ENCLOSURE 1

PROPOSED TECHNICAL SPECIFICATION CHANGE

SEQUOYAH NUCLEAR PLANT UNIT 2

DOCKET NO. 50-328

(TVA-SQN-TS-88-18)

LIST OF AFFECTED PAGES

Unit 2

3/4 6-27

CONTAINMENT SYSTEMS

3/4.6.5 ICE CONDENSER

ICE BED

LIMITING CONDITION FOR OPERATION

3.6.5.1 The ice bed shall be OPERABLE with:

a. The stored ice having a boron concentration of at least 1800 ppm boron as sodium tetraborate and a pH of 9.0 to 9.5,

b. Flow channels through the ice condenser,

c. A maximum ice bed temperature of less than or equal to 27°F,

d. A total ice weight of at least 2,333,100 pounds at a 95% level of confidence, and

e. 1944 ice baskets.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the ice bed inoperable, restore the ice bed to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 The ice condenser shall be determined OPERABLE:

a. At least once per 12 hours by using the ice bed temperature monitoring system to verify that the maximum ice bed temperature is less than or equal to 27°F.

b. At least once per 6 months during the first 2 years following initial criticality and at least once per 12 months* thereafter by:

1. Chemical analyses which verify that at least 3 representative samples of stored ice have a boron concentration of at least 1800 ppm as sodium tetraborate and a pH of 9.0 to 9.5 at 20°C.

2. Weighing a representative sample of at least 144 ice baskets and verifying that each basket contains at least 1200 lbs of ice. The representative sample shall include 6 baskets from each of the 24 ice condenser bays and shall be constituted of

* ONE TIME EXTENSION TO BE REQUESTED NO LATER THAN Unit 2 CYCLE 3 REFUELING OUTAGE OR JANUARY 22, 1989, which ever OCCURS FIRST.

ENCLOSURE 2

PROPOSED TECHNICAL SPECIFICATION CHANGE

SEQUOYAH NUCLEAR PLANT UNIT 2

DOCKET NO. 50-328

(TVA-SQN-TS-88-18)

DESCRIPTION AND JUSTIFICATION FOR
EXTENDING SURVEILLANCE REQUIREMENT
FOR ICE CONDENSER ICE WEIGHING

ENCLOSURE 2

Description of Change

Tennessee Valley Authority proposes to modify the Sequoyah Nuclear Plant Unit 2 Technical Specifications to revise surveillance requirement (SR) 4.6.5.1.b.2 to allow for a one-time extension to the next refueling outage for weighing of ice.

Reason for Change

TVA is requesting an extension of SR 4.6.5.1.b.2 to allow weighing of ice in the upcoming refueling outage. The ice condenser surveillance is required to be performed by December 4, 1988. This surveillance can only be performed during shutdown; therefore, to avoid an unnecessary shutdown of the plant, this surveillance needs to be extended to the upcoming refueling outage. Currently, the refueling outage is scheduled to begin January 22, 1989. Therefore, this extension is short compared with the overall time of the surveillance interval.

Justification for Change

SR 4.6.5.1.b.2 requires that each basket contain at least 1,200 pounds of ice and that the average ice weight in the group-row analysis shall not be less than 1,200 pounds per basket at a 95-percent level of confidence. Also, the minimum total ice condenser ice weight at a 95-percent level of confidence shall not be less than 2,333,100 pounds. As defined in the basis of the technical specification, the 1,200 pounds contains a 10-percent conservative allowance for ice loss through sublimation, which is a factor of 10 higher than assumed for the ice condenser design. Therefore, the basis for the minimum ice weight is:

$$1{,}200 \text{ pounds} - (1{,}200 \times 10 \text{ percent}) = 1{,}080 \text{ pounds}$$

This value (1,080) pounds is used in all containment safety analyses.

Utilizing the data from previous ice weighing surveillances (May 1982 to September 1985), the ice loss for each basket was calculated. The calculation was run using the average sublimation rate over the entire period (May 1982 to September 1985). This method is conservative in that the surveillance history shows that the sublimation rate has decreased since the initial ice weighing. It was determined that, after the initial ice weighing, special attention was required for group 1 row 1 and bays 1 and 24. Other ice condenser plants were experiencing similar problems; therefore, an ice condenser improvement program was implemented to identify probable causes for the problems. Improved maintenance and operation of the ice condenser have reduced the amount of ice loss in the later surveillance.

In order to ensure a sufficient quantity of ice is available, the technical specification SR 4.6.5.1 requires that a sample of at least 144 ice baskets be weighed on a 12-month basis. This sample includes one basket from six rows (radial rows 1, 2, 4, 6, 8, and 9) of each of the 24 bays (refer to the attached figures 1 and 2 of this enclosure for a representation of ice condenser bays, groups, and rows). If any basket is found to contain less than 1,200 pounds of ice, an additional 20 baskets must be weighed. The rows are then subdivided into three groups (group 1 - bays 1 through 8, group 2 - bays 9 through 16, group 3 - bays 17 through 24). The minimum average weight of the group-row combinations and bays must not be less than 1,200 pounds per basket at a 95-degree level of confidence. In addition, these basket weights shall be used to determine that the overall ice weight is not less than 2,333,100 pounds.

The calculation shows that, using the expected sublimation rate (average rate), five group-row combinations have an average weight that is slightly less than the 1,200 limit (group 1 row 1 is 5.5 percent low, group 2 row 1 is 1.9 percent low, group 2 row 2 is 0.17 percent low, group 3 row 1 is 1.8 percent low, and group 3 row 2 is 0.33 percent low). However, all of the group-row combinations and bays are well in excess of the analytical limit (1,080 pounds) that takes into account the amount of ice loss allowed between successive weighings and is the amount taken credit for in all containment safety analyses. The average weight per basket for each group in the group-row combinations is 1,206 pounds for group 1; 1,270 pounds for group 2; and 1,223 pounds for group 3. The overall average weight per basket based on the group-row combination calculations is 1,233 pounds, which indicates a total ice condenser ice weight of (1,233) x (81) x (24) = 2,397,000 pounds. The overall weight of the ice condenser based on both the group-row combinations and bays is greater than the minimum allowable amount of 2,333,100 pounds listed in the technical specifications. Therefore, the ice condenser has sufficient capability to perform its safety function during the requested extension period.

FIGURE 1

ICE CONDENSER
NUMBERING OF BAYS

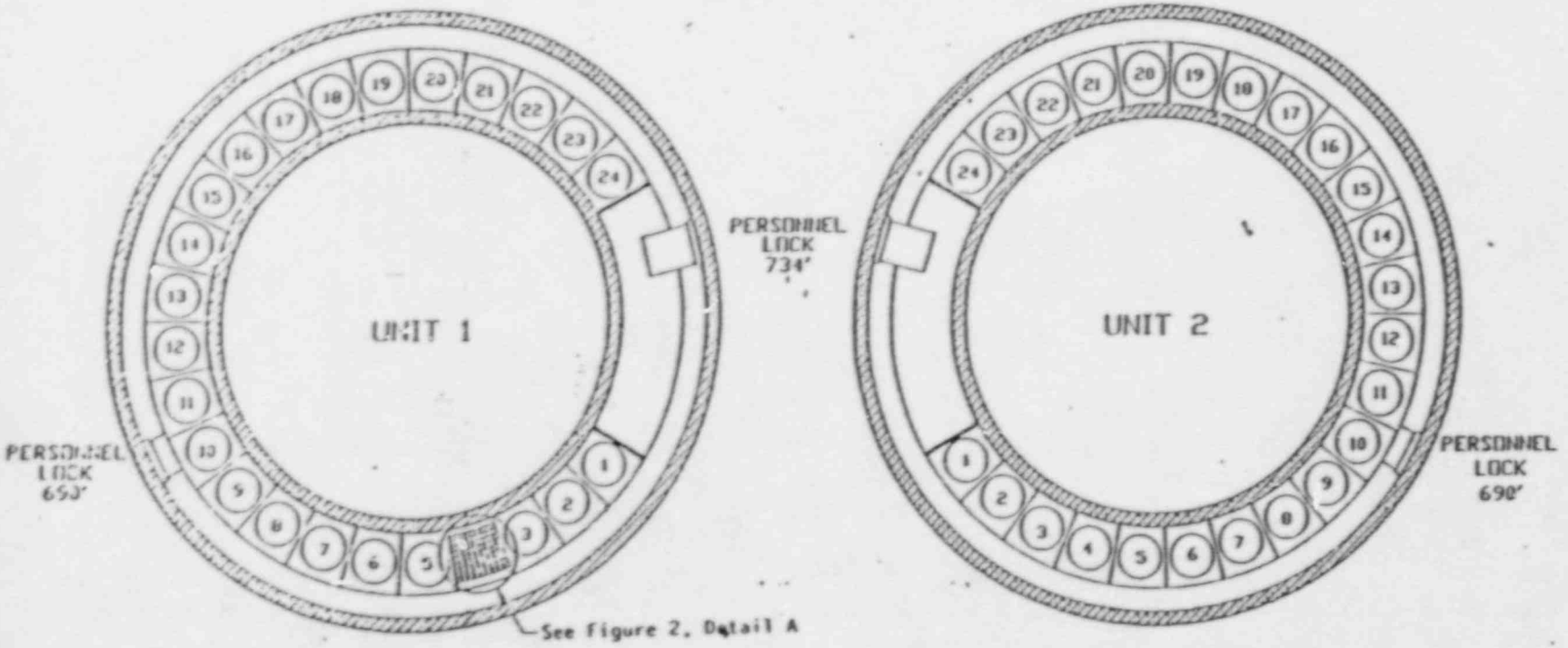
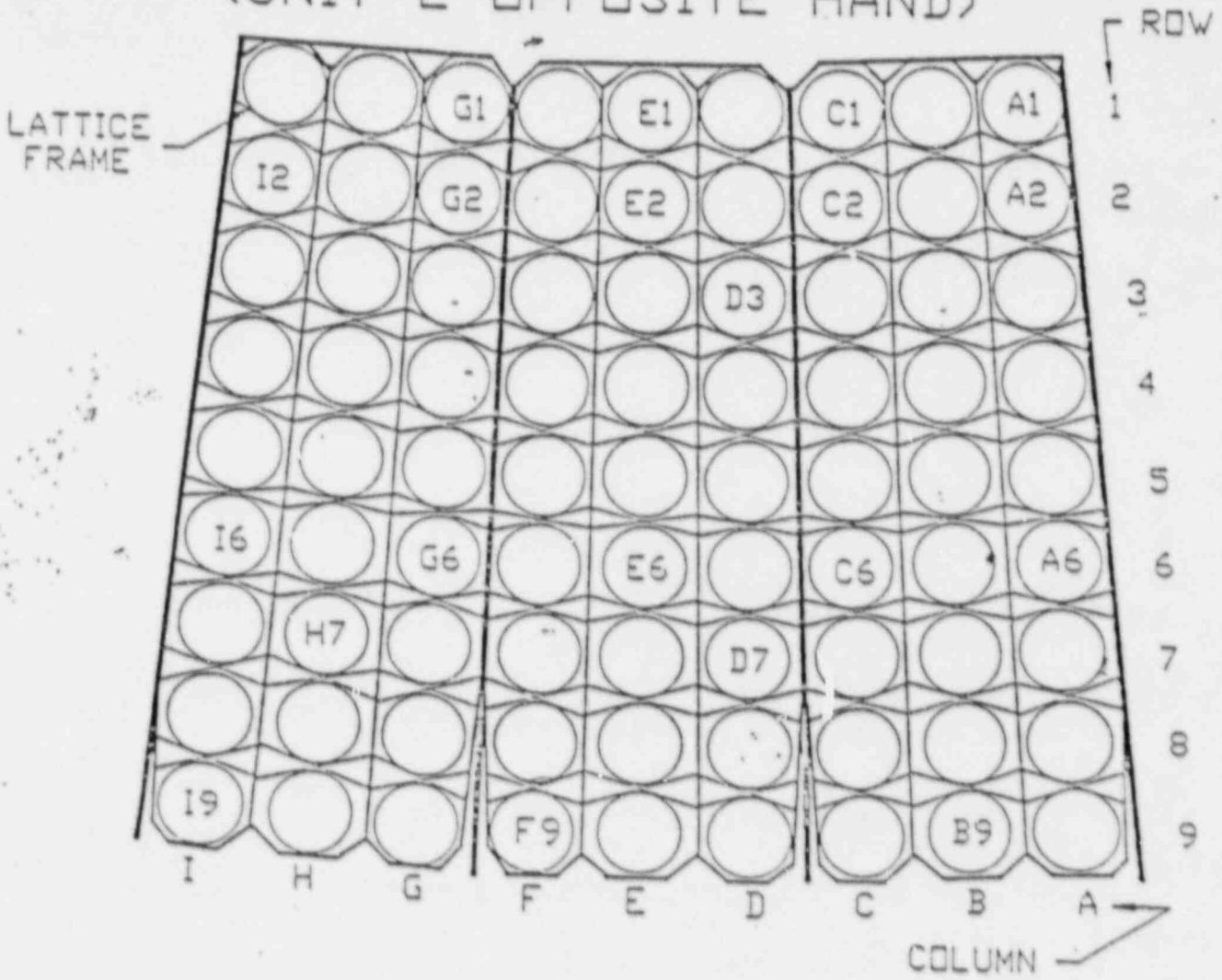


FIGURE 2

ICE BASKETS NUMBERING SEQUENCE TYPICAL FOR UNIT 1 ICE CONDENSER (UNIT 2 OPPOSITE HAND)



(BAY SHOWN WITH BEAMS AND DOOR FRAMES REMOVED)

DETAIL A
FIGURE 2

ENCLOSURE 3

Significant Hazards Evaluation

TVA has evaluated the proposed technical specification change and has determined that it does not represent a significant hazards consideration based on criteria established in 10 CFR 50.92(c). Operation of SQN in accordance with the proposed amendment will not:

(1) Involve a significant increase in the probability or consequences of an accident previously evaluated. The ice condenser system is provided to absorb thermal energy release following a loss of coolant accident (LOCA) or high-energy line break (HELB) and to limit the peak pressure inside containment. The ice condenser analysis shows that, with a minimum of 1,080 pounds of ice per basket, the ice condenser will perform its function. Based on surveillance history of the ice baskets, the calculations of the sublimation rates, and the relatively short extension time, this request will not result in a significant increase in the probability or consequences of an accident previous evaluated.

(2) Create the possibility of a new or different kind of accident from any previously analyzed. The surveillance extension will not result in a change to the plant configuration or operation. Therefore, this change will not create the possibility of a new or different kind of accident from any previously analyzed.

(3) Involve a significant reduction in a margin of safety. The Final Safety Analysis Report analysis shows that, with the minimum amount of ice present in the ice condenser, the system will perform its function during a LOCA or HELB. Based on the improved surveillance performance of the system, the sublimation calculation, and the short time period of the extension, this change does not involve a significant reduction in the margin of safety.

ENCLOSURE 3

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DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS

ENCLOSURE 4

TECHNICAL SPECIFICATION 88-18
ICE CONDENSER SUBLIMATION CALCULATION