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

Gentlemen:

In the Matter of )  
Tennessee Valley Authority )

Docket No. 50-390

WATTS BAR NUCLEAR PLANT (WBN) - LOOSE PART DETECTION SYSTEM (LPDS)  
SPECIAL REPORT - TECHNICAL REQUIREMENT (TR) 3.3.6

Provided in Enclosure 1 is a special report for the LPDS. A report of this type is required by TR 3.3.6 and details the cause of the problems associated with the LPDS. Also included is a description of the actions TVA has planned for restoration of the system and a commitment to implement the actions during the Unit 1 Cycle 4 refueling outage. Enclosure 2 lists this commitment.

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

Sincerely,

  
W. R. Lagergren

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Enclosures

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**Enclosure 1**  
**Watts Bar Nuclear Plant (WBN)**  
**Special Report**  
**Loose Part Detection System (LPDS)**

Description of the WBN LPDS:

The WBN LPDS provides the capability to detect acoustic disturbances indicative of loose parts within the reactor coolant system pressure boundary. The six channels (designated as Channels 1 through 6) of this system have two sensors located at each of the six natural collection regions; the top and bottom plenums of the reactor vessel and the primary coolant inlet plenum to each steam generator. One sensor at each of the six locations is an active sensor and the other is an installed spare sensor. The six redundant instrumentation channels are physically separated, starting at the sensor location and extending out to the containment electrical penetrations.

The principal components for the LPDS are located in an electrical panel designated as 1-R-139. This panel is located in the control building at elevation 708.0 in the Unit 1 auxiliary instrument room. The six channels of the system include alarm units which, when their set threshold is exceeded, provide an alarm in the main control room. This alarm is indicated on an annunciator window which is common to the six channels. Separate alarm indication for each of the channels is also provided on 1-R-139. The alarm function also automatically starts a frequency-modulated tape recorder to record the disturbance. All six channels for loose part monitoring are individually recorded. An audio monitor provides a capability to "listen" audibly to the output signal of a selected channel.

Problem Encountered with the LPDS:

Technical Requirement (TR) 3.3.6, "Loose-Part Detection System (LPDS)," defines the controls for operation of the system. Condition A of TR 3.3.6 was entered on July 26, 2001, due to repeated alarms on Channel 4 of the LPDS. Appropriate sections of Technical Instruction (TI) 34.03, "Audio Monitoring of the Loose Parts Monitoring System," were performed to confirm that the alarms were not valid.

Immediate Action Taken:

At the time the Channel 4 alarm problem occurred, WBN Unit 1 was at 100% power. Therefore, the actions taken in response to the alarming channel were limited to the components and wiring which are outside containment. In an effort to determine a cause for the alarms, measures were taken to establish if any components in the system were malfunctioning. Additional steps were taken to clean component contacts and to check electrical wiring connections to ensure the connections were properly terminated. These actions had no effect on the malfunctioning alarm for Channel 4. Prior to the problems encountered on July 26, 2001, a temporary alteration (TA) had been implemented in an effort to address the false alarm problem. The TA made wiring changes to certain LPDS channels and added isolation devices. After considering the scope of the actions that had been implemented without resolving the problem, TVA decided to disable

**Enclosure 1**  
**Watts Bar Nuclear Plant (WBN)**  
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the alarm function for Channel 4. The disabling of the alarm was performed in accordance with TVA standard department procedure, OPDP-4, "Annunciator Disablement." This procedure provides the controls for the approval of the disablement of the alarm along with the tracking of the disabled condition to ensure it is properly restored.

In addition to the above actions, the requirements of TI 34.03 are also being implemented. This TI is implemented weekly and requires operations personnel to monitor the audio channels of the system for loose parts.

Basis for LPDS Special Report:

TVA plans to take no further action to restore the alarm functions for Channel 4 until the Cycle 4 refueling outage. Therefore, the Channel 4 alarm function will be disabled for longer than the 30 days. The "Required Action" for Condition A of TR 3.3.6 indicates that a report must be submitted to NRC whenever one or more channels of the LPDS are inoperable for greater than 30 days.

Planned Corrective Actions:

TVA has developed a plan to restore the LPDS to an operable condition which will be implemented during the upcoming Unit 1 Cycle 4 refueling outage. The plans currently include the following modifications to the system:

1. Design Change Notice (DCN) 50906 will initiate changes to improve the grounding scheme and to increase the common mode rejection capability of the existing equipment.
2. Work Order (WO) 00-013967-000 will repair the grounding scheme on the sensors inside containment.

TVA is also investigating replacement of the entire LPDS. No specific plans or schedules are developed at this time pending the results of the changes that will be implemented in the Cycle 4 outage.

**Enclosure 2**  
**Watts Bar Nuclear Plant (WBN)**  
**Special Report**  
**Loose Part Detection System (LPDS)**

**Commitment List**

1. TVA has developed a plan to restore the LPDS to an operable condition which will be implemented during the upcoming Unit 1 Cycle 4 refueling outage.