

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower

October 27, 1983

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WBRD-50-390/82-52

WBRD-50-391/82-49

U.S. Nuclear Regulatory Commission

Region II

Attn: Mr. James P. O'Reilly, Regional Administrator

101 Marietta Street, NW, Suite 2900

Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - OPERATING CONDITIONS USED IN PIPING ANALYSIS - WBRD-50-390/82-52, WBRD-50-391/82-49 - FIFTH INTERIM REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on May 18, 1982 in accordance with 10 CFR 50.55(e) as NCR WBN CEB 8215. Interim reports were submitted on June 17, 1982; February 2, June 17 and September 13, 1983. Enclosed is our fifth interim report. We expect to submit our next report by February 23, 1984.

If you have any questions, please get in touch with R. H. Shell at FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills

L. M. Mills, Manager
Nuclear Licensing

Enclosure

cc: Mr. Richard C. DeYoung, Director (Enclosure)

Office of Inspection and Enforcement

U.S. Nuclear Regulatory Commission

Washington, D.C. 20555

Records Center (Enclosure)

Institute of Nuclear Power Operations

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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
OPERATING CONDITIONS USED IN PIPING ANALYSIS
NCR WBN CEB 8215
WBRD-50-390/82-52, WBRD-50-391/82-49
10 CFR 50.55(e)
FIFTH INTERIM REPORT

Description of Deficiency

The Quality Assurance Criteria of 10 CFR 50, Appendix B, section XVII, states, "Records shall be identifiable and retrievable." Also, section III states, "Measures shall be established for the identification and control of design interfaces and for coordination among participating design organizations." These measures shall include the establishment of procedures among participating design organizations for the review, approval, release, distribution, and revision of documents involving design interfaces.

The operating conditions used in piping analysis are based upon data provided from different organizations. The thermal and seismic design basis "source" data is not in all cases identifiable as being current, valid data and in some cases is not available. No engineering procedure exists to control revisions to this data, i.e., assurance that the analysis is still valid for current operating conditions.

Also, piping analysis has been done by personal service contractors who have assumed that the data previously shown on the piping isometrics is still valid. They have signed off on the analysis checklist without verifying that it is still current and valid data.

The report which contains operating mode data for inside containment (Civil Engineering Support Branch report 76-2) has not been maintained to reflect errors that have been observed in the data. As one example, the report does not indicate the 40°F operating condition for analysis problems 0600200-02-05, -06, -07, -08, -01, and -02.

Interim Progress

The guidelines, for the sampling program that governs the operating modes used in the rigorously analyzed piping problems for the various piping systems, have been set forth in TVA's Division of Engineering Design (EN DES) Special Engineering Procedure (SEP) 82-15. The operational modes data were compiled in accordance with Mechanical Design Guide DG-M5.1.1. TVA is conducting the sampling survey as follows:

1. Twenty rigorously analyzed problems were selected.
 - a. Eighty percent of the problems selected are common to units 1 and 2, unit 1 shown, unit 2 opposite hand, or unit 1 only.
 - b. Twenty percent of the problems selected are from unit 2 only.
 - c. There is one problem from each of the systems which has rigorously analyzed piping. At least two problems each for the reactor building and auxiliary building have been chosen. One problem for each the essential raw cooling water (ERCW) pumping station and the control building has been chosen.

See attachment 1 for a detailed listing of the problems chosen in the sampling program. New operational modes are being generated and compared to those used in the analysis. The differences in the new operational modes data and the analysis data are being evaluated on a pass-fail basis. Decisions may be based on engineering judgments using the guidelines set forth in EN DES-SEP 82-15 or by reanalyzing the piping system using the new operational modes data. Qualification of the flanges, nozzles, and supports is being considered in TVA's evaluation of the effect of operational modes on the piping system. If any problem fails the sampling program, another sample will be made of that system. This second random sample would consist of the larger of 10 problems or 25 percent of the problems for that system. If an additional failure is found, a 100 percent review of that system will be done. Most system operational modes data are similar in nature. If a failure occurs, similar discrepancies are more likely to occur within that particular piping system.

Operating modes data for all pipe stress analysis problems will be formally reviewed and documented beginning September 1, 1984. The final review and documentation for both units is scheduled to be completed by January 1986. The sampling program should be sufficient until the final review has been completed since the fatigue life is based upon 7000 cycles, of which only a few cycles would be experienced during this period of time. The sampling program is scheduled to be completed by January 30, 1984. Attachment 1 lists the status of all the problems included in the sampling program. The pipe stresses for all the TPIPE computer test runs were within ASME Code allowables.

At this time, 15 of the 20 problems in the sample have been evaluated and found acceptable. Two flange problems in the safety injection system did not qualify. A second random sample of 10 problems in the safety injection system have been picked and are currently having new operational modes generated.

**ATTACHMENT
WATTS BAR NUCLEAR PLANT
RIGOROUSLY ANALYZED PIPING PROBLEMS
FOR WHICH OPERATIONAL MODES DATA WILL BE DEVELOPED**

<u>SYSTEM</u>	<u>ANALYSIS PROBLEM NO.</u>	<u>ISOMETRIC DRAWING NUMBER</u>
MAIN STEAM	a 0600200-06-01	06200-06-01
AUXILIARY FEEDWATER	d, e N3-03-4A	47W427-201
BLOWDOWN	a 0600200-07-01	47W400-208
AUXILIARY BOILER SYSTEM	d, e N3-12-01A	47W431-200 47W431-201 47W431-202
REACTOR COOLANT SYSTEM	a 0600200-13-05	47W465-209
HIGH PRESSURE FIRE PROTECTION	a N3-26-2R	47W491-208
SERVICE AIR SYSTEM	a N3-33-01A	47W492-200
CHEMICAL & VOLUME CONTROL	d, e 0600250-08-13	0600250-08-13
SAFETY INJECTION	b, d N3-53-C5A	47W435-202
ESSENTIAL RAW COOLING WATER	a N3-67-04A a, d N3-67-06A c N3-67-15A	37W206-30 47W450-208 47W450-233
COMPONENT COOLING WATER	a N3-70-34A	47W464-232
CONTAINMENT SPRAY	a N3-72-02A	47W437-200
RESIDUAL HEAT REMOVAL SYSTEM	a N3-74-03A	47W432-206
SPENT FUEL PIT COOLING	a N3-78-08A	47W454-205
UPPER HEAD INJECTION	a 0600250-15-02	0600250-15-02
RADIATION MONITORING	a, d N3-90-06R	47W600-407
ICE CONDENSER	d, e N3-61-1R	47W462-100
HVAC	a N3-30-1R	47W915-100

- a) Evaluation completed and acceptable
- b) Evaluation completed and unacceptable
- c) No discrepancy found
- d) Test run made
- e) Evaluation not complete