

## Performance Technology

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P.O. Box 51663, Knoxville, Tennessee 37950-1663 Phone: (865) 588-1444, Fax (865) 584-3043  
performtech@compuserve.com

September 7, 2000

Ms. Cynthia Carpenter  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
11555 Rockville Pike  
Rockville, MD 20852-2738

Dear Ms. Carpenter:

I received your letter to me dated August 30, 2000, and I will send you a detailed reply concerning the entire letter in the future. However, I had an immediate reaction to the part of your letter that responds to my letter to Mike Snodderly, dated July 3, 2000. If it is true that the operators at certain Pressurized Water Reactors (PWRs) in the United States would open a hydrogen purge valve following accidents in which the reactor core is severely damaged, I believe we need to address this situation as quickly as possible.

As indicated in my letter to Mike Snodderly, I believed, but was not sure, that the operators at all nuclear units would not open the hydrogen purge valves following severe reactor core damage at any nuclear electric power unit in the United States. Now you indicate that the NRC staff have found my belief is not correct for certain unspecified PWR units. I do not believe I am an alarmist when I say I am extremely uncomfortable regarding this issue as described in your letter.

In the course of the last 20 years, I have been involved in the production and review of many Probabilistic Risk Assessments for Pressurized Water Reactors. The dominant accident with respect to public health risk for PWRs is generally the Intersystem LOCA (Event V of WASH 1400). This accident sequence dominates public health risk for PWRs because containment integrity is lost through the initiating event. Other failures can then cause the reactor core to be severely damaged and fission products are subsequently released to the atmosphere. The Steam Generator Tube Rupture is another event that can cause loss of containment integrity before the reactor core is damaged but this accident sequence generally has a smaller impact on public health risk than the Intersystem LOCA. The probability of the Intersystem LOCA accident sequence is generally fairly low with respect to other accident sequences that can damage the reactor core. Other, more likely accident sequences that damage the reactor core do not generally cause containment integrity to be lost except through additional combinations of multiple failures besides those that damage the reactor core.

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"When you measure performance realistically, it improves."

YGO!  
Add: Cynthia Carpenter 1 Paper Copy

Based on your letter, it is my opinion that any more likely accident sequence, other than the Intersystem LOCA, that results in severe reactor core damage at a PWR, followed by the opening of the hydrogen purge valve with a probability of one, will have a greater impact on public health risk at that PWR than the Intersystem LOCA. Depending on the nuclear unit, there could be a large number of these sequences that could have greater impact. In my mind, any time we identify a new phenomena that can cause changes in the dominant accident sequences for public health and safety at a nuclear unit such that the risk is increased, we have identified an important health and safety situation.

Rather than trying to "determine blame" for this situation by arguing whether the problem lies with 10CFR50.44 itself or with industry implementation of Emergency Operating Procedures, I propose that the NRC and the nuclear units just solve the problem. Based on the public meetings that have taken place this year (Workshops and ACRS), I believe everyone is in agreement that the elimination of the post-LOCA requirements for control of hydrogen following design basis accidents would be advantageous for all the nuclear units. This "fix" would eliminate the situation described above with respect to opening hydrogen purge valves at certain nuclear units during severe accidents and in addition remedy a number of other safety concerns.

I suggest a meeting to discuss how the NRC can achieve immediate elimination of the existing post-LOCA requirements for control of hydrogen following design basis accidents. We should not be pursuing a patch-work solution, that is: change only certain Emergency Operating Procedures for some plants without changing the related NRC regulations, the related Technical Specifications and the related Final Safety Analysis Report sections. Then, after some units change their Emergency Operating Procedures, all nuclear units would wait for a rulemaking under Option 3 which would only be implemented for nuclear units that "volunteer" for such rulemaking.

I will contact you shortly about such a meeting.

Sincerely,

A handwritten signature in black ink that reads "Bob Christie". The signature is written in a cursive, flowing style.

Bob Christie

cc: Samuel J. Collins (NRR)  
Dana Powers (ACRS)  
Ashok Thadani (RES)