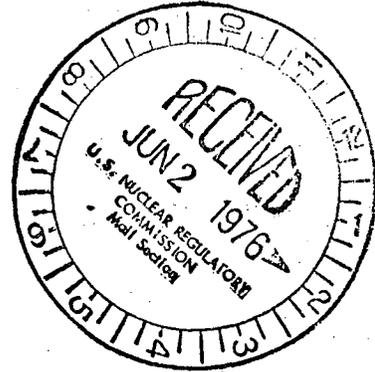




830 Power Building
TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

JUN 1 1978

Regulatory Docket File

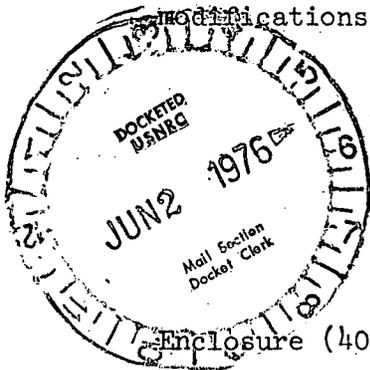


Mr. Benard C. Rusche, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Rusche:

In the Matter of the Application of) Docket Nos. 50-327
Tennessee Valley Authority) 50-328
50-390
50-391

Submitted herewith is Revision 3 to TVA report No. 72-22,
"Evaluation of the Effects of Postulated Pipe Failures
Outside of Containment for the Sequoyah Nuclear Plant, Units
1 and 2." This revision changes the schedule for plant
modifications.



Very truly yours,

J. E. Gilleland

J. E. Gilleland
Assistant Manager of Power

Enclosure (40)

5537

TENNESSEE VALLEY AUTHORITY
DIVISION OF ENGINEERING DESIGN

EVALUATION OF THE EFFECTS OF POSTULATED
PIPE FAILURES OUTSIDE OF CONTAINMENT
FOR SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2
72-22

| | Revision R0 | R1 | R2 |
|------------------|---------------|---------------|---------------|
| | Date 5/16/74 | 11/27/74 | 9/19/75 |
| Contractor | Randy Roman | G. O. Randall | R. E. Koppe |
| Sponsor Engineer | | B. B. Neely | B. B. Neely |
| Reviewed by | W. A. English | W. A. English | W. A. English |
| Recommended | W. A. English | W. A. English | W. A. English |
| Project Manager | R. M. Pierce | R. M. Pierce | R. M. Pierce |
| Approved | R. S. Roman | R. S. Roman | R. S. Roman |

Thermal Power Engineering Branches

Civil

Electrical

Mechanical

| | | | | | |
|----|-----|----|-------------|----|--------------------|
| RO | WWS | RO | HMC 7/24/74 | RO | LWL 8/15/75 EGG |
| R1 | WWS | R1 | HMC 7/24/74 | R1 | EGG EGG |
| R2 | WWS | R2 | HMC | R2 | EGG EGG |

Thermal Power Engineering Design Projects

Civil

Electrical

Mechanical

Plant Additions

| | | | | | | | |
|----|-----|----|-------------|----|-------------|----|--|
| RO | PNT | RO | 1008 KNA | RO | 1 | RO | |
| R1 | PNT | R1 | 1008 KNA | R1 | 1 | R1 | |
| R2 | PNT | R2 | 1008 | R2 | 1008 EGG | R2 | |

TENNESSEE VALLEY AUTHORITY
 DIVISION OF ENGINEERING DESIGN

EVALUATION OF THE EFFECTS OF POSTULATED
 PIPE FAILURES OUTSIDE OF CONTAINMENT
 FOR SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2
 72-22

| | | | |
|------------------|-------------------|--|--|
| | R3 | | |
| | Date 5/5/70 | | |
| Contractor | | | |
| Sponsor Engineer | B. B. Neely | | |
| Reviewed by | P. E. [Signature] | | |
| Recommended | W. A. English | | |
| Project Manager | E. D. [Signature] | | |
| Approved | R. G. [Signature] | | |

Thermal Power Engineering Branches

| | Civil | Electrical | Mechanical |
|----|-------------|----------------------|--------------------|
| R3 | [Signature] | R3 [Signature] 2WC/s | R3 [Signature] A2C |
| | | | |
| | | | |

Thermal Power Engineering Design Projects

| | Civil | Electrical | Mechanical | Plant Additions |
|----|-------|----------------|----------------|-----------------|
| R3 | PNT | R3 [Signature] | R3 [Signature] | R3 |
| | | | | |
| | | | | |



| | | |
|--|---|---------------------|
| Title: Postulated Pipe Failures Outside Containment | Sequoyah Nuclear Plant Units 1 and 2 | REVISION LOG |
|--|---|---------------------|

| Revision No. | DESCRIPTION OF REVISION | Date Approved |
|--------------|---|---------------|
| R1 | General revision - Revised report to incorporate evaluation of all systems (excluding field routing systems) possessing the the potential for affecting cold shutdown of the plant. | 11/1/74 |
| R2 | General revision - Revised report to incorporate evaluation changes resulting from the main steam and feedwater rerouting, other plant modifications, and design differences between Unit 1 and Unit 2. | 9/15/75 |
| R3 | Revision of section 6.5 - Revised section to change the schedule for incorporation modifications. | 5/5/76 |

6.4 Field Evaluation Effort

In addition to the evaluation whose results have been reported in sections 6-1 through 6-3 a field evaluation will be performed to determine unacceptable consequences of piping ruptures for the additional piping systems listed in section 3-3.

Rev 1

These systems include small piping, field routed piping and piping systems currently under revision. The sizes and pressures of these piping systems are such that their only potential for damage is through water spray on essential electrical equipment. If such potential is found during the field evaluation, barriers will be installed to divert water spray from sensitive equipment.

Rev 2

Due to the separation of essential conduit from high energy lines, the only potential for unacceptable damage to conduit occurs where essential conduit passes in close proximity to high pressure low energy lines. The determination of whether damage can occur will be based on a field survey to determine the exact "as built" relationship between the piping and conduit. Corrective action will be taken where required.

Rev 1

6.5 Schedule for Incorporating Modifications

Based upon the evaluation of postulated piping failures discussed above, certain modifications will need to be accomplished. All modifications required to prevent unacceptable events associated with each postulated break in the main steam, feedwater, and RHR lines and the steam supply line to the auxiliary feedwater turbine outside containment will be incorporated before the respective unit attains the 1 percent power level.

Rev 3

The initial phases of startup testing are conducted before attaining the 1 percent power level. The reactor coolant system will be at design temperature and pressure during this phase. The secondary side of the steam generators will also be at design temperature and pressure, but only out to the isolation valves. For system pressure control, steam will be dumped to the atmosphere through the relief valves which are inboard of the main steam isolation valves. The portions of main steam, feedwater, and RHR lines (outside the valve rooms) which require modification or addition of restraints will not be pressurized during the startup testing and will not present a hazard to plant safety. The auxiliary feedwater turbine steam supply line may be pressurized prior to the 1 percent power level. However, it is not required for safe shutdown nor will a break present a safety hazard during this period of plant startup. TVA therefore concludes that incorporation of all modifications to main steam, feedwater, and RHR lines and the auxiliary feedwater turbine steam supply line outside containment before attaining the 1 percent power level presents no undue risk to plant safety.

Rev 3

For all other piping systems outside of containment, modifications to prevent unacceptable events will be completed before 50 percent power is achieved. These modifications are included to mitigate the effects of a postulated critical crack. The modifications are for low-energy lines which involve pipe sleeves and spray barriers. This is an acceptable schedule for incorporation of these modifications because a pipe failure in the form of a critical crack does not produce immediate detrimental effects. Increased operator presence and surveillance in the auxiliary building during startup testing

Rev 3

will assure that any adverse environments caused by critical cracks are detected in a timely manner and corrective action is initiated. TVA concludes that incorporation of all modifications other than those to main steam, feedwater, and RHR lines and the auxiliary feedwater turbine steam supply line before 50 percent power presents no undue risk to plant safety.

Rev 3