August 4, 2006

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Gentlemen:

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

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 – TECHNICAL SPECIFICATION (TS) 5.9.8 – CONTAINMENT HIGH RANGE RADIATION MONITORS

On July 21, 2006, Technical Specification Limiting condition for Operation (LCO) 3.3.3, Condition G was entered for both trains of High Range of Radiation Monitors when it was determined that upper and lower containment radiation monitors 1-RM-90-271, 272, 273, and 274 may not meet reliability expectations due to temperature induced currents during some portions of postulated high energy line break scenarios in containment. Condition G requires immediate action to provide a report within 14 days in accordance with Technical Specification 5.9.8, "PAM Report." Enclosure 1 provides the required report. Enclosure 2 provides the list of commitments.

If you have any questions concerning this matter, please call Paul Pace at (423) 365-1824.

Sincerely,

Mike Skaggs

Enclosures
cc: See Page 2

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ENCLOSURE 1

WATTS BAR NUCLEAR PLANT (WBN)
TECHNICAL SPECIFICATION 5.9.8
POST ACCIDENT MONITORING SYSTEM REPORT
CONTAINMENT RADIATION MONITORS – HIGH RANGE FUNCTION

This special report provides information related to a condition identified that affects the Containment Radiation function (12) of Technical Specification 3.3.3, "PAM Instrumentation." The Containment Radiation function is provided to monitor for the potential of significant radiation releases and to provide release assessment for use by operators in determining the need to invoke site emergency plans. In addition, Containment Radiation level is used to determine if a loss of reactor coolant or secondary coolant has occurred.

BACKGROUND

NRC Information Notice 97-45, Supplement 1 identified a potential equipment qualification deficiency on the coaxial signal cables associated with containment high range radiation monitors from thermal induced currents (TIC). The potential exists for TIC on the signal cables associated with these monitors to cause erratic and inaccurate readings of post accident radiation levels inside of containment.

The TIC phenomenon appears to be dependent on the temperature change magnitude, rate of change and the type of cabling used for the plant. TVA evaluated the potential impact of TIC on instrumentation and the only devices impacted at WBN are the containment high range (2 located in upper containment, 2 located in lower containment) radiation monitors. At WBN, these monitors are 1-RE-90-271, -272, -273, and -274.

This phenomenon could cause these monitors to go into high alarm during the rapid temperature increases associated with Loss of Coolant Accidents (LOCAs) and Main Steam Line Breaks (MSLBs) inside containment. The monitors could also alarm as failed low due to negative TIC effects during rapid cooling for the same events. These monitors are used to estimate post accident fuel damage which factors into post accident emergency classifications and in certain Emergency Operating Procedures (EOPs).

As part of the effort to establish the WBN impact, new cables from the same production run as the cables installed at WBN were sent to the Electrical Insulation Research Center at the University of Connecticut for testing. Testing demonstrated that the WBN cables were impacted by TIC in magnitudes large enough to challenge the accuracy of monitor readings. Testing also demonstrated that repeated temperature transient cycling and aging of the cables at elevated temperatures both had an effect on the magnitude of TIC response. However, testing also

demonstrated that the time constant for the WBN cables would allow the TIC effects to dissipate in approximately three minutes or less after temperature stabilization. This three minute period was substantiated using a computer program developed by the University of Connecticut.

The tests described above are conservative with respect to the actual cabling installation since both the upper and lower compartment monitor coaxial cables are routed through the lower compartment in conduit. Other studies performed for cabling, in conduit exposed to high temperatures in the valve vaults, demonstrate that the conduit can reduce the thermal impact of transients by reducing short term temperature peaks and smoothing the thermal transient. However, based on the conservative test results, it has been assumed that the monitors would read high and would initially go into alarm during the rapid temperature rises inside of containment during LOCAs and MSLBs. It has also been assumed that the monitors will read low and go into low failure alarm during rapid temperature decreases inside of containment during LOCAs and MSLBs. However, the monitors will stabilize and recover accuracy within acceptable limits in approximately three minutes or less by either steady or slowly changing containment temperatures. As noted, the bulk of the cable runs for the upper containment monitors are in lower containment, so the effect for the four monitors will predominantly depend upon the rate of change of lower containment temperature. Therefore, although the four High Range Radiation Monitors will experience periods of inaccurate readings post accident, the combination of the short time constant of the TIC effect coupled with temperatures inside of containment that are relatively stable for sufficient periods of time will allow the containment high range radiation monitors to be functional for evaluation of post accident radiation environments throughout most of the 100 day post accident period.

TVA initially concluded (documented by Problem Evaluation Report 13755) based on early information and the availability of independent indicators of inadequate core cooling, that an operability issue did not exist. However, earlier this year, the need to reevaluate this issue was identified. Problem Evaluation Report 100095 was initiated to document this new evaluation.

PREPLANNED ALTERNATE METHOD OF MONITORING

For events inside containment such as large LOCA or MSLB, which can produce rapid temperature changes, it is postulated that readings from these monitors may be erroneously high or low and in excess of actual containment conditions. If this occurs, this high or low error in radiation monitor readings is expected to be short-lived relative to an instantaneous temperature change and is expected to self correct as temperature inside containment

stabilizes. If the monitor readings appear stable for more than three minutes, its readings should meet accuracy requirements.

For the purposes of REP classification the following considerations apply:

- For a LOCA inside containment, other symptoms of Fuel Clad Barrier loss and potential containment barrier loss are listed in the Fission product barrier matrix (such as rapid unexplained pressure decrease following initial increase) and should be used to validate the indications from the high range radiation monitors.

- For MSLB inside containment, the absence of other symptoms listed in the fission product barrier matrix for loss of fuel clad barrier or potential loss of containment barrier, as well as diverse diagnostic information provided in the plant Emergency Operating Procedures are intended to help in distinguishing between a primary system LOCA and a steam line break. Information from these diverse sources should be used to validate the monitor readings.

The above information has been provided to onshift personnel and to selected members of the Emergency Response Organization that are involved in making event classifications.

THE CAUSE OF THE INOPERABILITY

See the discussion in the background section above.

PLANS AND SCHEDULE FOR RESTORING FUNCTION TO OPERABLE CONDITON

A modification is planned to replace the affected cables with cables that minimize the TIC phenomenon. The modification will allow the radiation monitors to function within their required accuracy and within acceptable limits throughout the post accident period. This design change will be implemented in the Cycle 8 refueling outage which is scheduled for early 2008. Prior to that implementation, walkdowns are required in the Cycle 7 refueling outage to obtain measurements for cable lengths and identify required raceway modifications. These walkdowns will facilitate a purchase of cabling with factory installed connectors which have a long normal lead time. Therefore, the Cycle 8 refueling outage is the first reasonable outage of sufficient duration to implement the change after the required material has been purchased and staged.

ENCLOSURE 2

LIST OF COMMITMENTS

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