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JUL 3 1 1996

U.S. Nuclear Regulatory Commission
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Gentlemen:

In the Matter of) Docket No. 50-390
Tennessee Valley Authority)

WATTS BAR NUCLEAR PLANT (WBN) - PROPOSED LICENSE AMENDMENT -
CONTAINMENT SYSTEMS

The purpose of this letter is to request that Appendix A of Facility Operating License NPF-90, Watts Bar Unit 1 Technical Specifications (TSSs), be amended in accordance with 10 CFR 50.90 to allow extension of the 3-month surveillance requirements (SRs) of TS 3.6.12 for the ice condenser lower inlet doors for approximately 40 days to coincide with the plant mid-cycle outage scheduled for October 1996.

A description of the proposed amendment, and the basis for it, is included in Enclosure 1. TVA's analysis of significant hazards considerations, as required by 10 CFR 50.91(a), is included in Enclosure 2. Proposed revised TS pages are included in Enclosure 3.

The proposed amendment has been reviewed and approved by the Watts Bar Plant Operations Review Committee and Nuclear Safety Review Board.

In accordance with 10 CFR 50.91(b)(1), a copy of this proposed license amendment is being forwarded to the state designee for the State of Tennessee.

TVA has concluded that, for As Low As Reasonably Achievable (ALARA) purposes, performance of the ice door surveillances at

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power operation should be avoided. Accordingly, TVA requests that the proposed changes be approved prior to September 9, 1996, in order to prevent an unnecessary plant shutdown transient and to support continued power operation until the scheduled mid-cycle outage.

In addition, performance of this surveillance during the mid-cycle outage will include a thorough review of door surveillance results in support of TVA's decision to implement the currently existing TS provision which adjusts the surveillance interval to 18 months. Should there be a forced outage prior to the mid-cycle which causes the plant to go to mode 3 or lower, TVA will perform the ice condenser door surveillances prior to returning to power from that outage.

If you should have any questions, please contact P. L. Pace at (423) 365-1824.

Sincerely,



J. A. Scalice

Sworn to and subscribed before me
this 31st day of July 1996

E. Jeannette Lord
Notary Public

My Commission Expires July 1, 1997

Enclosures

cc: See page 3

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ENCLOSURE 1

PROPOSED LICENSE AMENDMENT
CONTAINMENT SYSTEMS

I. Description of Proposed License Amendment

The proposed amendment would revise the Watts Bar Unit 1 TS requirements to allow a one-time extension of the 3-month SRs of TS 3.6.12 for the ice condenser lower inlet doors to coincide with the plant mid-cycle outage.

Specifically, this proposed amendment would add notes to SRs 3.6.12.3, 3.6.12.4, and 3.6.12.5 and their respective bases to state, "The 3-month performance due September 9, 1996, (per SR 3.0.2) may be extended until October 21, 1996." Following the first year of operation, the frequencies of these surveillances are extended to 18 months.

II. Basis for Proposed License Amendment

The requirements of SRs 3.6.12.3, 3.6.12.4, and 3.6.12.5 provide inspections and tests to ensure the operability of the ice condenser lower inlet doors. Specifically, SR 3.6.12.3 requires inspections of the doors to identify ice, frost, or debris which may restrict their opening in a design basis event. SRs 3.6.12.4 and 3.6.12.5 require torque tests for opening and closure to ensure proper door function.

Since the low power license was issued in November 1995, these SRs have been performed on December 6-8, 1995, February 23, 1996, May 13, 1996, and May 17, 1996. During the May 13, 1996, performance, 15 doors exceeded a portion of the acceptance criteria of 3.6.12.5. Once these doors were exercised, they met the SR. The other three performances of the surveillance, including the most recent surveillance, were successful.

The following discussion provides the basis for adding the described notes to each of the SR:

Surveillance Requirement 3.6.12.3

As stated above, this SR requires inspection of the lower ice condenser inlet doors to identify ice, frost, or debris which may restrict their opening in a design basis event. Data from the four previous performances of the SR indicates that ice, frost or debris have not been a problem. Based on the previous four performances of this test since fuel load, it is expected that inspection results at the mid-cycle outage date would also provide the same results. In that this is normally an 18-month surveillance, an extension of 42 days to make a total interval of 156 days would not effect the capability of the doors to perform their safety function. Therefore, there is reasonable

assurance that the surveillance interval extension would have no impact on the health and safety of the public.

Surveillance Requirement 3.6.12.4

This surveillance requirement requires verification that the torque required to open the lower inlet doors is less than or equal to 675 inch lbs. This verification provides assurance that no doors become stuck in the closed position during a design basis event such as a large break loss of coolant accident (LOCA). During the previous four performances, the values obtained range from well within to moderately within the acceptance criteria (160.5 inch lbs to 601.875 inch lbs). No failures to meet this criteria were identified. Based on the previous four performances of this test since fuel load, it is expected that inspection results at the mid-cycle outage date would also yield the same results. In that this is normally an 18-month surveillance, an extension of 42 days to make a total interval of 156 days would not impact the capability of the doors to perform their safety function. Therefore, there is reasonable assurance that the surveillance interval extension would have no impact on the health and safety of the public.

Surveillance Requirement 3.6.12.5

This SR verifies that the lower inlet doors have not developed excessive friction and that the return springs are producing a door return torque within required limits. To obtain these values, a measurement is taken for the opening and closing torque (doors at 40 degrees open position) and a calculation performed using these values to arrive at the frictional value. Each of these values is verified against the acceptance criteria. This verification ensures that, in the event of a small break LOCA or Steam Line Break, the 24-door pairs open uniformly. Opening uniformly assures that during the initial blowdown phase, the steam and water mixture entering the lower compartment does not pass through part of the ice condenser, depleting the ice there, while bypassing the ice in other bays.

Since Watts Bar was issued a license on November 9, 1995, this surveillance has been performed four times. During the four performances of this surveillance, only the May 13, 1996, performance identified doors which initially failed a portion of the acceptance criteria. Specifically, 15 doors failed the 40 degrees opening torque (1 door by 23 percent or 45.75 inch lbs, 1 door by 13 percent or 25.68 inch lbs, and 13 doors by 2.8 percent or 9.5 inch lbs). In addition, three of the 15 did not meet the calculation for frictional torque value of this SR by 0.3 percent or 0.125 inch lbs. From these values, it can be seen that only two of the doors were moderately over the criteria with the remaining 13 only slightly exceeding the criteria. (See Figure 1 for a location map reflecting the results distribution.)

To address the May 13, 1996, test deficiencies, the subject doors were exercised in place and the tests performed again with successful results. The surveillance was performed again on May 17, 1996, just prior to unit startup with all doors passing the acceptance criteria.

Watts Bar's Licensee Event Report (LER) 96-018, supplement 1 dated June 29, 1996, and reply to Notice of Violation 96-06-01 dated July 10, 1996, addressed the surveillance results and safety significance of the surveillance criteria not being met.

The safety review, performed by Westinghouse, concluded as follows: 1) Subcompartment Analyses - The validity of the current licensing basis subcompartment analyses is not compromised by the above condition, 2) Long-Term LOCA Containment Analysis - The validity of the current licensing basis Long-Term LOCA Containment Integrity analyses is not compromised by this condition, 3) Long-Term Main Steam Line Break (MSLB) Containment analysis - The validity of the current licensing basis Long-Term MSLB Containment Integrity analyses is unaffected by this condition and remains bounding, 4) Maximum Reverse Differential Pressure analysis - It is concluded that the current licensing analysis remains bounding, and 5) Deck Bypass - There still would remain substantial margin between the design deck leakage and that which can be tolerated without exceeding the containment design pressure.

Therefore, based on the above, TVA determined that the licensing basis remained bounding and that the opening torque condition associated with the 15 doors was not safety significant.

Other Considerations

Other considerations to support this justification for surveillance extension, are the initial ice mass relative to TS requirements in the WBN ice condenser and the probability of LOCAs requiring Ice Condenser function during the extension period.

Initial Ice Mass Relative To TS

In a supplement letter dated April 15, 1996, regarding WBN's Ice Bed and Flow Channel Inspection Surveillance Frequencies amendment request, TVA documented the initial ice loading for the WBN unit ice condenser was 2,877,685 lbs or 473,885 lbs more (about 20 percent) than the currently approved TS value of 2,403,800 lbs provided for an 18-month surveillance interval, and 752,685 lb greater (about 31 percent) than the safety analysis value of 2,125,000 lb. For the LBLOCA the doors would have been expected to open as designed, considering that all surveillances since fuel load have indicated that all doors passed the SR 3.6.12.4 test requiring an opening torque of 675 inch lbs.

For the small break LOCA or small steam line break, door opening torque measured at the 40 degree position becomes important to avoid steam maldistribution effects. As stated previously, one surveillance had two doors that did not meet the torque criteria for the mid position by 13 percent and 23 percent, respectively (one of two bay 3 doors and one of two bay 5 doors). Several doors also exceeded the criteria by an average of only 2.8 percent. Neglecting these minor exceedances, and conservatively assuming both bay 3 and both bay 5 doors did not open, only 162 ice baskets representing 240,442 lbs of ice would have been unavailable during the event. This is considerably less than the excess margin of ice above the TS requirement for the more challenging large break LOCA. This margin would allow for the failure of 8 doors associated with 4 additional bays. In addition, total blockage would not be likely since the steam/air mixture would reach the impacted bays from adjacent bays or via the operational doors in the two bays of interest. Therefore, it is concluded that the exceedances observed were not significant for the small break LOCA.

The Probability of LOCAs Requiring Ice Condenser Function

Another consideration for surveillance interval extension, is the likelihood of the need for the tested components during the period of the extension. In order to quantify the potential for a SBLOCA occurring during the 42-day period of time being requested for extension of the 3-month surveillance interval, the probability of selected initiating events resulting in core damage occurring during the period was evaluated. During this 42-day period, the probability of small break LOCAs resulting in core damage was $1.3E-06$, and the probability of small break LOCAs requiring ice condenser function was $3.3E-03$.

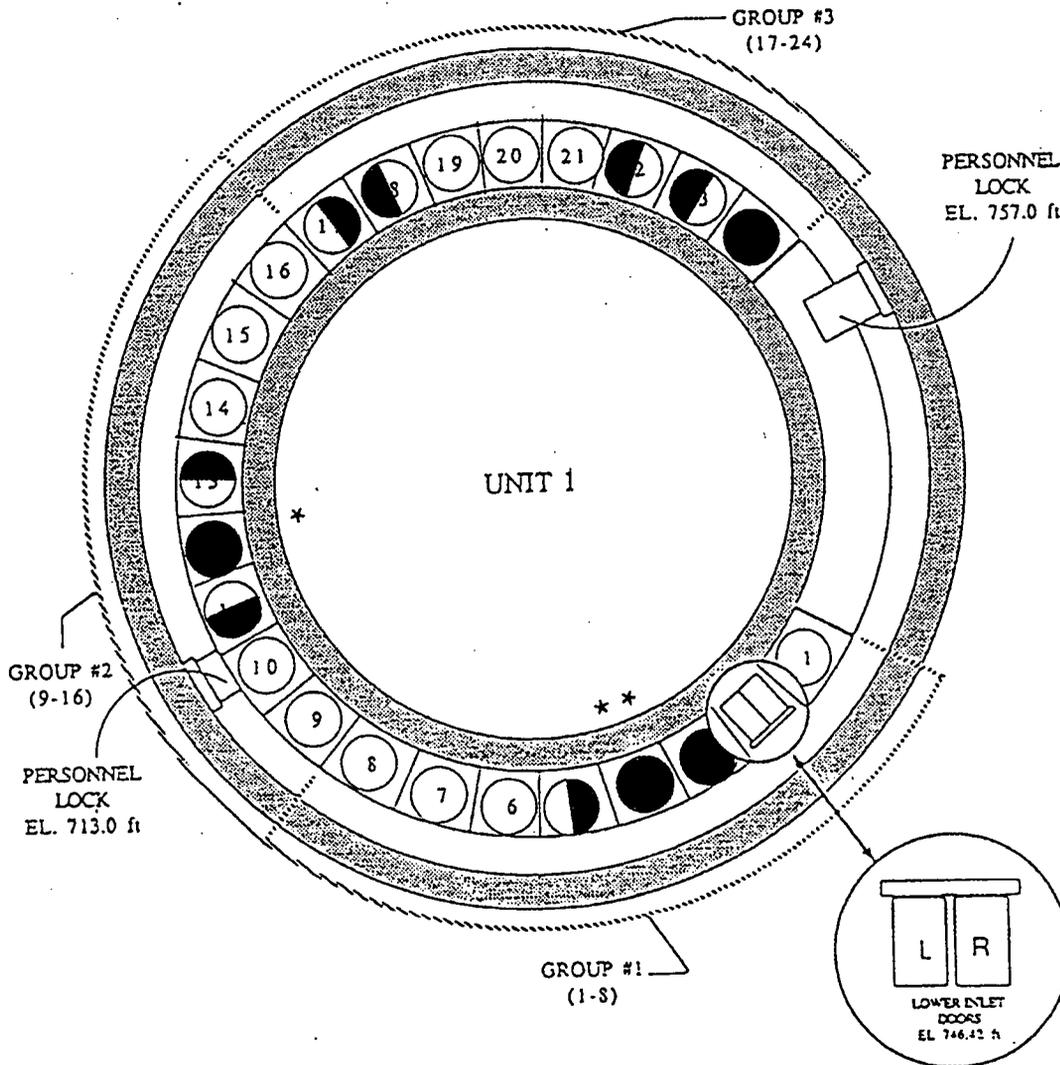
Conclusions

Considering that all doors passed the last surveillance, that earlier surveillance deficiencies were not safety significant, that there is a significant amount of ice margin available and that the likelihood of a design basis event requiring ice condenser operation is low, there is reasonable assurance that the 42-day extension of the surveillance interval for SR 3.6.12.5 would not adversely impact the operation of the plant, and would not impact the health and safety of the public.

III. Environmental Consideration

The proposed change does not involve a significant hazards consideration, a significant change in the types of or significant increase in the amounts of any effluents that may be released offsite, or a significant increase in individual or cumulative occupational exposure. Therefore, the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed change is not required.

FIGURE 1
ICE CONDENSER BAYS NUMBERING SEQUENCE.



NOTE: Blackened portions of numbered circles indicate doors not meeting 40 degree opening torque component. Doors with an "*" did not meet frictional force surveillance.

ENCLOSURE 2

NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

I. Description of Proposed License Amendment

The proposed amendment would revise the Watts Bar Unit 1 TS requirements to allow extension of the 3-month SRs for TS 3.6.12 for the ice condenser lower inlet doors to coincide with plant mid-cycle outage scheduled for October 1996.

Specifically, this proposed amendment would add notes to SRs 3.6.12.3, 3.6.12.4, and 3.6.12.5, and their respective basis to state, "The 3-month performance required to be completed (per SR 3.0.2) by September 9, 1996, may be extended until October 21, 1996."

II. Basis for No Significant Hazards Consideration Determination

The Nuclear Regulatory Commission has provided standards for determining whether a significant hazards consideration exists (10 CFR 50.92 (c)). A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility, in accordance with the proposed amendment, would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. Each standard is discussed below for the proposed amendment.

BACKGROUND

The WBN containment is an ice condenser pressure suppression design. The internal concrete structural design allows the containment to be divided into four main areas for containment pressure design evaluation, i.e., lower compartment, the dead-ended compartment, the upper compartment, and the ice condenser. Environmental communication between the upper and lower compartment is minimal during normal plant operation and consists primarily of known leakage paths through the drains in the refueling canal. During a postulated LOCA or MSLB, which could potentially occur in the lower compartment, steam emanating from the break location along with normal atmosphere of the lower compartment are directed almost exclusively to the ice condenser section via pressure driven flow through the lower ice condenser inlet doors. The lower inlet doors which are held closed during normal operation by the cold air head pressure occurring inside the ice condenser system are designed to open at a differential pressure of 1 pound per square foot (psf). The initial flow pattern through the ice condenser to the upper compartment is maintained by the established pressure differential until later

in the transient when continued movement of the mixture is by the Air Return Fan system.

The ability of the ice condenser to adequately perform its intended safety function is dependent on the reliability of the lower inlet doors to open as intended, and the current peak containment pressure analysis assumes that the lower inlet doors open simultaneously under the pressure differential of 1 psf. In addition, the efficient performance of the ice condenser is also dependent on the even distribution of flow directed to the ice bed via the simultaneous opening of all doors in the 24 bays during any postulated line break design bases event.

From the Bases of the WBN TSS, it can be seen that the purpose of SR 3.6.12.3 is to confirm that door opening is not restricted by ice, frost, or debris buildup. SR 3.6.12.4 verifies the door opening torque to be within the 1 psf design value (675 inch lbs of torque). SR 3.6.12.5 verifies the inlet doors have not developed excessive friction by confirming, at the 40 degrees open position, a door opening torque of less than or equal to 195 inch lbs and a door closing torque of greater than or equal to 78 inch lbs (required to cause opening motion and required to hold the door stationary). The measured values are then utilized to determine the frictional torque.

(1) Operation of the facility in accordance with the proposed amendment would not involve a significant increase in the probability or consequences of an accident previously evaluated.

The four previous performances of SR 3.6.12.3 and 3.6.12.4 have all been successful. The most recent performance of SR 3.6.12.5 on May 17, 1996, was successful. However, because a previous performance of SR 3.6.12.5 on May 13, 1996, had identified several doors which did not pass portions of the surveillance, the results of the May 13, 1996, performance were reviewed in detail.

Conduct of the May 13, 1996, surveillance yielded initial "as-found" test results which indicate that 15 of the 48 lower inlet doors did not meet the 40 degrees open position opening torque (13 by an average of 2.8 percent, one by 13 percent and one by 23 percent). This has been evaluated by TVA and Westinghouse as to the potential effect on current design basis analysis. The review also addressed three doors which exceeded the overall friction criteria by 0.3 percent. The evaluation consisted of a review of the Subcompartment analysis, Long-Term LOCA Containment analysis, Long-Term MSLB Containment analysis, Maximum Reverse Differential Pressure analysis, and Deck Bypass. The result of these analyses, indicates that the "as-found" deviations in ice condenser inlet door opening performance are still bounded by the current licensing design basis containment related accident analysis. In addition, since the "as-left" conditions were within the TS requirements and a subsequent performance on May 17, 1996, did not

identify any deficiencies, justification exists to allow extension of the 3-month surveillance for the ice condenser lower inlet doors until the plant mid-cycle outage scheduled for October 1996.

Other considerations to support this justification for surveillance extension, are the initial ice mass relative to TS requirements in the WBN ice condenser, and the probability of core damaging small break LOCAs requiring Ice Condenser function during the extension period.

Initial Ice Mass Relative To TS

In a supplemental letter dated April 15, 1996, regarding WBN's Ice Bed and Flow Channel inspection Surveillance Frequencies amendment request, TVA documented the initial ice loading for the WBN unit ice condenser was 2,877,685 lbs. This value is 473,885 lbs more (about 20 percent) than the currently approved TS value of 2,403,800 lbs provided for an 18-month surveillance interval, and 752,685 lbs greater (about 31 percent) than the safety analysis value of 2,125,000 lbs. For the LBLOCA the doors would have been expected to open as designed, considering that all surveillances since fuel load have indicated that all doors passed the (SR) 3.6.12.4 test requiring an opening torque of 675 inch lbs.

For the small break LOCA, door opening torque at the 40 degrees open position becomes important to avoid steam maldistribution effects. As stated previously, one surveillance had two doors that did not meet the torque criteria for the mid position by 13 percent and 23 percent, respectively (one of two bay 3 doors and one of two bay 5 doors). Several doors also exceeded the criteria by an average of only 2.8 percent. Neglecting these minor exceedances, and conservatively assuming both bay 3 and both bay 5 doors did not open, only 162 ice baskets representing 240,442 lbs of ice would have been unavailable during the event. This is considerably less than the excess margin of ice above the TS requirement for the more challenging large break LOCA. This margin would allow for the failure of 8 doors associated with 4 additional bays. In addition, total blockage would not be likely since the steam/air mixture would reach the impacted bays from adjacent bays or via the operational doors in the two bays of interest. Therefore, it is concluded that the exceedances observed were not significant for the small break LOCA.

The Probability of LOCAs Requiring Ice Condenser Function

Another consideration for surveillance interval extension, is the likelihood of the need for the tested components during the period of the extension. In order to quantify the potential for a SBLOCA occurring during the 42 day period of time being requested for the extension of the 3-month surveillance interval, the probability of selected initiating events

resulting in core damage occurring during the period was evaluated. During the 42-day period, the probability of small LOCAs resulting core damage was $1.3E-06$, and the probability of small break LOCAs requiring ice condenser function was $3.3E-03$. Therefore, operation of the facility in accordance with the proposed amendment (extension of the 3-month surveillance for the ice condenser lower inlet doors until the plant mid-cycle outage scheduled for October 1996), when considering the magnitude of the deviations observed in the May 13, 1996, surveillance testing, the sensitivity to the containment related analysis, and other physical/technical considerations discussed in the preceding text, would not involve a significant increase in the probability of an accident previously evaluated nor their respective consequences.

(2) Operation of the facility in accordance with the proposed amendment would not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed extension of the surveillance interval affects only the operability confidence associated with the lower ice doors. It has no impact on systems or components, the failure of which could initiate a new design basis accident. It is concluded, therefore, that no new or different kind of accident from any accident previously evaluated is created by the proposed amendment.

(3) Operation of the facility in accordance with the proposed amendment would not involve a significant reduction in margin of safety.

The preceding text (No significant Hazards Consideration Determination questions 1 & 2) covers TVA's evaluation of test data from the May 13, 1996, surveillance. This evaluation addresses the associated LOCAs requiring the ice condenser function, and the comparison of the initial WBN ice condenser ice loading versus maximum potential loss of ice bed usage. This discussion is applicable to the review to determine if a significant reduction in margin of safety will occur with operation of the WBN facility in accordance with the proposed amendment.

Initial Ice Mass Relative To TS

This review determined that there would have been essentially no unavailability of the lower inlet doors for a LBLOCA. For the conditions found, the current TS ice mass of 2,403,800 lbs would have still been met, with the margin between TS and design basis ice mass of 2,125,000 lbs still maintained. For smaller breaks, the additional ice would more than make up for any maldistribution caused by any friction increase in the doors.

Westinghouse Evaluation of May 13, 1996 Test Data

A Westinghouse evaluation of the deficiencies identified during the May 13, 1996, surveillance performance indicates that substantial margin exists for the licensing basis subcompartment analysis, Long-Term LOCA Containment Integrity analysis, Long-Term MSLB Containment Integrity analysis, Maximum Reverse Differential Pressure analysis, and concludes that the current licensing analyses remain bounding even without the immediate correction and subsequent reverification on May 17, 1996. Therefore, the proposed amendment would not result in a significant reduction in the margin of safety.

The Probability of LOCAs Requiring Ice Condenser Function

In order to quantify the potential for a SBLOCA during the period of time being requested for extension of the 3-month surveillance interval, the probability of selected initiating events which result in core damage occurring during the period was evaluated. For the probability of selected small break LOCAs resulting in core damage, the probability was $1.3E-06$ and for probability of a small break LOCA was $3.3E-03$. These event probabilities are small enough to conclude that the margin of safety has not been decreased by the proposed amendment.

III. Summary

Based on the above, TVA has determined that operation of Watts Bar in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety. Therefore, operation of Watts Bar in accordance with the proposed amendment would not involve a significant hazards consideration as defined in 10 CFR 50.92.