

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

JUL 19 1989

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

Gentlemen:

In the Matter of)	Docket Nos.	50-259	50-390
Tennessee Valley Authority)		50-260	50-391
)		50-296	
)		50-327	
)		50-328	

RESPONSE TO GENERIC LETTER 89-08 - EROSION/CORROSION-INDUCED PIPE WALL THINNING

Enclosure 1 is TVA's response for Sequoyah, Browns Ferry, and Watts Bar Nuclear Plants for the subject generic letter. Our response provides the erosion/corrosion long-term implementation schedule for Watts Bar and describes the programs that are currently in place at Sequoyah and Browns Ferry Unit 2. TVA will utilize either the NUMARC or similar guidance on these programs. Enclosure 2 contains the commitments in this letter.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. H. Shell

R. H. Shell, Manager,
Regulatory Licensing

Subscribed and sworn to before
me on this 19th day of July 1989

Paulette H. White

Notary Public

My Commission Expires 11-4-92

Enclosures

cc: See page 2

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U.S. Nuclear Regulatory Commission

JUL 19 1989

cc (Enclosures):

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ENCLOSURE 1

TVA RESPONSE TO GL 89-08

WATTS BAR

Single-Phase Erosion/Corrosion:

The TVA response to NRC Bulletin No. 87-01 dated September 18, 1987, gives the details of the program to address single-phase erosion/corrosion. Since the issuance of TVA's response to NRC Bulletin No. 87-01, a design study utilizing the Nuclear Management and Resources Council (NUMARC) endorsed Chexal-Horowitz Erosion/Corrosion (CHEC) computer code has been completed for Watts Bar. The locations identified in the design study will be incorporated into a Technical Instruction (TI) that will define program details such as grid locations, frequency of inspection, responsibilities, procedures for performing inspections, and acceptance criteria.

Implementation of the TI will be performed prior to fuel load to establish baseline pipe conditions. Inspections will be performed at scheduled refueling outages to establish the rate of wall loss and whether revision to the inspection intervals, material replacement, or design changes are warranted.

Dual-Phase Erosion/Corrosion:

Baseline wall thickness data was acquired in early 1985 on extraction steam piping and high-pressure, moisture separator, reheater vent lines. Seventeen areas were grided and ultrasonically tested in accordance with TI 31.13. Sections on the turbine exhaust and heater drain piping have been identified as potentially suspect areas for steam erosion damage and are recommended to be monitored for wall degradation. The areas identified above will be supplemented by a design study utilizing the Chexal-Horowitz Erosion-Corrosion Methodology for Analyzing Two-Phase Environment (CHECMATE) computer program (sister to CHEC) in order to formulate a comprehensive program to assess suspect piping for erosion/corrosion damage at Watts Bar. A TI for dual-phase erosion/corrosion will be prepared and implemented.

Implementation of the TI will be performed before fuel load to establish baseline pipe conditions. Inspections will be performed at scheduled refueling outages to establish the rate of wall loss and whether revision to the inspection intervals, material replacement, or design changes are warranted.

SEQUOYAH

Single-Phase Erosion/Corrosion:

The TVA response to NRC Bulletin No. 87-01 dated September 18, 1987, gives the details of the program to address single-phase erosion/corrosion. The Electric Power Research Institute (EPRI) CHEC program, NUMARC guidelines, industry experience, and engineering judgment were used in selecting inspection locations.

SEQUOYAH (continued)

The surveillance instruction (SI) for single-phase flow is SI-733, "Wall Degradation Monitoring Program for the Feedwater/Condensate Piping, Turbine, and Heater Drain Lines." This program consists of 18 areas of feedwater piping, 11 areas of condensate piping, 19 areas on the heater drains and vents, 3 areas on the turbine drain lines, and 1 steam generator blowdown line (per unit). The inspections are performed during refueling or extended outages and have been completed twice on Unit 2 with Unit 1 scheduled for its second inspection during the Cycle 4 refueling outage.

Dual-Phase Erosion/Corrosion:

TVA has routinely performed visual and ultrasonic inspections during plant outages for dual-phase flow erosion/corrosion. Kellers equation was used to prioritize the components for inspection. The SI in use for dual-phase piping is SI-714, "Extraction Steam Pipe Wall Degradation Monitoring Program." This SI deals with the extraction steam piping that is located in the turbine building. There are 29 areas (per unit) currently inspected in this SI with additions and deletions of locations being dictated by experience. The inspections are performed during refueling or extended outages and have been completed twice on Unit 2 with Unit 1 scheduled for its second inspection during the Cycle 4 refueling outage.

BROWNS FERRY

Single-Phase Erosion/Corrosion (Unit 2):

TI 148 implements the single-phase flow monitoring requirements. This instruction requires pipe wall thickness measurements each outage at established monitoring locations. It also provides direction on trending of data as well as engineering review for any necessary corrective action. The monitoring points were selected using the NUMARC guidelines and the EPRI CHEC program. All inspections have been completed for Unit 2 restart.

Dual-Phase Erosion/Corrosion (Unit 2):

TI 140 implements the dual-phase flow monitoring requirements. This instruction requires pipe wall thickness measurements each outage at established monitoring locations. It also provides direction on trending of data as well as engineering review for any necessary corrective action. The monitoring points were selected using the NUMARC guidelines and the EPRI CHEC program. All inspections have been completed for Unit 2 restart.

Single/Dual-Phase Programs (Units 1 and 3):

Similar programs will be developed/implemented prior to each unit's restart once a definite restart schedule is established.

ENCLOSURE 2

COMMITMENTS

BROWNS FERRY

Implement for Units 1 and 3 prior to restart a long-term monitoring program (single- and dual-phase piping) as described in GL 89-08.

WATTS BAR

Single-Phase Erosion/Corrosion

1. The locations identified in the design study will be incorporated into a Technical Instruction (TI) that will define program details such as grid locations, frequency of inspection, responsibilities, procedures for performing inspections, and acceptance criteria.
2. Implementation of the TI will be performed prior to fuel load to establish baseline pipe conditions.
3. Inspections will be performed at scheduled refueling outages to establish the rate of wall loss and whether revision to the inspection intervals, material replacement, or design changes are warranted.

Dual-Phase Erosion/Corrosion

1. The areas identified above will be supplemented by a design study utilizing the Chexal-Horowitz Erosion-Corrosion Methodology for Analyzing Two-Phase Environment (CHECMATE) computer program (sister to CHEC) in order to formulate a comprehensive program to assess suspect piping for erosion/corrosion damage at Watts Bar.
2. A TI for dual-phase erosion/corrosion will be prepared and implemented.
3. Implementation of the TI will be performed before fuel load to establish baseline pipe conditions.
4. Inspections will be performed at scheduled refueling outages to establish the rate of wall loss and whether revision to the inspection intervals, material replacement, or design changes are warranted.