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

September 14, 1990

Docket Nos. 50-259, 50-260
and 50-296

Mr. Oliver D. Kingsley, Jr.
Senior Vice President, Nuclear Power
Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37401-2802

Dear Mr. Kingsley:

SUBJECT: SAFETY EVALUATION OF THE EFFECT OF ACCIDENTAL RELEASES OF HAZARDOUS CHEMICALS TRANSPORTED BY BARGES ON CONTROL ROOM HABITABILITY (TAC NOS. R00155, R00156, AND R00157)

The NRC staff has reviewed an analysis by the Tennessee Valley Authority (TVA) regarding the probable effects of accidental releases of hazardous chemicals, transported down the Tennessee River by barges, upon control room habitability at the Browns Ferry Nuclear (BFN) plant. TVA provided their analysis and conclusions to the staff by submittals dated May 31, 1990 and August 16, 1990. Based on our own independent evaluation of this analysis, as detailed in the enclosure, we concur with TVA's conclusion that out of the twenty chemicals transported by barges past BFN, only six could adversely affect habitability of the control room. Furthermore, the staff also concurs with TVA that of these six chemicals, chlorine poses the greatest potential threat because the other five chemicals slowly build up to toxic concentrations. In fact, the rate of buildup is slow enough (i.e. longer than two minutes) to meet the criteria of Regulatory Guide (RG) 1.78, "Assumptions for Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release," for allowing control room operators sufficient time to don protective gear.

Only chlorine builds up toxic levels much faster than operators could be expected to recognize and respond to. However, TVA demonstrated by a probabilistic argument that the chances of an accident resulting in releases of enough chlorine to affect habitability of the control room is less than the level of probability specified by the NRC's Standard Review Plan (SRP) for requiring an accident to be included as part of a plant's safety analysis.

The staff finds TVA's analysis and arguments acceptable for concluding that hazardous chemicals being barged on the Tennessee River by BFN do not pose a significant safety concern to control room habitability, provided that TVA institutes the appropriate compensatory measures (i.e. emergency procedures and training) outlined by RG 1.78 for the five toxic chemicals which build up slowly. Although, as an alternative to these compensatory measures, TVA could submit additional analysis, for staff evaluation, to demonstrate that the combined contribution of all six potentially threatening chemicals would have an aggregate probabilistic risk of creating a toxic environment in the control room from an accidental chemical release of less than the SRP threshold.

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In order to satisfactorily resolve this issue prior to restart of Unit 2, we would expect to receive a response from you within the next thirty days that either (1) confirms that appropriate compensatory measures exist at BFN to accomodate accidental chemical releases, or (2) provides additional analysis concluding that these measures are unwarranted because the level of probabilistic risk is sufficiently low. If you have any questions concerning this letter, please do not hesitate to contact me at (301) 492-1313.

Sincerely,

Original signed by

Thierry M. Ross, Project Manager
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosure:
See next page

OFC	PDII-4/LA	PDII-4/PM	NRR/EMCB	PDII-4/D		
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