

October 15, 2001

The Honorable Richard A. Meserve
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: PROPOSED RESOLUTION OF GENERIC SAFETY ISSUE (GSI)-173A,
"SPENT FUEL STORAGE POOL FOR OPERATING FACILITIES"

Dear Chairman Meserve:

During the 486th meeting of the Advisory Committee on Reactor Safeguards, October 4-6, 2001, we met with representatives of the NRC staff to discuss the proposed resolution of GSI-173A, "Spent Fuel Storage Pool for Operating Facilities." We also had the benefit of the documents referenced.

RECOMMENDATION

The screening criteria used in the staff's proposed resolution of GSI-173A are appropriate to resolve the issue.

DISCUSSION

In its proposed resolution of GSI-173A, the staff used screening criteria such that if the frequency of fuel uncovering were 10^{-6} to 10^{-5} /yr, further technical evaluation would be performed. If the frequency were less than 10^{-6} /yr, no further regulatory action would be considered.

In our report dated June 20, 2000, we raised the concern that the screening criteria, which were derived on the basis of steam-oxidation severe accident source terms and the Commission's Safety Goals, could be inappropriate for spent fuel pool (SFP) accidents because the source term for such accidents could be dominated by air oxidation of clad, which could substantially increase the release of fuel fines and ruthenium compared to steam oxidation releases. In that report, we recommended that the staff defer declaring its resolution of GSI-173A until it considered the findings of NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," in which the use of the screening criteria was reassessed in view of the potential air-oxidation source term.

The results of NUREG-1738 indicate that even if the large early release frequency were 10^{-5} /yr, the Commission's quantitative health objectives (QHOs) would still be met with the air-oxidation source term and that at 10^{-6} /yr the risk level would be at least one order of magnitude lower than the QHOs. Of course, the acceptability of these frequency criteria presumes the availability of an emergency response plan.

Our expectation is that the acceptable risk contribution from a subset of sequences should be on the order of one-tenth of the overall acceptance criteria. The above screening criteria appear to meet that expectation. In addition, the studies in NUREG-1353 and NUREG/CR-4982 estimate the actual frequency of spent fuel uncovering at operating reactors to be about 2×10^{-8} /yr. In view of these results, we concur with the staffs' position that GSI-173A be considered resolved.

Sincerely,

/RA/

George E. Apostolakis
Chairman

References:

1. Letter dated June 11, 2001, from Gary M. Holahan, Office of Nuclear Reactor Regulation, NRC, to John T. Larkins, ACRS, Subject: Resolution of Generic Safety Issue (GSI)-173A, "Spent Fuel Pool Cooling For Operating Plants."
2. Report dated June 20, 2000, from Dana A. Powers, Chairman, ACRS, to Richard A. Meserve, Chairman, NRC, Subject: Proposed Resolution of Generic Safety Issue-173A, "Spent Fuel Storage Pool For Operating Facilities."
3. U.S. Nuclear Regulatory Commission, NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," February 2001.
4. U.S. Nuclear Regulatory Commission, NUREG-1353, "Regulatory Analysis for the Resolution of Generic Issue 82, "Beyond Design Basis Accidents in Spent Fuel Pools," published April 1989.
5. U.S. Nuclear Regulatory Commission, NUREG/CR-4982, "Severe Accidents in Spent Fuel Pools in Support of Generic Safety Issue 82," published July 1987.