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TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

September 25, 1979

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

OFFICE OF INSPECTION AND ENFORCEMENT BULLETIN 79-13 REVISION 1 - RII:JPO 50-327, 50-328, 50-390, 50-391 - SEQUOYAH AND WATTS BAR NUCLEAR PLANTS

In response to your August 30, 1979, letter to H. G. Parris which transmitted Revision 1 to OIE Bulletin 79-13, enclosed is our response. Followup reports will be submitted 30 days after each of the scheduled inspections.

If you have any questions concerning this matter, please get in touch with D. L. Lambert at FTS 854-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

for L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure
cc: Mr. Victor Stello, Jr., Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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ENCLOSURE

RESPONSE TO IEB 79-13 REVISION 1

SEQUOYAH NUCLEAR PLANT 50-327, 50-328

Item 5a

Unit 1--The specified nozzle inspections have been completed with no relevant indications being revealed. A visual inspection of feedwater system piping supports and snubbers inside containment is scheduled to begin September 24, 1979.

Unit 2--The required inspections will be performed after hot functional testing which is scheduled for June 1980.

Item 5b

The Emergency Operating Instruction, EOI-2, Part B, addresses the consequences of a loss of secondary coolants. The major topics addressed are symptoms, automatic actions, immediate operator actions, subsequent operator actions, recovery, and a discussion of the effects of a main feedwater line break. Also included is a leak identification procedure in logic form.

The symptoms listed in the procedure are those most probable to give indications and initiate control room alarms. They are associated with either a reactor coolant system heatup, caused by a feedwater line break upstream of the feedwater line check valves outside containment, or a reactor coolant system cooldown, due to break downstream of feedwater line check valves.

The automatic actions listed in the procedures are those which will or could result from a feedwater line break. For example: reactor trip at low-low steam generator water level (15 percent), etc.

The immediate operator actions listed in the procedure are those which will be followed by the operator to verify that proper automatic actions have taken place. Also, actions are listed that he must immediately take to mitigate the consequences of the accident.

The subsequent operator actions listed in the procedure are those which, when taken following the immediate actions, will help to mitigate the consequences of the event. The reactor coolant system is further stabilized by following the accident recovery section which outlines the steps to follow during a longer recovery period.

A discussion of the accident is in the last section of EOI-2B. The break location possibilities and the consequences or effects at the different locations are also discussed.

Item 5c

1. Humidity Monitoring

The humidity detector system offers another means of detecting leakage into the containment. Two humidity sensors (one in the lower compartment and one in the upper compartment) are installed within each containment. The humidity detector system consists of a probe which is sensitive to moisture in the air, independent of its absolute temperature. The

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humidity probe uses a resistance temperature detector (RTD) to measure the equilibrium temperature of a lithium chloride solution and this temperature can be referenced to dewpoint temperature, vapor pressure, or another equivalent of absolute humidity. The RTD is the input to a temperature transmitter which regulates a current signal proportional to the temperature of the RTD. Any water vapor buildup originating from any system leakage within the containment (such as reactor coolant, steam, or feedwater) will be detected by this sensor.

The ice condenser has a negligible effect on the humidity detector sensitivity for all coolant leaks which do not open the inlet doors.

The humidity detector (both lower and upper compartments) output is recorded on panel M-10 in the main control room. Visual and audible alarms are initiated on main control room panel M-5 on a high rate of increase of moisture content. The humidity detector output is also transmitted to the computer and moisture recorder in the control room.

The humidity detector system is sensitive to leakage in the order of 2 to 10 gpm, depending on the cooling water temperature, containment air temperature variation, and containment air recirculation rate. It is also sensitive to both radioactive and nonradioactive discharge. The humidity detector itself has a sensitivity of $\pm$ 2 percent absolute humidity. Response time for the system ranges from approximately 10 minutes for a 10-gpm leak to approximately 50 minutes for a 2-gpm leak. The system is an indirect indication of leakage to the containment in accordance with Regulatory Guide 1.45, C.3.

2. <u>Containment Floor and Equipment Drain Sump and Containment Auxiliary Floor and Equipment Drain Sump (2 Sumps)</u>

Both of the above sumps (located outside the crane wall) are designed to collect liquid from the containment floor drains and the containment equipment drains (located in the bottom of the reactor cavity). A break in the feedwater system will result in an increase in water level in the two containment sumps, both of which are continuously monitored by level switches.

Gross leakage is indicated by the frequency of operation of the containment floor and equipment drain sump pump, as indicated by running time meters. The containment floor and equipment drain sump level change-rate instrumentation consists of a level transmitter; a rate-of-change timing and alarm system /which actuates high alarm contact when level change-rate (inches/hr) exceeds set rate corresponding to a sump inflow rate of 1 gpm/; and a main control indicator and annunciators (visual and audible). The rate-of-change timing and alarm system actuates a high alarm contact when the level change-rate (inches/hr) exceeds a set rate corresponding to a sump inflow rate of 1 gpm. The sensitivity of the combined instrumentation is such that a 1-gpm inflow rate can be detected in approximately one hour.

Drains outside the polar crane wall flow to the containment floor and equipment drain sump. Drains inside the polar crane wall flow to the auxiliary sump. The auxiliary floor and equipment drain sump level change-rate instrumentation consists of two level transmitters, two level indicators in the control room, a rate-of-change alarm (actuated by computer upon an approximate 1-gpm change), and a high-level alarm in the control room. The sensitivity is such that a 1-gpm inflow rate can be detected in approximately one hour.

The Surveillance Instruction, SI-137.1, will verify that the unidentified leakage is less than or equal to 1 gpm. This is accomplished by measuring the leakage into both the containment floor and equipment drain sump and the containment auxiliary floor and equipment drain sump. If the leakage rate is determined to be greater than 1 gpm, then the ratio of the sumps' isotopic activity to the reactor coolant system's isotopic activity will be utilized to determine how much of this leakage is from the reactor coolant system. Leakage determined not to be from the reactor coolant system is assumed to be from other sources, of which feedwater is a possibility.

Gross leakage is indicated by the steam flow/feedwater flow mismatch indication in the control room, increase in containment pressure and temperature, moisture alarms, and high sump level alarms. Continuous condensate makeup from condensate storage tank to the hotwell is generally useful only for detection of leaks much larger than 10 gpm.

Item 6

Unit 1--Steam generator feedwater nozzle-to-piping welds have been inspected by both radiography and ultrasonics as required by item 1a with no relevant indications found. This inspection was completed in July 1979. The results of inspections specified in item 1c will be reported within 30 days after completion.

Unit 2--A written report as required by this item will be provided to NRC within 30 days after the tests referred to in item 1 are completed.

WATTS BAR NUCLEAR PLANT 50-390, 50-391

Item 5a

Unit 1--The present schedule is for hot functional testing to be completed by mid-May 1980. The required inspection will be performed in the May-through-September 1980 time period before initial fuel loading.

Unit 2--The present schedule is for hot functional testing to be completed by mid-February 1981. The required inspection will be performed in the February-through-June 1981 time period before initial fuel loading.

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Item 5b

The Emergency Operating Instruction, EOI-2, addresses the response to a feedwater line break accident. This instruction is presently being revised and will provide adequate instructions when completed. This procedure will address the symptoms, automatic actions, immediate operator and subsequent operator actions, recovery, and a discussion of the effects of a main feedwater line break. Also included will be a leak identification procedure. This procedure will contain information similar to the Sequoyah Nuclear Plant instruction. This revision will be completed by October 15, 1979.

Item 5c

The Surveillance Instruction, SI-4.4.6.2.d.1, will be implemented to perform a reactor coolant inventory balance and determine both identified and unidentified leakage from the system. All unidentified leakage to the containment is monitored by the containment floor and equipment drain sump level monitors. Moisture is condensed from the containment atmosphere by the air coolers and then piped to the sump. The level monitors continuously measure the level rise in the sump, which is converted to an inflow rate. The containment floor and equipment drain sump level instruments can detect a leak as small as 1 gpm. The humidity and temperature monitors are used to assist in identifying and locating leakage. The containment air particulate monitor and radioactive gas monitor provide assistance in determining the origin of the leakage.

Item 6

A written report as required by this item will be provided to NRC within 30 days after the tests referred to in item 1 are complete.