

TENNESSEE VALLEY AUTHORITY

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OCT 15 1990

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of)	Docket Nos. 50-259
Tennessee Valley Authority)	50-260
		50-296

BROWNS FERRY NUCLEAR PLANT (BFN) - CONTROL ROOM HABITABILITY - HAZARDOUS CHEMICALS (TAC R00155, R00156, R00157)

This letter is in response to the NRC's September 14, 1990 Safety Evaluation regarding control room habitability - hazardous chemicals. TVA's detailed response to the NRC staff's request for compensatory measures or additional analysis is provided in the enclosure to this letter.

In summary, TVA's position on Regulatory Guide 1.78, Assumptions for Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release, is that further analysis or compensatory measures for a particular hazardous chemical are not required if that particular hazardous chemical is barged past the site less than fifty times per year. Chemical shipment frequencies were provided in TVA's May 31, 1990 letter. There were no potentially hazardous chemicals shipped past BFN more than 50 times per year. The current Browns Ferry procedures coupled with the extremely low probability of offsite doses as a consequence of a potential hazardous barge accident support TVA's conclusion that this scenario does not pose an undue risk to the public health and safety.

TVA reiterates its position that further consideration of the issue of combined probabilities from the shipment of an aggregate of hazardous chemicals be deferred and addressed as part of the generic evaluation of severe accidents included under the Individual Plant Examination of External Events (IPEEE). TVA's position is that the NRC's present interpretation regarding the frequency of hazardous material transportation is inconsistent with the NRC's past interpretation with specific regards to Browns Ferry as well as on a generic basis. Accordingly, prior to TVA undertaking any additional actions as described in NRC's letter of September 14, 1990, TVA requests that the present NRC staff's position be considered under the standards of 10 CFR 50.109.

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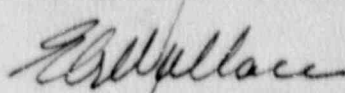
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There are no commitments contained in this letter. If you have any questions, please contact Patrick P. Carier, Manager of site Licensing, at (205) 729-3570.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



E. G. Wallace, Manager
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Enclosures

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ENCLOSURE
BROWNS FERRY NUCLEAR PLANT
CONTROL ROOM HABITABILITY - HAZARDOUS CHEMICALS

By letter dated December 19, 1989, the NRC requested TVA evaluate the release of chlorine and other hazardous chemicals from a potential barge accident for impact on control room habitability. This letter also stated NRC's position that it was the intent of Regulatory Guide 1.78, "Assumptions for Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release," to require specific accident evaluations of all hazardous chemicals if total hazardous chemical barge shipments exceed 50 per year.

TVA performed a review of prior correspondence between TVA and NRC as well as other dockets' correspondence on this issue. The results of this review support TVA's position on Regulatory Guide 1.78 which has historically been and remains that further analysis for a particular hazardous chemical is not required if that particular hazardous chemical is barged past the site less than 50 times per year. TVA's interpretation was documented by letter to NRC, dated June 27, 1989. This position is consistent with the interpretation of Regulatory Guide 1.78 as applied to other dockets and as stated in other NRC staff documents such as the guidance provided in NUREG/CR-2650, "Allowable Shipment Frequencies for the Transport of Toxic Gases Near Nuclear Power Plants - October 1982" and NUREG/CR-5042, "Evaluation of External Hazards to Nuclear Power Plants in the United States - December 1987," the latter of which states:

"Shipments are defined to be frequent if the number per year equals or exceeds 10 or more for truck traffic, 30 for rail traffic, and 50 for barge traffic. The quantity of the chemical per shipment is specified for a range of distances from the control room to the accident and for three different types of control room ventilation systems. This information is summarized in Table 6.2.1. For a given distance of closest approach along the route and control room type, only shipments whose size exceeds the values in Table 6.2.1 need be counted. If this count for a chemical exceeds the above frequency criterion, the licensee must provide protection against accidents involving this chemical. If the frequency criterion is not met, then shipment of this chemical need not be considered." [Emphasis added]

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BROWNS FERRY NUCLEAR PLANT
CONTROL ROOM HABITABILITY - HAZARDOUS CHEMICALS

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This position was also supported on the Browns Ferry docket by NRC letter to TVA, dated October 1, 1988, which stated:

"NRC staff guidance (Regulatory Guide 1.78 - 'Assumptions for Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release') provides a frequency criterion for barge traffic below which a specific hazardous chemical may be eliminated in terms of control room habitability analyses. This criterion states that barge shipments are defined as frequent if there are 50 or more per year. TVA's current data indicate a chlorine barge traffic frequency of 26 shipments per year. Since this number is considerably below the Regulatory Guide threshold criterion of 50 shipments per year, the staff concurs with the licensee's conclusion that closure of NUREG-0737, Item III.D.3.4 pertaining to chlorine is still valid and no additional modifications are necessary." [Emphasis added]

In an attempt to be responsive to the NRC Staff's changed interpretation, TVA performed the analysis requested by the NRC's December 19, 1989 letter and submitted the results by letter dated May 31, 1990. Chemical shipment frequencies were provided in this letter and there were no potentially hazardous chemicals shipped past BFN more than 50 times per year. This letter concluded that:

The total probability of a postulated chlorine barge accident occurring in the vicinity of BFN simultaneously with detrimental wind conditions, resulting in incapacitation of the operators, when combined with the probability of an initiating event requiring reactor trip and operator action occurring within 24 hours after the barge accident is beneath regulatory concern.

Since chlorine produces significantly more severe toxic effects than the other chemicals barged past BFN, this estimate conservatively bounds the probability of an accident involving the other potentially hazardous chemicals.

TVA met with the NRC staff on August 1, 1990 in order to resolve any outstanding concerns. During that meeting, no generic regulatory guidance was identified which would support the NRC staff interpretation of the Regulatory Guide 1.78 term "frequent" current applying to an aggregate of all hazardous chemicals. In response to a NRC staff request during this meeting, TVA submitted the supporting calculations by letter dated August 16, 1990.

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The NRC staff's September 14, 1990 letter requests TVA to either:

- (1) Institute the appropriate compensatory measures (i.e., emergency procedures and training) outlined by Regulatory Guide 1.78 for the toxic chemicals which build up slowly, or
- (2) Submit additional analysis to demonstrate that the combined contribution of all potential 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 Standard Review Plan threshold.

It is TVA's position that the compensatory measures outlined by Regulatory Guide 1.78 are not required for a particular hazardous chemical if that hazardous chemical is barged past the site less than 50 times per year.

It is TVA's position that the guidance regarding the training of operators to distinguish the smells of hazardous chemicals should not be implemented at Browns Ferry. A commitment in this area could place an undue restriction upon operators who have a permanent or temporary impairment in their ability to detect odors (i.e., nasal congestion due to a common cold).

Further, BFN's current procedures identify the actions to be taken in the event of a onsite or offsite release of hazardous chemicals or gases that may pose a threat to Control Room personnel safety. The symptoms of such an event are identified as visible gases in the atmosphere, odors or fumes that irritate breathing passages or vision, people in the area becoming affected by hostile gases, or the annunciation of the smoke detector in the Control Bay. The operator is instructed to use portable breathing apparatus as needed, to shut down the supply and exhaust fans to the control room if the irritant is entering through the ventilation system, to abandon the control room, if necessary, and to take other subsequent action to stop the introduction of the toxic gas and to remove the gases from the Control Bay. The operator is also instructed to refer to the Radiological Emergency Plan for any subsequent actions.

BFN procedures currently require five self-contained breathing units be available in the unit 2 control room. Three units are located in the unit 1 control room and two units are located in the unit 3 control room. There are 15 air cylinders maintained on Elevation 3C of the Control Bay. The fire equipment cage on Elevation 557 of the turbine building contains 10 self-contained breathing units and 10 additional cylinders. Additional self-contained breathing units are also located in the 4kV Shutdown Board Room C, fire equipment cabinets, and in various other areas.

ENCLOSURE (Continued)
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The compensatory measures described above, in conjunction with current operator training and expertise, as well as the extremely low probability of a postulated hazardous chemical accident occurring in the vicinity of BFN simultaneously with detrimental wind conditions which results in the incapacitation of the operators, and the low probability of a subsequent initiating event requiring reactor trip and operator action occurring shortly after the barge accident, support TVA's conclusion that a potential hazardous chemical barge accident does not pose an undue risk to the public health and safety. Further additional plant specific analysis, training, or compensatory measures would not provide any additional safety benefit and could potentially have an overall negative impact on public health and safety and plant reliability by causing Browns Ferry to expend its limited resources on an area which does not promise a significant benefit in safety.

TVA proposed, in its May 31, 1990 letter, that further consideration of the issue of combined probabilities from the shipment of an aggregate of hazardous chemicals be deferred and addressed as part of the overall evaluation of severe accidents. This evaluation is specifically contained in the November 3, 1989 draft Generic Letter concerning Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities. TVA continues to believe that this would be the most prudent course of action.

TVA's position is that the NRC's present interpretation regarding the frequency of hazardous material transportation is inconsistent with the NRC's past interpretation on a plant specific basis with regard to Browns Ferry (i.e., NRC's letter to TVA, dated October 21, 1988) as well as on a generic basis (e.g., NUREG/CR-2650, NUREG/CR-5042, and other docketed correspondence). TVA also believes that the NRC's request that BFN address this issue at the present time is inconsistent with the coordinated effort to deal with severe accident evaluations as outlined in the draft IPEEE. Accordingly, prior to TVA undertaking any additional actions as described in NRC's letter of September 14, 1990, TVA requests that the present NRC staff's position be considered under the standards of 10 CFR 50.109.