July 27, 2006

Mr. Karl E. Singer
Chief Nuclear Officer and
Executive Vice President
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNIT 1 - REVIEW OF LICENSEE RESPONSE TO NRC GENERIC LETTER 97-04, "ASSURANCE OF SUFFICIENT NET POSITIVE SUCTION HEAD FOR EMERGENCY CORE COOLING AND CONTAINMENT HEAT REMOVAL PUMPS" (TAC NO. MC3392)

Dear Mr. Singer:

By letter dated May 6, 2004 (Agencywide Documents Access and Management System [ADAMS] Accession Number ML041280621), the Tennessee Valley Authority (TVA, licensee) provided an updated response to Nuclear Regulatory Commission (NRC) Generic Letter 97-04, "Assurance of Sufficient Net Positive Suction Head (NPSH) for Emergency Core Cooling and Containment Heat Removal Pumps" for Browns Ferry Nuclear Plant (BFN), Unit 1.

BFN Unit 1 has been in an extended outage since 1985. TVA is proposing to return the unit to service and is, therefore, responding to NRC generic communications that were not answered while BFN Unit 1 was shut down.

The NRC issued Generic Letter 97-04 on October 7, 1997. This generic letter requested information on the design basis analyses used to determine the available NPSH of the emergency core cooling system and containment heat removal pumps. No actions were requested other than providing the requested information. The staff has reviewed the TVA's updated response to NRC Generic Letter 97-04 for BFN Unit 1. Our evaluation is attached.

If you have any questions, please contact me at (301) 415-4041.

Sincerely,

/RA/

Margaret H. Chernoff, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-259

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

UPDATED GENERIC LETTER 97-04 RESPONSE

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNIT 1

DOCKET NO. 50-259

1.0 INTRODUCTION

By letter dated May 6, 2004 (Agencywide Documents Access and Management System [ADAMS] Accession Number ML041280621), the Tennessee Valley Authority (TVA, licensee) provided an updated response to NRC Generic Letter (GL) 97-04, "Assurance of Sufficient Net Positive Suction Head (NPSH) for Emergency Core Cooling and Containment Heat Removal Pumps" for Browns Ferry Nuclear Plant (BFN), Unit 1.

BFN Unit 1 has a BWR4 [boiling-water reactor] nuclear steam supply system with a Mark I containment. Unit 1 has been idle since 1985. The licensee is proposing to return Unit 1 to service and is, therefore, responding to NRC communications that were not answered while Unit 1 was shut down.

The NRC issued GL 97-04 on October 7, 1997. This generic letter requested information on the design basis analyses used to determine the available NPSH of the emergency core cooling system (ECCS) and containment heat removal pumps. No actions were requested other than providing the requested information.

2.0 REGULATORY EVALUATION

Browns Ferry, Unit 1, was designed and licensed to the draft general design criteria (GDC) for nuclear power plants, dated November 22, 1965. Two of these criteria are applicable to NPSH considerations for the ECCS and containment heat removal pumps.

Criterion 10

> Heat removal systems must be provided which are capable of accommodating core decay heat under all anticipated abnormal and credible accident conditions, such as isolation from the main condenser and compete or partial loss of primary coolant from the reactor.

Criterion 18

> Provisions must be made for the removal of heat from within the containment structure as necessary to maintain the integrity of the structure under conditions described in Criterion 17 above. [GDC 17 states that the containment must be designed and fabricated to accommodate or dissipate without failure the pressures and temperatures associated with the largest credible release of energy.] If engineered safeguards are needed to prevent containment vessel failure due to heat released under such conditions, at least two independent systems must be provided, preferably of different principles. Backup equipment (e.g., water and power systems) to such engineered safeguards must be redundant.

In order to satisfy both GDC, adequate available NPSH must be maintained for the ECCS and containment heat removal pumps.

3.0 TECHNICAL EVALUATION

GL 97-04 required licensees to respond within 30 days as to whether the requested information will be submitted and whether or not the requested information would be submitted within the requested time period (within 90 days of the date of the generic letter).

TVA satisfied this requirement with a response dated October 31, 1997, which stated that Unit 1 was in an extended outage and TVA would evaluate the impact of NPSH for ECCS and containment heat removal pumps prior to startup.

By letter dated January 5, 1998 (NUDOCS 9801130288), TVA provided the information requested in GL 97-04 for Units 2 and 3.

The licensee stated in the May 6, 2004, response to GL 97-04 that the most recent Browns Ferry, Unit 1 design basis NPSH analysis reviewed and approved by the NRC is described in a June 28, 1974, letter from the Atomic Energy Commission (predecessor to the NRC) issuing Amendment 3 to the Browns Ferry Nuclear Plant, Unit 1 operating license.

Browns Ferry, Unit 1 has been shut down since 1985. The licensee is preparing to restart Unit 1. Unit 1 is currently licensed for a maximum thermal power of 3293 megawatts thermal (Mwt). The licensee has requested approval to operate Unit 1 upon restart at 3952 Mwt. The NRC staff is currently reviewing this request. As part of this review, the staff will review the NPSH analyses for the core spray and residual heat removal pumps. This review will cover all aspects of NPSH addressed by GL 97-04.

4.0 CONCLUSION

The licensee has satisfied the required actions of GL 97-04. The information provided in the licensee's May 6, 2004, letter will be considered as part of the review of the adequacy of the available and required NPSH of the ECCS and containment heat removal pumps during the extended power uprate review of Browns Ferry Unit 1.

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Date: July 27, 2006

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