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

July 7, 1981

Director of Nuclear Reactor Regulation
Attention: Mr. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Ms. Adensam:

In the Matter of	)	Docket Nos. 50-327
Tennessee Valley Authority	)	50-328

My letter to A. Schwencer dated March 4, 1981 committed TVA to provide additional information related to the Sequoyah Nuclear Plant Ice Condenser Containments. The information is enclosed.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Sworn to and subscribed before me
this 7th day of July 1981

Bryant M. Lowery
Notary Public
My Commission Expires 4/4/82

Enclosure

B021
S1/1

ENCLOSURE

SEQUOYAH NUCLEAR PLANT
ICE CONDENSER INFORMATION

I. Ice Condenser Maintenance Program

A. Current Program at Sequoyah Nuclear Plant

1. Perform weighing every six months in accordance with Surveillance Instruction SI-106.

2. If required, perform ice addition in accordance with procedure SMI-1-61-1.

a. Break up existing accessible ice, remove by vacuuming, replace, and compact.
b. Blow in new ice using permanent ice making equipment.
c. Reweigh according to SI-106 and evaluate weights.

3. If ice addition fails to provide sufficient weight, proceed with water addition according to the special maintenance instructions.

B. Proposed Improvement Studies

1. Investigation and development of mechanical devices to provide rapid removal of ice from individual baskets when ice addition method is used:

a. Extendable tube with positive displacement auger.
b. Extendable tube incorporating high-efficiency vacuum device.

2. Development of instructions for maximizing quality of ice delivered by permanent ice machines.

3. Investigation of improved water addition methods and equipment (based primarily on D. C. Cook's experience) if ice addition method proves inadequate.

4. Evaluation of methods to minimize heat gains in ice condenser area during maintenance activities:

a. Addition of air locks at end-wall access doors.
b. Prechilling of air locks.
c. Improved administrative control over personnel entry into upper and lower inlet doors during normal operation and maintenance periods.

C. Maintenance Concepts Previously Rejected

1. Partial or complete melting of individual ice baskets with heat strips, laser devices, etc.

2. Ice addition through bottom of baskets.

3. Settling of ice in underweight baskets by vibration or shock.

II. Projection of Ice Mass as Function of Time

We are not including a graph projecting the ice mass as a function of time because of insufficient supporting data to establish reliable sublimation rates.

We can, however, show some early data taken on Sequoyah unit 1 as follows:

Date	Status	Average Wt. (lbs.) at 95% C.L.	Sublimation % per yr.
Jan. 1979	Initial loading	1528.2	N/A
June 1980	Reweight	1455.7	3.3
Feb. 1981	Reweight	1439.8	*1.6

*The percentage of annual ice loss for the period ending in February 1981 is significantly lower than the rate experienced during the initial period ending in June 1980. This improvement is primarily a result of increased operational experience, correction of associated equipment deficiencies, and improved administrative controls. We expect that this trend toward improved sublimation rates will continue with additional operating time and implementation of future study program recommendations.

III. Heat Balances

Heat balances, including calculations for hydrogen, were submitted in letters from L. M. Mills to A. Schwencer dated April 1, 1981 and June 2, 1981.

IV. Minimizing Ice Loss Rate

A. Ice condenser modifications or methods already implemented to minimize equipment failure, maintenance time, and subsequently the rate of ice loss, are as follows:

1. Changed differential pressure type coil defrost to timer type defrost.

2. Changed air handling unit (AHU) glycol valves from 3-way to 2-way type.

3. Installed viewing windows on face of AHU's as a maintenance/ inspection expedient to identify fan and related malfunctions.

4. Changed insulation on coil drain lines from fiberglass to foam rubber. Improved vapor barrier, "K" factor, and thickness.

5. Installed water soluble paper covers over floor drains to eliminate back drafts.

B. Proposed Modifications

1. Change AHU glycol valves from existing normally closed (energize to open) to normally open (energize to close). This will minimize glycol shutoff to cooling coils in case of electrical power failure. These valves are in open mode 94 percent of the time.

2. For each AHU, add local indication for electrical power continuity to defrost heaters and heat tapes for early warning detection of faulty electrical equipment before AHU's ice up and damage cooling equipment.

C. Areas of Study

1. Improved insulation for ice condenser envelope.

2. Improved flow paths for chilled air and/or exterior ventilation systems.