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MAR 19 1993

U.S. Nuclear Regulatory Commission
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Gentlemen:

In the Matter of the Application of	)	Docket Nos. 50-390
Tennessee Valley Authority	)	50-391

WATTS BAR NUCLEAR PLANT (WBN) Units 1 and 2 - NUREG-0737, ITEM II.B.1 - REACTOR COOLANT SYSTEM (RCS) VENTS - SUPPLEMENTAL INFORMATION (TAC NUMBERS M84776 AND M84777)

This letter provides the supplemental information to NRC's concerns discussed in a teleconference on January 19, 1993, with NRC reviewer W. Lyons and NRC Project Manager P. Tam. These concerns resulted from the review of TVA's revised submittal on the subject NUREG item dated October 2, 1992.

The NRC requested that each of the responses discussed in the teleconference be formally submitted in order to complete the review. The enclosure provides TVA's response to each of these concerns.

If you have any additional questions, please telephone John Vorees at (615) 365-8819.

Very truly yours,

W. J. Museler

William J. Museler

Enclosure
cc: See page 2

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ENCLOSURE

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As requested by NRC reviewer W. Lyons, the following provides TVA's response to each of the questions discussed in a teleconference on January 19, 1993. These questions resulted from NRC's review of TVA's revised submittal dated October 2, 1992, concerning NUREG-0737, Item II.B.1.

Question 1a

What is the elevation of the bottom of the upper head injection (UHI) standpipe relative to the inside top of the reactor vessel head?

Response 1a

The elevation of the bottom of the reactor vessel head vent, the former UHI head adapter, relative to the inside top of the reactor vessel head is approximately 5 feet 1-1/2 inches. The Westinghouse System Description states that the Reactor Vessel Head Vent System (RVHVS) is capable of venting one-half of the Reactor Coolant System (RCS) volume of hydrogen in one hour. The RVHVS was added to the RCS to comply with the requirements of NUREG-0737, Item II.B.1. The purpose of the RVHVS is to mitigate voiding in the upper head that could inhibit natural circulation cooldown. The Westinghouse WCAP-12334 concerning the WBN natural circulation cooldown specifically discussed the letdown through the RVHVS to mitigate voiding. This WCAP was submitted to NRC by TVA on July 11, 1991, and, subsequently, approved by NRC in a letter dated July 14, 1992.

Question 1b

If not at the top of the head, are there any other flow passages that relieve gas from the "unvented" portion of the head?

Response 1b

The RVHVS was installed specifically to provide the operator flexibility during both normal as well as accident mitigation operations. Air venting during plant startup, system venting during plant shutdown, or postaccident mitigation of nondesign basis events are possible periods of RVHVS usage. Westinghouse has determined that the "unvented" portion of the head will not adversely affect the ability of the core to be covered. A high point vent with a manual valve is provided as part of the Reactor Vessel Level Instrumentation System (RVLIS). This valve can not be operated from the control room. This vent is primarily used for venting the RCS during filling of the reactor and is not designed for postaccident use.

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Question 2

What is the elevation of the bottom of the UHI standpipe relative to the inside top of the hot leg nozzle?

Response 2

The elevation of the bottom of the reactor vessel head vent, the former UHI standpipe, relative to the inside top of the hot leg nozzle is approximately 116 inches.

Question 3

Describe labeling and separation of the valve controls. Are they distinctly labeled and separated?

Response 3

The Control Room panel labeling is separate and distinct. TVA described this in the Detailed Control Room Design Review (DCRDR) Supplemental Summary Report submitted to NRC on February 23, 1990.

Question 4

Is throttle valve position indicated in the Control Room?

Response 4

Yes, the position of the throttle valve is indicated in the Control Room. The throttle valve enables the operator to regulate the release rate of the noncondensible gases and/or steam as well as minimize the dynamic and thermal stresses on piping outside of the reactor coolant pressure boundary. (See Final Safety Analysis Report (FSAR), Section 5.5.6.2).

Question 5

Is RCS design for 2485 psig and 650°F?

Response 5

Yes, as stated in the FSAR Section 5.2.1.2, "Design Parameters," the RCS design pressure and temperature is 2485 psig and 650°F, respectively.

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Question 6

Is all piping and equipment designed and fabricated from the orifice to the first anchor downstream of the outboard valves in accordance with the American Society of Mechanical Engineers (ASME) Code, Section III, Class 2 requirements? Is everything in piping and equipment classified as Seismic Category I and Safety Class 1 or 2, as appropriate?

Response 6

The piping from the orifice through the outboard valve is ASME, Section III, Category I, Class 1 or Class 2 piping, and the piping downstream of the outboard valve is American National Standards Institute (ANSI) B31.1, Category I(L).

Question 7

Can the Reactor Coolant Vent System (RCVS) be tested for operability by cycling each valve through a full cycle from the Control Room?

Response 7

Yes, the valves can be cycled from the Control Room.

Question 8

Is the RCVS tested in accordance with subsection IWV of Section XI of ASME Code for Category B valves?

Response 8

Yes, the RVHVS is tested in accordance with IWV for Category B valves.

Question 9

Are the valves seismically designed and qualified to IEEE 344-75 as supplemented by Regulatory Guide (RG) 1.100, RG 1.92, and Standard Review Plan (SRP) 3.9.2, 3.9.3, and 3.10?

Response 9

The vent valves were supplied by Westinghouse and seismically qualified by Westinghouse. As stated in the previous letter dated October 2, 1992, the vent valves are qualified to IEEE 344-1975. RG 1.100 endorses IEEE 344-1975. These valves also conform to the intent of RG 1.92 and SRP Sections 3.9.2, 3.9.3, and 3.10.

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Question 10

Are the valves on the list of electrical equipment environmentally qualified (EQ) in accordance with 10 CFR 50.49? Has the Staff found the (EQ) program at WBN acceptable? If so, reference the approval letter.

Response 10

Yes, TVA's Equipment Management System lists the subject valves as 10 CFR 50.49 valves. The 10 CFR 50.49 Environmental Qualification Program for WBN is still under the NRC staff review.

Question 11

Are the vent valves not used unless level instrumentation shows inadequate level not acceptable - what if superheat via thermocouples?

Response 11

As discussed and agreed to in the teleconference, RVLIS temperatures and pressures are accounted for in the inadequate core cooling monitoring (ICCM) system by appropriate algorithms. Superheat is accounted for in the algorithms. See WBN FSAR Section 5.5.6.2. and Table 7.5-1. The FSAR Section 5.5.6.2 states "The system should not be used unless an inadequate water level is determined in the reactor vessel by RVLIS."

Question 12

Has the RVHVS been evaluated for missiles and spray by application? If so, reference document? Were there any significant impacts?

Response 12

Wall cracks are not postulated for high energy piping one-inch or less, as delineated in the WBN design criteria for evaluating the effects of pipe failure inside and outside containment. Generated missiles are, likewise, not considered as credible events for one-inch or less piping size.

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Question 13

Is the RVHVS designed to pass noncondensible gases, steam, water, or mixture thereof?

Response 13

Westinghouse added the use of the RVHVS as a safety-grade letdown path. The Westinghouse system description and the WBN FSAR, Section 5.5.6.1, state that the RVHVS considers only noncondensible gases or steam that may impair emergency core cooling or natural circulation cooling. Although not explicitly stated, water and two-phase flow through the RVLIS would fall under the abnormal or emergency situation when the RVHVS functions as a reactor vessel vent. The design of the support system adequately bounds the various phase mixtures. The WBN calculation for fluid transient event identification for the RCS and the WBN piping analysis calculations cover the water and two-phase flow conditions.

Question 14

Can a single failure open an inboard and outboard valve spontaneously?

Response 14

The vent valves are powered by different vital power trains and on loss of power, the valves fail to the close position. Electrical separation to prevent the valves from spuriously opening due to fire is also provided. No postulated single failure event would cause inoperability of both vent paths.

Question 15

Has piping been designed and supported to withstand vibration forces?

Response 15

Flow-induced vibration is not considered in the design; however, piping systems are monitored for vibrations at full flow during preoperational testing. If unacceptable vibration is present, supports are realigned to bring vibration into acceptable limits.