

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

TVA-SQN-TS-88-20

SEP 21 1988

10 CFR 50.90

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

Gentlemen:

In the Matter of)
Tennessee Valley Authority)

Docket Nos. 50-327
50-328

SEQUOYAH NUCLEAR PLANT (SQN) - ADDITIONAL INFORMATION FOR TECHNICAL SPECIFICATION CHANGE 88-20

Reference: TVA letter to NRC dated August 15, 1988, "Sequoyah Nuclear Plant (SQN) - Technical Specification Change 88-20"

The reference transmitted a proposed technical specification change to revise the upper head injection (UHI) system isolation setpoint and tolerances. This setpoint change was supported by an evaluation that justified reducing the minimum delivered UHI water volume. To support their review of the reference, NRC has requested that the following be provided:

1. Additional information and references regarding the evaluation/analyses performed in support of the reduced minimum delivered UHI water volume.
2. Additional information to demonstrate that an assumed discharge coefficient (C_D) of 0.6 did result in the most limiting peak clad temperatures (PCT) for the double-ended, cold-leg guillotine (DECLG) break with imperfect mixing of UHI water assumed in the vessel upper head.
3. Justification that the PCT penalties calculated in the 1986 timeframe for postulated guide-tube flexure failures and instrument tube filling during reflood are still bounding for the evaluation provided in the reference.
4. Indication of sufficient controls for determining UHI isolation switch operability as a result of varying ambient temperatures in the area of the UHI level switches.
5. Justification and documentation that sufficient conservatism/margin was maintained in the operability evaluations provided in the reference.

0130 880921
AFOCK 05000327
PDC

0030
11

U.S. Nuclear Regulatory Commission

SEP 21 1988

Information provided in an attachment to a September 14, 1988 Westinghouse Electric Corporation (W) letter to TVA addresses items 1, 2, and 3. The W letter is provided in its entirety as enclosure 1.

In response to item 4, TVA will revise the balance-of-plant temperature monitoring procedure to indicate that the UHI level switches are inoperable if the ambient temperature in the area of the switches exceeds the values used in Demonstrated Accuracy Calculation 1-LS-87-21 to determine temperature-induced reference water-leg error.

In regard to item 5, the evaluation used to determine the PCT impacts of reducing the minimum delivered UHI water volume is conservative in nature. The sensitivities used in the evaluation were developed from the UHI emergency core cooling system (ECCS) Evaluation Model. As such, the calculated PCT of 2,198 degrees Fahrenheit (F) is believed to be conservative and bounding for all postulated accident scenarios. However, to provide additional margin, SQN will implement two operational restrictions. First, the steam generator tube plugging limit will be administratively lowered from 10 percent to 5 percent. This effectively reduces calculated PCT by 22 degrees F. Second, the heat flux hot channel factor ($F_0(z)$) limit will be lowered from 2.237 to 2.15. This reduces the calculated PCT an additional 87 degrees F for the limiting imperfect mixing case and 96 degrees F for the limiting perfect mixing case. This results in PCTs of 2,089 degrees F and 2,067 degrees F for imperfect and perfect mixing, respectively, for the postulated DECLG break with $C_0 = 0.6$. The sensitivities used for obtaining this PCT margin are documented on pages 3, 4, and 5 of enclosure 1.


The reduction in $F_0(z)$ is also described in proposed technical specification change 88-28, submitted under separate correspondence.

Additionally, because the above changes in PCT are supported by sensitivity studies, a temporary exemption to certain requirements of 10 CFR 50.46(b)(1) will be pursued by separate correspondence.

Summary statements of commitments contained in this submittal are provided in enclosure 2. Please direct questions concerning this issue to Russell R. Thompson at (615) 870-7470.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


M. J. Ray, Manager
Site Licensing Staff

Enclosures
cc: See page 3

U.S. Nuclear Regulatory Commission

SEP 21 1988

Enclosures

cc (Enclosures):

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. F. R. McCoy, Assistant Director
for Inspection Programs
TVA Projects Division
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Sequoyah Resident Inspector
Sequoyah Nuclear Plant
2600 Igou Ferry Road
Soddy Daisy, Tennessee 37379

American Nuclear Insurors
Attention: Librarian
The Exchange, Suite 245
270 Farmington Avenue
Farmington, Connecticut 06032

Enclosure



September 14, 1988

Westinghouse Power Systems
Electric Corporation

Nuclear Technology
Systems Division
Box 355
Pittsburgh Pennsylvania 15230-0355

Mr. P. G. Trudel
Sequoyah Project Engineer
Tennessee Valley Authority
Sequoyah Nuclear Power Plant, DSC-A
P. O. 2000
Soddy Daisy, TN 37379

TVA-88-761
NS-OPLS-OPL-II-88-572
Ref. 1) TVA RD #428873
2) W G.O. CO-42680
3) TVA-88-746

TENNESSEE VALLEY AUTHORITY
SEQUOYAH UNITS 1 & 2
DECREASED UHI VOLUME DELIVERY LOCA SAFETY EVALUATION
(SECL-88-417, Revision 1)

Dear Mr. Trudel:

In accordance with our telecon of September 7, 1988, the LOCA safety evaluation provided in Reference 3 has been revised to reflect the impact of reducing F(Q) and SGTP, and a supplemental information document is being provided in response to the NRC request for additional information addressing the LOCA models referenced, clarification of the appropriate limiting breaks, and clarification of the effect of the postulated instrumentation thimble and guide tube flexure failures.

The revised LOCA safety evaluation, SECL-88-417, Revision 1, entitled, Safety Evaluation for a 50 Cubic Feet Decrease in the UHI Accumulator Deliverable Water Volume (LOCA, SGTR, Post-LOCA Long Term Core Cooling and Hot Leg Switchover Accident), is attached. This revision incorporates the impact of reducing F(Q) from 2.32 to 2.15 and the Steam Generator Tube Plugging (SGTP) level from 10% to 5%.

The supplemental information document is also attached and is entitled Supplemental Information to SECL-88-417, Revision 1.

If you have any comments or questions, please contact the undersigned.

Very truly yours,

WESTINGHOUSE ELECTRIC CORPORATION

T. A. Lordi
T. A. Lordi, Manager
ESSD Projects
Mid-South Area

L. V. Tomasic/tu
Attachment

- cc: D. W. Wilson
- R. W. Meadows
- R. C. Weir
- M. J. Ray
- W. R. Mangiante
- J. A. Vogel
- R. G. Davis
- S. J. Smith
- M. J. Burzynski
- R. E. Daniels

WESTINGHOUSE
NUCLEAR SAFETY EVALUATION CHECK LIST

- 1) NUCLEAR PLANT(S) SEQUOYAH UNITS 1 AND 2 (TVA/TEN)
- 2) CHECK LIST APPLICABLE TO: SAFETY EVALUATION FOR A 50 CU.FT. DECREASE IN
(subject of change) THE UHI ACCUMULATOR DELIVERABLE WATER VOLUME
- 3) The written safety evaluation of the revised procedure, design change or modification required by 10CFR50.59 has been prepared to the extent required and is attached. If a safety evaluation is not required or is incomplete for any reason, explain on Page 2.
Parts A and B of this Safety Evaluation Check List are to be completed only on the basis of the safety evaluation performed.

CHECK LIST - PART A

- (3.1) Yes X No _____ A change to the plant as described in the FSAR?
- (3.2) Yes _____ No X A change to procedures as described in the FSAR?
- (3.3) Yes _____ No X A test or experiment not described in the FSAR?
- (3.4) Yes X No _____ A change to the plant technical specifications
(Appendix A to the Operating License)?
- 4) CHECK LIST - PART B (Justification for Part B answers must be included on Page 2.)
 - (4.1) Yes _____ No X Will the probability of an accident previously evaluated in the FSAR be increased?
 - (4.2) Yes _____ No X Will the consequences of an accident previously evaluated in the FSAR be increased?
 - (4.3) Yes _____ No X May the possibility of an accident which is different than any already evaluated in the FSAR be created?
 - (4.4) Yes _____ No X Will the probability of a malfunction of equipment important to safety previously evaluated in the FSAR be increased?
 - (4.5) Yes _____ No X Will the consequences of a malfunction of equipment important to safety previously evaluated in the FSAR be increased?
 - (4.6) Yes _____ No X May the possibility of a malfunction of equipment important to safety different than any already evaluated in the FSAR be created?
 - (4.7) Yes _____ No X Will the margin of safety as defined in the bases to any technical specification be reduced?

If the answers to any of the above questions are unknown, indicate under 5) REMARKS and explain below.

If the answer to any of the above questions in 4) cannot be answered in the negative, based on written safety evaluation, the change cannot be approved without an application for license amendment submitted to NRC pursuant to 10CFR50.90.

5) REMARKS:

The following summarizes the justification upon the written safety evaluation, (1) for answers given in Part B of the Safety Evaluation Check List:

See the attachment

(1) Reference to document(s) containing written safety evaluation:
NS-SAT-SAI-88-362

FOR FSAR UPDATE

Section: _____ Page(s): _____ Table(s): 15.4.1-9

Reason for/Description of Change:

Change Table 15.4.1-9 for UHI Accumulator water volume delivered to reflect 850 cu.ft. minimum volume evaluated in this safety evaluation and the associated footnote.

6) APPROVAL LADDER

- (6.1) Prepared by (Nuclear Safety): RM [Signature] (SAI) Date: 9/14/88
- Reviewed by (Nuclear Safety): M. O. [Signature] (SAI) Date: 9/14/88
- (6.2) Coordinated with Engineer(s): NO REVIEW (SAI) Date: _____
- Coordinated with Engineer(s): NECESSARY (TSA) Date: _____
- Coordinated with Engineer(s): PREVIOUS AP-(COA) Date: _____
- Coordinated with Engineer(s): APPROVAL STILL (SAI) Date: _____
- (6.3) Coordinating Group Manager(s): APPLIES SI (SII) Date: _____
- Coordinating Group Manager(s): ONLY LARGE (TSA) Date: _____
- Coordinating Group Manager(s): SHALL LOC. ACCOATS Date: CHANGED
- (6.4) Nuclear Safety Group Manager: Walt [Signature] (SAI) Date: 9/14/88