

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

6N 38A Lookout Place

MAY 12 1989

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

Gentlemen:

In the Matter of the Application of )  
Tennessee Valley Authority )

Docket Nos. 50-390  
50-391

WATTS BAR NUCLEAR PLANT (WBN) - CONTAINMENT ISOLATION - RESPONSE TO NRC'S  
REQUEST FOR ADDITIONAL INFORMATION

- References:
1. Letter from NRC to TVA dated February 15, 1989, "Request for Additional Information Regarding Corrective Action Program (CAP) Plan for Containment Isolation - Watts Bar Nuclear Plant, Units 1 and 2"
  2. Letter from NRC to TVA dated March 15, 1989, "Further Clarification Regarding Request for Additional Information Dated February 12, 1989, for Containment Isolation - Watts Bar Nuclear Plant, Units 1 and 2"
  3. Letter from TVA to NRC dated October 20, 1988, "CAP Plan for Containment Isolation"

This letter provides TVA's response to NRC's request for information (reference 1) and the clarification of that request for information (reference 2) regarding containment isolation at WBN.

As requested, the enclosure identifies closed systems outside containment with isolation valves inside containment. The FSAR and SER sections which discuss the evaluation provisions of SRP-6.2.4, section II.6.e, are also identified. TVA considers the use of closed systems outside containment at WBN to be consistent with the conclusions previously drawn in the WBN SER.

Upon review of references 1 and 2 and consideration of the NRC staff positions expressed during teleconferences on February 14, February 17, and April 10, 1989, TVA reexamined the need for a containment isolation CAP. TVA agrees with the NRC staff position that a single inboard isolation valve which meets the requirements of GDC 55 or 56 is at least as conservative as a single outboard isolation valve for use in conjunction with a closed system outside containment. Further, WBN's closed system design, as described in the FSAR, meets the intent of GDC 55 and 56 and SRP-6.2.4, II.6.e. Because the perceived need to replace the previously approved closed system isolation barriers is no longer applicable, TVA is withdrawing the WBN containment isolation CAP and the corresponding commitments identified in reference 3. The upgrades described in the CAP which are not directly related to closed system design will be tracked and completed individually under TVA's CAQR and DCN processes. As discussed with the NRC staff on May 3, 1989, NRC review of this position will be documented by a containment isolation SER.

8905240327 890512  
PDR ADCK 05000390  
A PDC

An Equal Opportunity Employer

*D030*  
*11*

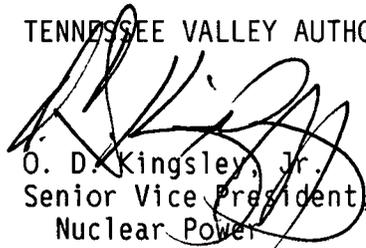
U.S. Nuclear Regulatory Commission

**MAY 12 1989**

Acronyms and abbreviations used in this submittal are listed at the end of the enclosure. No new commitments are contained in this submittal. Any questions should be directed to T. W. Horning of WBN Site Licensing, at (615) 365-3381.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



O. D. Kingsley, Jr.  
Senior Vice President,  
Nuclear Power

Enclosure

cc (Enclosure):

Ms. S. C. Black, Assistant Director  
for Projects  
TVA Projects Division  
U.S. Nuclear Regulatory Commission  
One White Flint, North  
11555 Rockville Pike  
Rockville, Maryland 20852

Mr. B. A. Wilson, Acting Assistant Director  
for Inspection Programs  
TVA Projects Division  
U.S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, NW, Suite 2900  
Atlanta, Georgia 30323

U.S. Nuclear Regulatory Commission  
Watts Bar Resident Inspector  
P.O. Box 700  
Spring City, Tennessee 37381

## ENCLOSURE

Table 1 provides references to WBN FSAR information related to the SRP acceptance criteria for the use of closed systems outside containment as containment isolation barriers.

SRP-6.2.4, II.6.e (NUREG 0800, revision 2) describes the following conditions which should be met:

1. ESF system reliability is greater with only one isolation valve.
2. A single active failure can be accommodated with only one isolation valve in the line.
3. The system should be closed outside containment and
  - 3a. should be protected from missiles
  - 3b. should be classified Safety Class 2
  - 3c. should be designed to seismic category I standards
  - 3d. should have a design temperature and pressure rating at least equal to that for containment
  - 3e. should be able to be leak tested unless it can be shown that the system integrity is being maintained during normal plant operations.
4. The single valve is outside containment, and the piping between containment and the valve should be enclosed in a leak-tight or controlled leakage housing.

The referenced FSAR sections were taken from the FSAR as updated by amendment 62. No changes related to the acceptability criteria for use of closed loop outside containment have been made in the referenced FSAR statements since the SER review (June 1982). SER-6.2.4 includes general statements of NRC approval of the WBN CIS design. The existing WBN CIS design approach is consistent with the design approved by NRC in the SER (which was based on a detailed comparison to SQN's design at the time). Therefore, TVA believes that the conclusions drawn in the SER remain valid.

SRP-6.2.4, II.6.e, addresses the use of a closed system and a single isolation valve, both outside containment. As noted by the NRC staff during the February 17, 1989, teleconference on this subject, the use of an inboard isolation valve satisfies GDC 55 or 56 requirements and is considered acceptable for use in conjunction with a closed system outside containment, provided the outboard closed system satisfies the SRP acceptance criteria.

## ENCLOSURE

Leak-tight or controlled leakage housings around the single isolation valves are not required if the valves are conservatively located inside containment in accordance with GDC 55 or 56. Table 2 lists the penetrations utilizing closed systems outside containment with inboard isolation valves and the corresponding FSAR figure numbers. None of these penetrations have a second containment isolation valve installed in series.

## ENCLOSURE

Table 1

<u>SRP Acceptance Criteria</u>	<u>References</u>
1. ESF Reliability	FSAR 6.2.4.1 (Note A)
2. Single Failure	FSAR 6.2.4.2.2
3. Closed System Outside Containment	FSAR 6.2.4.1
3a. Missile Protection	FSAR 6.2.4.1; FSAR 3.5; SER 3.5
3b. Class 2	FSAR 6.2.4.1
3c. Seismic Category I	FSAR 6.2.4.1
3d. Design Temp & Pressure (Note B)	FSAR 6.2.4.1
3e. System Integrity	FSAR 6.2.4.2.2
4. Single Outboard Valve	This condition is not considered applicable for closed systems outside containment utilizing a single inboard isolation valve which satisfies GDC 55 or 56.

---

NOTE A: Mentioned in FSAR 6.2.4.1 only in regard to a closed system and a single outboard valve. If fail-closed outboard CIS valves were added (as discussed with NRC on April 10, 1989, teleconference) in lines required to operate for accident mitigation, the reliability of the ESF systems could be degraded.

NOTE B: Some containment penetration design temperatures have been identified which are below the required containment design temperature. Resolution is being handled in accordance with TVA's CAQR program.

## ENCLOSURE

Table 2

<u>PENETRATIONS UTILIZING CLOSED SYSTEM OUTSIDE CONTAINMENT WITH INBOARD ISOLATION VALVE</u>		<u>FSAR FIGURE</u>
x-16	CVCS Normal Charging	6.2.4 - 22K
x-17	RHR Hot Leg Injection	6.2.4 - 22P
x-20A, B	RHR Cold Leg Injection	6.2.4 - 22BB
x-21	SIS Hot Leg Injection	6.2.4 - 22J
x-22	GCP Pump Discharge thru BIT	6.2.4 - 22Q
x-24	SI Relief Line to PRT	6.2.4 - 22O
x-32	SIS Hot Leg Injection	6.2.4 - 22P
x-33	SIS Cold Leg Injection	6.2.4 - 22Q
x-43A, B, C, D	RCP Seal Injection	6.2.4 - 22A
x-48A, B	Containment Spray	6.2.4 - 22F
x-49A, B	RHR Spray	6.2.4 - 22F
x-92A, 92B, 99, 100	Hydrogen Analyzer (Note A)	6.2.4 - 22DD
x-107	RHR Supply from RCS	6.2.4 - 22X
x-108, 109	Upper Head Injection (UHI) (Note B)	6.2.4 - 22N

NOTE A: CAQRs exist for the design of the hydrogen analyzer system. They are being resolved in accordance with TVA's CAQR program.

NOTE B: The UHI System is being removed from plant design, as noted in FSAR changes submitted July 26, 1988, by letter from TVA to NRC.

## ENCLOSURE

LIST OF ACRONYMS AND ABBREVIATIONS USED

BIT	Boron Injection Tank
CAP	Corrective Action Program
CAQR	Condition Adverse to Quality
CCP	Centrifugal Charging Pump
CIS	Containment Isolation System
CVCS	Chemical and Volume Control System
DCN	Design Change Notice
ESF	Engineered Safety Features
FSAR	Final Safety Analysis Report
GDC	General Design Criteria
NRC	Nuclear Regulatory Commission
PRT	Pressurizer Relief Tank
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RHR	Residual Heat Removal
SER	Safety Evaluation Report
SI	Safety Injection
SIS	Safety Injection System
SN	Sequoyah Nuclear Plant
SRP	Standard Review Plan
UHI	Upper Head Injection
WBN	Watts Bar Nuclear Plant