance of the amendment.

Subsequent to the closing date for this licensing action, Consumers Energy Company responded to an NRC request for additional information about the reactor vessel neutron fluence evaluation. That July 6, 2000, submittal—77 pages long—dealt directly with the lifetime of the reactor vessel at Palisades. Recall that this issue was the very first issue addressed by Consumers Energy Company in its safety analysis supporting its license extension request. It is the same issue, but it was discussed in far less detail than in the company's July 6, 2000, submittal. The point here is that the public did not have access to this relevant information until after the closing date of June 16, 2000.

UCS reviewed these documents and concludes that the NRC staff should not approve the license extension until after the Palisades reactor vessel neutron fluence evaluation being examined by the NRC in TAC No. MA8250 is completed. The bases for our conclusion are as follows:

1. By letter dated February 14, 2000, the NRC staff notified Consumers Energy Company of a second correction to the safety evaluation it had prepared to approve Relief Request 11 of the Third Inservice Inspection Program at Palisades. The need to make repeated corrections to the safety evaluation strongly suggests that the NRC staff placed schedule ahead of quality, a fault that must not be repeated with the pending license extension request.

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2. By letter dated March 16, 2000, the NRC Office of Research informed the NRC Office of Nuclear Reactor Regulation of its independent assessment of the NRC staff's approval of an extension in the steam generator inspection interval at the Indian Point 2 plant. Quoting from that letter:

However, in our review of the original inspection interval for cycle 14, we cannot reconcile several statements and conclusions in the safety evaluation (SE) with the request for additional information (RAI) and the information we reviewed, particularly with respect to the operational assessments conducted for stress corrosion cracking in the second row U-bend region and at the top of the tubesheet under the sludge. In its review of the licensee request, the NRR staff recognized the importance for maintaining required tube structural and leakage integrity for the entire cycle 14, and in a request for additional information, posed the following question (question 1): "[F]or each degradation mechanism, please provide a general description of the operational assessment methodology used to ensure that SG tube integrity will be maintained for the entire fuel cycle (cycle 14). The description should include an explanation of the predictive methodology, flaw growth rates, and NDE uncertainty used to determine structural and accident leakage integrity."

We find the licensee's response to the staff's question weak and incomplete. For example the licensee provided only a very short discussion regarding their operational assessment for stress corrosion cracking at the row 2 U-bend. No predictive methodology was discussed nor were growth rates or NDE uncertainty applied in their evaluation. The licensee simply stated that the indication was below the in-situ screening threshold (i.e., small) and "[A]s this represented the first detected U-bend indication after approximately 23 years of operation, any growth rates associated with this indication would be considered minimal." While more detailed discussions regarding the weakness of the analyses conducted by the licensee are included in the attachment, we disagree with the licensee's contention because it is inconsistent with the evolution of stress corrosion cracking and with other industry experience.

This Indian Point 2 case is directly applicable to the pending license extension at Palisades. In both cases, the NRC staff identified the weak links (e.g., tube structural integrity at Indian Point 2 and reactor vessel lifetime at Palisades). In the Indian Point 2 case, the NRC staff improperly relied on "weak and incomplete" (to use the NRC's characterization) information from the plant owner to approve the request. At Palisades, the NRC staff must complete its evaluation into the reactor vessel neutron fluence question before it can determine if the safety analysis provided by the plant owner is also "weak and incomplete." Hence, TAC No. MA8250 must be completed before the NRC staff approves the license extension request for Palisades.

3. On page 8 of attachment 1 to its July 6, 2000, submittal, Consumers Energy Company replied to an NRC question about using dosimetry results to check chemical composition. The company's Part (2) response stated, "We concur that dosimetry is not a proper means to determine the chemical composition of a substance." However, in its response to Part (1), the company indicated that it had essentially used dosimetry results as a screen to accept or reject measurements. It appears that the company, despite its protests to the contrary, is indeed using dosimetry results to check chemical composition. The NRC staff must resolve its concerns about this issue in order to determine if the company supplied "weak and incomplete" information.
4. On page 11 of attachment 1 to its July 6, 2000, submittal, Consumers Energy Company replied to an NRC question about how its computer code (SIMULATE-3) dealt with mixing (i.e., the flow of water between fuel assemblies in the reactor core region). The issue of mixing is vital because water

density is one of the primary factors in the attenuation of neutrons reaching the reactor vessel. The company replied that SIMULATE-3 did not account for mixing. The company stated: "The cross-flow between assemblies in the Palisades core geometry is very small due to the existence of wide water gaps between assemblies." What is the basis for this statement? If it is testing conducted during the plant's initial startup phase (as is implied by the discussion on the top of page 13), are the results still applicable following numerous changes made over the years to fuel assembly mechanical designs and to core geometries (e.g., low-leakage cores)? What is the sensitivity of the company's calculations to "very small" amounts of cross-flow or mixing. The NRC staff must resolve these questions in order to determine if the company supplied "weak and incomplete" information.

5. On page 16 of attachment 1 to its July 6, 2000, submittal, Consumers Energy Company provided in Table 7-3 the fuel assembly water densities and water temperatures predicted by SIMULATE-3. The company stated "Comparisons to measured in-core temperatures and assembly powers show that SIMULATE-3 adequately predicts the temperatures in the assemblies where core exit temperature (CET) measurements are available." On the next page, the company reported that the calculated densities in the 29 outermost assemblies in a quadrant core were averaged to produce the material properties of the water. This discussion prompts the following questions:

- (a) How many of the 29 outermost assemblies are equipped with core exit temperature indications?
- (b) If data exists, how do the calculated-to-measured results for the outermost assemblies compare to the calculated-to-measured results for interior assemblies?
- (c) Table 7-3 indicates a 20°F to 30°F difference between the peripheral assembly temperatures and the temperatures of assemblies two rows into the reactor core (all within the 29 assembly averaging region) with a corresponding difference in assembly water densities. Why did the company use the 29-assembly averaging approach instead of using individual assembly water parameters?

The NRC staff must resolve these questions in order to determine if the company supplied "weak and incomplete" information.

6. On page 35 of attachment 1 to its July 6, 2000, submittal, Consumers Energy Company replied to an NRC question about 2% underpower operation. The company reported "it was determined that core thermal power on average was 2% lower than rated hot full power conditions from Cycle 1 through 12 due to an error in the calibration of one of the [feedwater flow] venturis." By this statement, the company conceded that for many years it was wrong about flow measurements. This admission of error in the company's knowledge about flow rates reinforces the point raised in Item 4 above about the need for the NRC staff to resolve the cross-flow mixing issue before approving the license extension at Palisades.

Collectively, UCS believes that the concerns about the reactor vessel fluence evaluation at Palisades raise more than reasonable doubt. The concerns must be resolved and the doubt removed before the NRC staff approves the proposed extension to the plant's operating license. In the license amendment request for the extension, Consumers Power Company implicitly acknowledged the importance of reactor vessel integrity when it covered this component first in its safety analysis. It is therefore imperative that the NRC staff complete its evaluation of the Palisades reactor vessel (TAC No. MA8250) before approving the license extension request.

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Sincerely,

A handwritten signature in cursive script that reads "David A. Lochbaum".

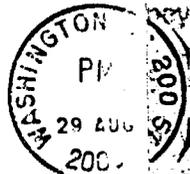
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