



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 13, 1995

Dr. T. S. Kress, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: RESOLUTION OF GENERIC SAFETY ISSUE 83, "CONTROL ROOM HABITABILITY"

Dear Dr. Kress:

I am responding to your letter of July 20, 1995, providing comments on the staff's proposed resolution of Generic Safety Issue 83 (GSI-83), "Control Room Habitability." In your letter you agreed that the improved meteorological model developed by the staff "seems to be a promising basis for resolving meteorological concerns" but "may not be adequate to deal with the wide variety of circumstances that arise." Your letter also questioned the basis for the revisions to the limits on toxic chemicals. You also noted that the staff's resolution "appears to be refining the original 'conservative' design-basis accident (DBA) approach by taking some of the conservatisms out of the calculational models" and you recommended that the resolution determine the acceptable risk. Finally, you asked to be kept informed of any special inspections to address the compliance issues identified as part of this issue resolution.

As discussed in the July 13, 1995, briefing on the proposed resolution of GSI-83, this issue arose out of concerns regarding the implementation of TMI-2 Action Plan Item III.D.3.4 which dealt with control room habitability. As a result of these concerns, the staff conducted surveys of existing control rooms which identified a number of discrepancies in the as-built control room design from what was described in the licensing documents. These non-compliance issues have been dealt with through the normal licensing process. However, as part of the review of this issue, several aspects of the methodology for evaluating control room habitability were identified as areas that needed to be updated. These included developing improved meteorological models and developing revised exposure limits to toxic gases. Staff did not reevaluate the entire range of assumptions and calculational methodologies used in control room habitability and therefore, did not attempt to quantify the degree of conservatism in the current approach.

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With respect to the meteorological modeling, staff agrees with the Committee in the difficulty in modeling in this complex area. For this reason, the new meteorological model developed under GSI-83 was based on both wind-tunnel tests and reactor-site tracer studies, for a wide variety of conditions. This data was used to assess not only the new meteorological model but also to compare the new model with the Murphy/Campe model currently being used. This model was also compared to predictions of two other models which provide estimates of maximum concentrations in building wakes. The results of these comparisons showed that the new model provides significantly better predictions of the data than does the current model while still providing a conservative estimate of concentrations. To provide further confidence in the reasonableness of this model, the meteorological models were also subjected to a peer review (Memorandum from F. Congel to J. Larkins, dated April 28, 1994).

Your letter also questioned the basis for the revisions to the limits on toxic chemicals, noting that in most cases the revised values are above the concentration limits considered "immediately dangerous to life and health" (IDLH). As discussed with the Committee, in developing the recommended toxic chemical limits as part of GSI-83, the staff, through its contractor, evaluated data regarding toxicity of the chemicals of interest and convened a group of consultants who were experts in the field of toxicology. The revised limits were not established solely on the basis that operators have time to don breathing apparatus but were established, as recommended by the Committee, at levels such that the "function of the operators...will not be altered in such a detrimental way that the control room cannot be operated safely" (NUREG/CR-5669). The IDLH limits established by National Institute for Occupational Safety and Health (NIOSH) were only one of the limits considered in establishing recommended toxic levels. At the time the recommended limits in NUREG/CR-5669 were established, they were less than or equivalent to the recommended IDLH values. In 1994, NIOSH revised its recommended IDLH limits. For two of the chemicals considered, NIOSH did lower its recommended limits below those recommended in NUREG/CR-5669. Staff is pursuing the basis for the new NIOSH recommendations and will consider the revised recommendations as part of its efforts to revise Regulatory Guide 1.78.

Finally, as discussed with the Committee, the staff will evaluate the effects of excessive in-leakage rates (typical of non-compliances previously identified) to determine the potential safety significance of the non-compliances. The results of the evaluation of representative plants will be presented to the NRR Generic Issues and Events Assessment Panel for

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prioritization as a Generic Communications and Compliance Activity. If the evaluation shows that the effects of greater than design basis in-leakage are safety significant, additional regulatory treatment, including special inspections, may be necessary. However, the staff is not considering such inspections at this time.

Sincerely,

Original signed by
James M. Taylor

James M. Taylor
Executive Director
for Operations

cc: Chairman Jackson
Commissioner Rogers
SECY

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