



The Under Secretary of Energy
Washington, DC 20585

July 7, 1998

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, D.C. 20004

Dear Mr. Chairman:

As noted in your letter of March 11, 1998, your staff identified several issues concerning preparations made by the Savannah River Site to resume first-cycle solvent extraction operations (Phase II Restart) in H-Canyon as part of the Department of Energy's (DOE) ongoing activities to stabilize nuclear materials. Follow-on discussions with the Board and staff, including the April 29, 1998, video conference, have been very productive.

I believe your concerns about the readiness of H-Canyon first-cycle solvent extraction operations have been resolved through satisfactory completion of the DOE Readiness Assessment, the results of which were briefed to the Board and staff during the April 29, 1998, video conference call.

In summary, the Department has implemented, or intends to implement, the following corrective actions to address your concerns.

1. The programmable logic controller -- The H-Canyon Basis for Interim Operation (BIO) has been revised to incorporate additional analysis of the solvent fire scenario.
2. Hydrogen deflagration risks -- Since hydrogen generation is not a concern with the low burn-up K14.1 spent nuclear fuel (SNF) charge that will comprise the first material to be processed after the H-Canyon Phase II Restart, DOE plans to proceed with the restart as scheduled. Nevertheless, DOE will ensure that charges of SNF with potential for significant hydrogen generation are not processed until vessel ventilation flow verification is complete and the authorization agreement between DOE-Savannah River and Westinghouse Savannah River Company (WSRC) for H-Canyon operations has been revised to include this activity. DOE is currently working to develop a plan to verify air flows in affected process vessels after the Phase II restart. This action will be accomplished promptly for vessels containing legacy materials with significant hydrogen generation potential. A detailed plan to verify vessel ventilation flow rates will be available in June 1998.

3. Functional classification of nuclear criticality controls -- DOE has completed a verification that items relied upon to control criticality are correctly classified by the criteria in the H-Canyon BIO and evaluation of the need for interim compensatory measures. No interim measures were found to be necessary. A joint DOE/WSRC team will examine the programmatic issue of functional classification of equipment that supports administrative controls in Double Contingency Analyses, with results expected in October 1998.

A more detailed description of the corrective actions completed or yet to be taken to address your concerns is enclosed. I want to thank you, the other board members, and your staff for your attention to the safety of these operations. We also appreciate the thoughtful process by which the Department and the Board have interacted to reach resolution of your concerns. Commencement of this activity represents an important step toward stabilization of the spent nuclear fuel and other nuclear materials at Savannah River.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ernest J. Moniz', with a long horizontal stroke extending to the right.

Ernest J. Moniz

Enclosure

Discussion of Corrective Actions
(Numbers correspond to items in cover letter)

- 1) Programmable logic controller. Westinghouse Savannah River Company (WSRC) performed additional analysis which evaluated a fire scenario where a single solvent stream overheated before it reaches the mixer settler. The consequences of this event are below Department of Energy (DOE) guidelines and are not required to have safety class/safety significant (SC/SS) controls; however, DOE continues to require WSRC to evaluate accident consequences using maximum source terms available and therefore the current SC/SS controls will remain in the Technical Safety Requirements. The Basis for Interim Operation (BIO) has been updated to reflect the new analysis.

- 2) Hydrogen accumulation and potential for deflagration. Because of the low burn-up of the K14.1 charge, hydrogen generation associated with this charge will be insignificant and, therefore, not a concern for the initial processing following H-Canyon Phase II startup. WSRC has accomplished a series of measurements and evaluations and has determined that there are four process vessels that contain legacy inventories of Pu-238, Pu-239 and Np-237 in sufficient quantity to reach 25 percent of the lower flammability limit for hydrogen in as little as 60 hours without proper ventilation. Initial differential pressure measurements on these four vessels indicate good flow in three vessels and somewhat lower flow in one. These flow calculations involved assumptions as to the size and condition of process vessel vent system piping and vessel air inlet flow paths. WSRC is formulating a plan to validate these assumptions and to more precisely determine air flow rates in the affected vessels. This analysis will include consideration of the hydrogen generation characteristics of the spent nuclear fuel to be processed following the K14.1 charge. Spent nuclear fuel with significant power history will not be processed until completion of the analysis and ventilation flows are determined to be adequate. The plan is to be finalized by June 1998.

- 3) Functional classification of criticality controls. WSRC has verified that items relied upon to prevent criticality accidents identified in the Double Contingency Analysis are correctly classified per the criteria described in the H-Canyon BIO. Also, WSRC has determined that no interim compensatory measures are necessary to prevent an inadvertent criticality while the programmatic issue involving the functional classification of equipment and instruments is evaluated by a joint DOE/WSRC working group. Subsequent changes to site requirements and procedures should be completed by October 1998. Implementation will be performed on a facility-by-facility basis taking into account the potential for safety improvement, the status of authorization basis document upgrades, and resource allocations.