

January 7, 2000

Mr. David A. Lochbaum  
Nuclear Safety Engineer  
Union of Concerned Scientists  
1616 P Street NW Suite 310  
Washington, DC 20036-1495

Dear Mr. Lochbaum

Thank you for your letter of November 12, 1999, which addressed remarks made during a Commission meeting on nuclear power plant decommissioning on November 8, 1999. The NRC appreciates your well-documented information and discussions related to decommissioning plant spent fuel pools. In the process of assessing risks at decommissioning plant spent fuel pools, the NRC has sought to engage both the industry and public in an effort to obtain a balanced perspective of the concerns and opinions of affected stakeholders. In addition, we are always interested in any factual information or experience that may be relevant to the subject matter. We have considered the information in your letter while completing the draft technical study on spent fuel pool accident risks at decommissioning plants.

You raised concerns on the application of NUREG-0612 safe load pathways at decommissioning plants. You suggested that safe load pathway assessments are applicable to safety-related equipment only and may not protect non-safety-related systems such as the spent fuel pool cooling system. The staff notes that the industry, in an NEI letter dated November 12, 1999, has committed to perform a load drop analysis for spent fuel pools if it does not utilize a single-failure proof crane. A load drop analysis would need to demonstrate acceptable consequences for any load drop onto the spent fuel pool cooling system.

The industry has taken a position that the spent fuel pool risk PRA end state of loss of inventory to the top of fuel is overly conservative. The industry has noted that there would still be significant opportunity for mitigative actions available before any offsite consequences develop if the time to uncover to the bottom of the fuel and subsequent heatup of the fuel are also considered. You disagree with this position because the radiation fields involved once the fuel is uncovered would represent a significant risk to plant workers. We agree that the radiation fields present at a spent fuel pool once fuel uncovering has begun would represent a risk to plant workers. In addition, there are uncertainties in the thermal-hydraulics of the fuel heatup once uncovering has begun. Although NEI has committed to developing methods for remote makeup of spent fuel pool water, the staff intends to retain uncovering to top of fuel as the end state for its risk assessment.

You cited examples of problems at several nuclear power facilities that went unrecognized by the plant staff for a long period of time even though the problems should have been self-revealing. The staff's PRA models human performance that reflects these lapses in recognition of a problem, whether it is due to operator error or instrument malfunction. The staff has not accepted industry suggestions that operator failure rates from long duration events be zero.

You did not agree with the industry assertion that PRA sequences should be truncated after 24 to 48 hours. In support of this position, you cited some reactor incidents where off-normal conditions continued for long time periods. The staff does not intend to truncate its PRA sequences after 24 or 48 hours but rather to generate HRA estimates appropriate to such long duration sequences and the conditions associated with them.

You took exception to the industry's assertion that there is not much to monitor at a permanently shutdown reactor, therefore, decreasing the likelihood that anything will be overlooked. You noted that there have been examples of multiple plant sites (with one of the plants decommissioning while the others continued to operate) where focus has been on the operating plants at the expense of the shutdown plant. While there is no model that reflects how the presence or absence of an operating plant on the same site as a decommissioning plant affects the HRA component of the PRA, the staff's report will address what is important to be monitored at a decommissioning plant relative to the spent fuel pool. Sufficient levels of system and human performance are expected to result from the insights in the staff's spent fuel pool risk evaluation.

Finally, you noted that there may be many more incidents associated with spent fuel pools than were reported because most of the support systems are non-safety related and do not result in formal reports to the NRC. A good general summary of the spent fuel pool cooling operating experience is provided in an AEOD report dated February 1997 (NUREG-1275, Vol. 12). Both the system reliability and human reliability data utilized by our PRA rely on more generalized operating data taken from other systems and are not limited to spent fuel pool equipment or incidents.

Thank you again for your perspective on decommissioning spent fuel pool risks and examples of the industry's performance problems in this area. We hope you will find the soon to be issued draft report on decommissioning spent fuel pool accident risks objective, accurate, and technically rigorous. Any further questions or discussion on this issue may be addressed to Bill Huffman of my staff at 301-415-1141.

Sincerely,

**/RA/**

Stuart A. Richards, Director  
Project Directorate IV & Decommissioning  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

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