TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

March 17, 1981

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Denton:

In the Matter of the)
Tennessee Valley Authority)

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

NUREG-0737, Clarification of TMI-Action Plan Requirements, was transmitted to TVA by D. G. Eisenhut's letter dated October 31, 1980, to All Licensees of Operating Plants and Applicants for Operating Licensees and Holders of Construction Permits. TVA provided an initial response on December 23, 1980. As required by NUREG-0737, enclosed is our response to item III.D.3.4, Control Room Habitability Requirements, for the Browns Ferry Nuclear Plant.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Subscribed and sworn to before
me this 17th day of March 1981.

Paulette H. White
Notary Public

My Commission Expires 9-5-84

Enclosure

8103240341

ENCLOSURE
RESPONSE TO D. G. EISENHUT'S LETTER
DATED OCTOBER 31, 1980, AND NUREG-0737
POST-TMI REQUIREMENTS

BROWNS FERRY NUCLEAR PLANT
III.D.3.4 - CONTROL ROOM HABITABILITY

(1) Control room mode of operation is discussed in section 10.12 of the BFN FSAR.

(2) Control room characteristics are discussed below:

(a) Volume of habitability for units 1 and 2 is 4996 M^3 and for unit 3 is 2549 M^3.

(b) The control room emergency zones are shown schematically in FSAR figures 10.12-2 and 10.12-3.

(c) Control room ventilation system schematic is FSAR figure 10.12-2.

(d) BFN control room is maintained at a positive pressure as described in response to FSAR Question 10.2.

(e) High-efficiency particulate filter and charcoal absorber efficiencies are 99 percent, and 95 percent for elemental iodine, and 90 percent for organic and particulate, respectively.

(f) The closest distance between containment and air intakes can be calculated from FSAR figures in section 1.6.

(g) Layout of control room, air intakes, containment, and chemical storage facilities is shown in figures in FSAR section 1.6.

(h) Control room shielding and dose calculations are discussed in FSAR section 14.10.5.

(i) Upon receipt of control room isolation signal, appropriate dampers are closed and all nonemergency fans are shut down.

(j) TVA has updated the evaluation of the main control room during a postulated hazardous chemical release, utilizing the guidelines presented in SRP 6.4 and Regulatory Guide 1.78. See attached summary for results of study.

(k) The 3-unit control room complex is provided with 21 self-contained breathing apparatus.

(l) The air supply stored in the control room complex is 21 man-hours.

(m) An unlimited potable water supply is provided from an offsite source. An emergency food supply is not maintained onsite; however, food can be supplied as needed.

(n) Control room personnel requirements are specified in section 4.0 of the BFN Radiological Emergency Plan.

(o) The medical station maintains a 5000-dose supply of potassium iodine.

(3) As noted in response to item (2)(j), the summary of TVA's updated evaluation of main control room habitability is provided in Attachment A and discusses onsite storage of hazardous chemicals.

(4) As noted in response to item (2)(j), the summary of TVA's updated evaluation of main control room habitability is provided in Attachment A and discusses offsite manufacturing storage and transportation facilities of hazardous chemicals.

(5) Technical specifications; based on our analysis, the present technical specifications are sufficient to ensure control room habitability.

ATTACHMENT A

BROWNS FERRY NUCLEAR PLANT

Item III.D.3.4 - Control Room Habitability - Evaluation

The habitability of the main control room was evaluated utilizing the approach outlined in Regulatory Guide 1.78. Potential hazards resulting from chemicals stored on or near the site or chemicals that are transported to the site by barge, rail, or road were considered.

Two types of accidents were considered. The first is a maximum concentration accident. This type of accident was evaluated using the computer program CHI224, as outlined in Attachment B. Major assumptions for this method were Pasquill Stability Class G and adverse wind directions. The second type of accident was a maximum concentration-duration accident. This type of accident assumed a leak from the largest relief valve and was evaluated in accordance with positions C.5 and C.6 of Regulatory Guide 1.78.

Results of the analysis indicated:

1. Chemicals shipped by rail and road will not affect main control room habitability since all major roads and rail lines lie outside the 5-mile radius specified in Regulatory Guide 1.78.

2. There are no industrial or military facilities within the 5-mile radius specified in Regulatory Guide 1.78.

3. None of the chemicals stored onsite in quantities greater than 100 pounds affect main control room habitability on the rupture of the single largest container.

4. Of the chemicals barged past the site, only chlorine will affect main control room habitability. The analysis showed that an accident where more than 5 tons of chlorine is vaporized will cause the concentration in the control room to exceed the toxicity limit of 45 mg/m^3.

Although compliance with Regulatory Guides 1.78 and 1.95 is not a licensing requirement for Browns Ferry, in order to meet guidelines in NUREG-0737, TVA is evaluating the need for chlorine detectors to be installed in the main control room intakes.

ATTACHMENT B

Item III.D.3.4

CHI224, A PROGRAM FOR CALCULATING THE EFFECTS OF A HAZARDOUS CHEMICAL RELEASE ON MAIN CONTROL ROOM HABITABILITY

Concentration levels of toxic gases within the control room area can be determined by use of the CHI224 program.

The analytical model utilized in the program is that for the "puff" release accident presented in NRC Regulatory Guide 1.78. Major assumptions within the wind program include: (1) "puff" release of the gas being considered at time = 0, (2) wind directed from the accident site toward the plantsite, (3) instantaneous homogenous mixing within the control room, and (4) a Gaussian atmospheric dispersion model. Some of the specialized features include: (1) branching for Pasquill Stability type, (2) control room isolation considerations, and (3) control building configuration consideration.