DOCKET NUMBER
PETITION RULE PRM 50-53
(54 FR 30905)

(5)

DOCKETED
USNRC

'90 AUG 22 P2:39

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

August 18, 1990

Docketing and Service Branch
Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Re: PRM-50-53

Dear Sir/Ms.:

The petitioner, Ohio Citizens for Responsible Energy, Inc. ("OCRE") would like the rulemaking record in PRM-50-53 to reflect the following facts and comments:

1. Simulation of BWR power oscillations without scram with the Brookhaven National Laboratory Engineering Plant Analyzer indicates sustained oscillations between 10% and 500% of full power; the Minimum Critical Power Ratio approaches unity at times (in the troughs of the oscillations), implying that fuel integrity might be challenged; centerline fuel temperature oscillates between 1200 F and 2300 F, while the clad wall temperature oscillates between 546 F and 566 F. "Simulation of BWR Power Oscillations Without Scram," H.S. Cheng, Brookhaven National Laboratory, August 4, 1988.

Comment: what is the potential for fuel failure due to pellet-cladding interaction under these circumstances?

2. Graphs presented to the NRC on December 6, 1988 by H.S. Cheng and W. Wulff of Brookhaven of BWR simulations with the BNL Engineering Plant Analyzer show the MCPR to be less than 1.0 in the troughs of the oscillations for the ATWS sequences modeled. The suppression pool temperature is predicted to reach 210 F within 12 minutes for the turbine trip without bypass event and 230 F within 15 minutes for the turbine trip with bypass but no feedwater pump trip.

3. Material presented by Dr. Jose March-Leuba of the Oak Ridge National Laboratory to the ACRS on May 23, 1989 indicates that average power increases due to power oscillations typically on the order of 1.5% of the peak oscillation amplitude. In a paper presented to the "BWR Stability Symposium" held in Idaho Falls, Idaho, August 10-11, 1989, Dr. March-Leuba states that the average power increase is typically 1.5% to 2% of the value of the peak power minus the steady state power. "Understanding

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the Boiling Water REactor Limit Cycle," p. 8.

4. In NEDO-31708, "Fuel Thermal Margin During Core Thermal Hydraulic Oscillations in a Boiling Water Reactor,", General Electric states that at large magnitude oscillations (greater than 200% rated power) potential violations of the safety limit MCPR were predicted.

5. In NEDO-31709, "Average Core Power During Large Core Thermal Hydraulic Oscillations in a Boiling Water Reactor," General Electric states that the increase in core average power over the period of increasing oscillation magnitude is less than seven percent of rated core power.

6. In SECY-90-152, it is stated that large amplitude power oscillations, with power peaks between 500 and 2000 percent of rated power, have been calculated for ATWS events. Such oscillations contribute to an average thermal powre increase of 1.5% to 2% per 100% of peak core power. I.e., a 500% peak power oscillation could lead to an increase of 7.5% to 10% in average thermal power in the core.

The proposed solution to this problem is said to involve revised operator actions, such as injecting boron earlier, reducing feedwater flow, and other measures to reduce core inlet subcooling.

7. The summary in the Weekly Information Report for the week ending July 6, 1990 of the meeting with the BWR Owners Group held June 27, 1990 states that the BWROG has admitted that ATWS acceptance criteria (1979 Mattson letter) could be exceeded (e.g., fuel tempe[illegible]e limits) and that significant fuel failure is likely. Candidate revisions to operating procedures are modifications to initiation times for water level reduction, boron injection and depressurization.

Comment: Relying on operator actions, however they may be revised, may not compensate for basic physical limitations in system designs. E.g., GE ATWS analyses (NEDO-24222) assumed that operators manually initiated the SLCS within 2 minutes. Is it realistic to assume that operators can and will in fact initiate the SLCS any sooner? The existing SLCS in BWRs, even if actuation were instantaneous, falls far short of the SLCS recommended in Vol. 4 of NUREG-0460: 300-400 gpm capacity, recommended precisely to suppress power oscillations and their associated uncertainties. Even with parallel two-pump operation, existing SLCS capacity is only 86 gpm. It may be appropriate to require the use of enriched boron and/or other neutron poisons in the SLCS, in addition to revising operator procedures. Automating the SLCS should also be reconsidered.

OCRE requests that the NRC respond to each of the above facts and comments in its final determination on PRM-50-53.

Respectfully submitted,

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