

September 13, 2001

Dr. William D. Travers  
Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

SUBJECT: PROPOSED FINAL REVISION TO REGULATORY GUIDE 1.78, "EVALUATING THE HABITABILITY OF A NUCLEAR POWER PLANT CONTROL ROOM DURING A POSTULATED HAZARDOUS CHEMICAL RELEASE"

Dear Dr. Travers:

During the 485<sup>th</sup> meeting of the Advisory Committee on Reactor Safeguards, September 5-7, 2001, we reviewed the proposed final revision to Regulatory Guide 1.78, "Evaluating The Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release." During our review, we had the benefit of discussions with representatives of the NRC staff and of the documents referenced.

Revision 1 to Regulatory Guide 1.78 is to ensure habitability of a reactor control room in the event of an accident off-site or onsite involving the atmospheric dispersal of toxic chemicals. This revision incorporates and withdraws Regulatory Guide 1.95 concerning accidental chloride releases, since many regulatory positions in these two guides are the same or similar. The staff has formulated this revision to make it less prescriptive and more performance oriented. The revision also allows licensees to use the results of quantitative risk analyses in their evaluations.

Plants vary widely in their vulnerabilities to accidents involving atmospheric releases of toxic chemicals that might be drawn into reactor control rooms. The revised Regulatory Guide 1.78 provides conservative screening criteria well founded on recent standards for toxic chemical concentrations that are considered "immediately dangerous to life and health." The screening criteria also recognize site-specific weather conditions and control room leakage.

In the revised Regulatory Guide, the staff offers three options to further examine the threats of toxic chemical releases on control room habitability. Licensees may:

- Use arguments based on quantitative assessments of risk.
- Adopt the performance criteria defined in the revised Regulatory Guide.
- Use prescriptive analyses and measures accepted by the staff in the past.

The treatment of performance-based approaches in the revised Regulatory Guide is of particular interest. The staff has defined criteria based on toxic chemical concentrations in the control room

and permits licensees to use technically justifiable means to show that they meet these criteria for control room habitability. The licensees are asked to address both maximum concentration accidents (short-term instantaneous releases) and maximum concentration-duration accidents (long-term, low-leakage-rate releases). In addition the licensees are to evaluate atmospheric dispersion, control room air flow, detection systems, control room isolation systems, personnel protection systems, and emergency planning. The revised Regulatory Guide suggests possible methods of analysis acceptable to the staff. Alternatively, licensees may use quantitative risk arguments, as described in Regulatory Guide 1.174.

The revised Regulatory Guide 1.78 should be issued for use by licensees. It should improve safety as well as reduce burdens on both licensees and the staff. Furthermore, this revised Guide provides a good example of how regulatory guides may be made more performance oriented.

Sincerely,

**/RA/**

George E. Apostolakis  
Chairman

References:

1. Memorandum dated August 9, 2001, from Thomas L. King, Office of Nuclear Regulatory Research, NRC, to John T. Larkins, Executive Director, ACRS, Subject: Prepublication Copy of the Regulatory Guide 1.78, Revision 1 (Previously Issued as DG-1087 for public comment).
2. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," July 1998.
3. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.95, "Protection of Nuclear Power Plant Control Room Operators Against an Accidental Chloride Release," issued January 1977.