

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

April 6, 1983

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Denton:

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

By letter from D. B. Vassallo to H. G. Parris dated January 17, 1983, we received a request for additional information regarding the proposed inservice pump and valve testing program for the Browns Ferry Nuclear Plant. Enclosed is our response to that request. After NRC approval of the enclosed responses and resolution of any remaining item, the program will be revised and resubmitted.

In our response to item 1 we are formally requesting an exemption to the requirements of 10 CFR Part 50.55a regarding interval for inservice testing. In that request we propose to have implementation of the Inservice Pump and Valve Testing Program for the three units of Browns Ferry on a concurrent interval, as opposed to a separate interval for each unit. The proposed start date of the 10-year interval is August 31, 1982, with a corresponding interval ending date of August 31, 1992. This approach was used for the Browns Ferry Section XI Inservice Inspection Program, and to our understanding was accepted by NRC. Additional discussion is provided in our response to item 1.

This latest round of questions from the NRC on the Browns Ferry Section and Valve Test Program greatly concerns TVA. The May 26 and 27, 1982 Section XI meeting at Browns Ferry was held for the purpose of updating the program and resolving any items that the NRC wished to address. TVA recognized the need for the meeting in light of unsuccessful attempts over the past few years to get the NRC to address and approve the Pump and Valve Test Program. Hence, a well prepared, comprehensive program submittal was presented and discussed at length with the NRC representatives in attendance: E. H. Girard of Region II, R. J. Clark of NRR, and Gerald Paulk, Resident NRC Inspector. TVA representatives left the meeting with the conviction that all of the concerns of the Section XI program had been addressed and resolved to the NRC's satisfaction, and that the program would be approved in a timely manner. We were disturbed with this request for additional information, since

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Mr. Harold R. Denton

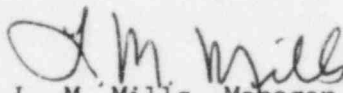
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nearly all of this information was discussed with the NRC in the May 1982 meeting. Furthermore, we are also concerned, despite efforts at the May 1982 meeting and earlier submittals, as to when the Browns Ferry Section XI Pump and Valve Program will be approved in light of the continual questions that we have received.

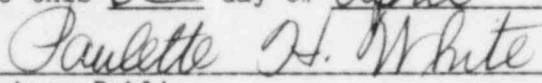
The NRC apparently recognizes the need for some continuity in the Section XI program requirements as evidenced by its approval of a 10-year versus a three-year program update requirement. Yet, almost halfway through the first inspection interval, as determined by 10 CFR 50.55a(g), Browns Ferry still does not have an approved program. At some point the criteria against which our program submittal is being reviewed must be fixed. Perpetuation of unresolved issues, as has been the case for the past several years, creates problems in complying with both the technical specifications and the Section XI requirements. It keeps the surveillance program in an unnecessary state of continual alteration and adds confusion to an already complex program, thus providing increased opportunity for violation of either or both sets of requirements. We trust that NRC will continue their review efforts and approve the subject plan in the near future.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


L. M. Mills, Manager
Nuclear Licensing

Subscribed and sworn to before
me this 6th day of April 1983.


Notary Public

My Commission Expires 9-5-84

Enclosure

cc: See page 3

Mr. Harold R. Denton

April 6, 1983

cc (Enclosure):

U.S. Nuclear Regulatory Commission
Region II
ATTN: James P. O'Reilly, Regional Administrator
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Atlanta, Georgia 30303

Mr. R. J. Clark
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Mr. E. H. Girard
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ENCLOSURE
RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION
INSERVICE PUMP AND VALVE TESTING PROGRAM
BROWNS FERRY NUCLEAR PLANT UNITS 1, 2, AND 3
(Reference: NRC Letter from D. B. Vassallo
to H. G. Parris dated January 17, 1983)

1. NRC Question

The program states that it will be applicable until September 1988.
Explain the basis for extending the program to that date.

TVA Response

In response to this question TVA hereby requests an exemption from the requirements of 10 CFR 50.55a to allow concurrent interval start and end dates for the Inservice Pump and Valve Testing Program of the Browns Ferry Nuclear Plant units 1, 2, and 3. The start date for the interval is proposed to be August 31, 1982, the submittal date of the revised Browns Ferry Pump and Valve Test Program. That revised program was updated in accordance with the 1980 edition, winter 1980 addenda of Section XI. Such a concurrent interval essentially integrates three separate programs (one for each unit) into one program for all three units. The proposed end date of the interval would be August 31, 1992, 120 months from program submittal. Discussion of the benefits to both TVA and the NRC staff of following such a program with concurrent interval start dates was made in TVA letters, L. M. Mills to T. A. Ippolito dated July 11, 1979 and December 24, 1980.

In establishing and proposing a concurrent program for the three units, we have been careful to perform certain reviews to ensure required elements are included. A thorough review of the program has been performed to ensure that any differences between each unit's listing of safety-related pumps and valves have been noted in the current program, and that the applicable testing procedures reflect those differences.

Furthermore, we have been careful to ensure that establishing a concurrent or integrated program and revising the inservice testing interval date will not in any way impact the current testing schedules of the individual valves. For instance, main steam relief valves which have a 60-month test frequency interval, will continue to be tested in accordance with current 60-month interval already established. A new 60-month testing interval will not be started to coincide with the August 31, 1982 program interval. Therefore, no valve test interval will exceed 60 months since previously tested because of a revised program interval date. The Browns Ferry program will be revised to state that the current program is applicable to August 31, 1992 upon concurrence from the NRC.

2. NRC Question

The Brookhaven National Laboratory reviews of your previous inservice testing (IST) programs, as documented in reports BNL-NUREG - 26617 and -26583, will, in part, provide a basis for the NRC's safety evaluation of your IST program.

- A. For valves that were included in the IST programs reviewed by Brookhaven, but which are not included in your new IST program, it is requested that you submit the basis for the deletions.
- B. For any instances where your new IST program proposes a reduction of testing requirements (including test frequencies), other than those attributal to the use of the 1980 code, it is requested that you submit the basis for the changes.

TVA Response

The current program was developed from the Brookhaven National Laboratory review of the previous program addressed during the May 26 and 27, 1982 meeting at Browns Ferry between NRC and TVA representatives. The basis for the changes between the previous and the current programs as given below were addressed and discussed at length during this meeting.

A. Valves omitted in the latest program submittal:

Main steam line drain valves 1-35, 56: These valves are containment isolation valves that do not change position upon a containment isolation signal. These type valves are tested in accordance with Appendix J and are included in the 'valves to be leak-rate tested' table, Attachment 3 of the latest submittal. These valves do not have operability requirements in accordance with the 1978 NRC staff guidance letter; hence, they were deleted.

RHR crosstie valve 74-46: This valve performs no safety function; it has power removed so that it cannot be operated. Hence, this valve is deleted from the program.

B. Reduction in testing requirements from previous to latest submittal:

Feedwater check valves 3-554, 3-558, 3-568, 3-572: The basis for reducing the frequency of test for these valves is addressed in relief request PV-8.

Standby liquid control check valves 63-525, 63-526: See relief request PV-8.

Reactor recirculation system check valves 68-508, 68-523, 68-550, 68-555: See relief request PV-8.

Reactor water cleanup check valves 69-579, 69-624: See relief request PV-8.

Residual heat removal check valves 74-661, 74-662: See relief request PV-8.

Recirculation loop flow control valves 68-3, 68-79: The testing frequency as stated in the previous submittal for these valves was changed from quarterly to every cold shutdown in the latest submittal. It is not feasible to test these valves during power operation since this would require isolation of one recirculation loop and a reduction in power level. These valves have always been tested every cold shutdown per IWV-3412, so the previous submittal was in error to state the frequency as quarterly.

Reactor core isolation cooling valve 71-37: The testing frequency for this valve was changed from quarterly to every cold shutdown. If this valve failed closed during an operability test, the system would be rendered inoperable. Since this is a convenience valve that performs no active safety function, the risk of failure during operability testing is not warranted.

High-pressure coolant injection valve 73-34: Same as RCIC valve 71-37.

3. NRC Question

Why doesn't your program specify valve position indication checks in accordance with IWV-3300?

TVA Response

As stated at the May 1982 meeting, Browns Ferry is in compliance with IWV-3300 by checking valve position indications in S.I.3.2.10. The program will be revised to include valve position indication checks.

4. NRC Question

Your IST program relief request PV-1 requests, in part, relief from requirements for bearing temperature measurements on your RHR, Core Spray, SLC, and RHRSW pumps. You state that the bearings of these pumps are lubricated by water supplied by the pumps themselves and that 'satisfactory pump operation is indicative of sufficient bearing lubrication.' It is our understanding that the intent of the code in requiring bearing temperature measurements was to assure detection and correction of changes in bearing performance while the pumps are still capable of satisfactory operation. This being the case, your basis for relief appears faulty. Provide additional details. Do you propose any alternate test to replace bearing temperature measurement?

TVA Response

Article IWP-4310 states that the temperature of centrifugal pump bearings outside the main flow path of the pump shall be measured. Since the water-cooled bearings of the RHR, core spray, and RHRSW pumps listed in PV-1 are within the main flow path, temperatures are not required to be monitored by the code. The SLC pumps are positive displacement pumps and are not required to have bearing temperatures monitored in accordance with IWP-4310. Vibration measurements are taken on all of the Section XI pumps to ensure detection and correction of changes in bearing performance while the pumps are still capable of satisfactory operation. This will be indicated on PV-1 under 'alternate test method.'

5. NRC Question

Your new IST program shows differential pressure being measured for the SLC pump. Is this correct?

TVA Response

Differential pressure is not measured; however, discharge pressure is representative of differential pressure on the SLC pump for all practical purposes. The minimum and maximum pump inlet pressures are six-inch H₂O (.2 psi) to four-feet H₂O (1.7 psi). Since the acceptable pump discharge pressure is 1,150 psi, it is clear that any inlet pressure deviation has a negligible effect on differential pressure developed by the pump. Hence, discharge pressure is an acceptable parameter to monitor pump performance.

6. NRC Question

For your new IST program relief request PV-2 submit your specific controls on inlet head.

TVA Response

The SLC pump flow test S.I.4.4.A.1. specifies that a minimum level of five-inch H₂O must be maintained in the suction test tank of the SLC pumps. This ensures adequate inlet head on the pumps. As stated in PV-2, a caution notice has been incorporated into S.I.4.4.A.1. to maintain this minimum level.

7. NRC Question

For relief request PV-3 in your new IST program

- A. Why do you now state that 'the pumps are tested by circulating liquid to a tank for 2 minutes,' whereas, in a similar request for relief submitted in your letter of March 3, 1979 (Request for Relief 32), you indicated that you would circulate liquid to the tank for 3 minutes during such a test?
- B. At what point in the test do you consider that the data you are obtaining is stable? Provide data to verify stability after two minutes.

TVA Response

- A. The change from three minutes to two minutes for the duration of the SLC flow test was made to ensure that the SLC test tank was not pumped dry. The SLC test tank has a limited capacity such that, at its normal flow rate, the tank is close to being pumped dry after three minutes.
- B. As stated in PV-3, a 15-minute functional test which involves recirculating water back to the test tank is performed before running the two-minute flow test. The 15-minute test is of sufficient length for all parameters to stabilize; the two-minute flow test is run immediately afterward. This method of testing was discussed and considered acceptable by the TVA and NRC representatives at the May 1982 meeting.

8. NRC Question

Request for relief PV-4 in your new IST program is somewhat unclear. Verify that

- A. The person who performs the test has the authority to and will immediately review the test values and determine whether they fall in the required action range of the code (ASME Section XI)
- B. When the above review identifies test values in the required action range, the related pump or pumps will immediately be declared inoperative and not returned to service until the cause of the deviation has been determined and corrected.

TVA Response

- A. The Section XI flow tests are performed by the unit operators or plant assistant unit operators under the guidance of the unit operator. The unit operator or the shift technical advisor will immediately review the flow test parameters and determine whether the parameters fall within the required action range of the code.
- B. Following the guidelines set forth in the March 17, 1980 NRC memorandum from Samuel E. Byron to R. C. Lewis, as soon as the pump flow test data is recognized as being within the required action range the pump is declared inoperable. This practice will be incorporated into the flow test Surveillance Instructions (S.I.'s).

9. NRC Question

Your relief request PV-5 proposes alternative testing requirements. Provide specific details of the alternative test commitment including

- Background information on the alternative testing justifying its usefulness.
- A description of the alternate test procedures, including allowable ranges of test values and their bases.

TVA Response

The alternate test method (equipment diagnostics) utilizes more measurement points than required in IWP-4510. Also, in conjunction with the displacement readings, peak velocity readings are taken and the data points are plotted on trend curves. The equipment diagnostics program has proven

more reliable in identifying and defining vibration problems in CSSC systems than the Section XI program. A specific example would be the identification of structural resonances associated with 12 RHRSW EECW pumps which had not been detected by previous testing in accordance with IWP-4510. The peak velocity limits (less than 0.64 in/sec) were established using instrument manufacturers' information and industry experience. The limits are subject to change as more test data becomes available.

10. NRC Question

Relative to your relief request PV-6

- Verify that you are only requesting relief from the portions of IWV-3417 and IWV-3523 that state 'when corrective action is required as a result of tests during cold shutdown, the condition shall be corrected before startup.'
- Shouldn't the statement given under the heading 'Alternative Testing' be part of your 'Basis for Relief?' It does not propose an alternate test.

TVA Response

Relief request PV-6 addresses articles IWV-3417(b) and IWV-3523 portions which state, 'when corrective action is required as a result of tests made during cold shutdown, the condition shall be corrected before startup.'

Yes, the statement under the heading 'Alternate Testing' should be part of the 'Basis for Relief.'

11. NRC Question

Relative to your relief request PV-7

- Are there valves located in the lines with the CRD scram function valves which, if closed, would permit testing of the scram function valves without scrambling the control rods?
- Could not symmetrically opposed valves be tested simultaneously in pairs during operation without resulting in any requirement for significant fuel preconditioning?

TVA Response

There are manual isolation valves in the lines with the scram function valves that could be closed to allow testing of the scram function valves without scrambling the control rod. However, this results in an unsafe condition since, if these manual isolation valves are closed, the control rod could not be scrambled. Additionally, it establishes a condition where potential for severe damage to the control rod drive mechanism exists.

The scram discharge valves of symmetrically opposed control rods could not be tested without requiring significant fuel preconditioning. We believe the current testing program outlined in relief request PV-7 is adequate.

12. NRC Question

For the valves addressed in relief request PV-8

- Why do you propose to test the valves only each refueling outage rather than at each cold shutdown?
- Do the subject valves have permissible leakage rates specified in accordance with IWV-3426?
- Will analysis of leakage rates and corrective action be undertaken for the subject valves in accordance with IWV-3425 and IWV-3426, respectively?

TVA Response

As discussed in the May 1982 meeting, these are poorly accessible check valves that are difficult to test. Testing these valves creates unfavorable conditions for the unit and test personnel. These difficulties were discussed at length in the May 1982 meeting. As agreed upon by attending NRC representatives, these valves will be tested during each refueling outage rather than at cold shutdowns.

IWV-3426 requires leakage rates to be specified by the plant owner. The leakage rates for these valves are specified in accordance with 10 CFR 50, Appendix J by the plant owner.

Analysis of leakage rates and corrective action is undertaken for the subject valves in accordance with 10 CFR 50, Appendix J, to satisfy overall leak rate criteria for primary containment.

13. NRC Question

Cannot the valves addressed in relief request PV-9 be partial-stroke exercised quarterly?

TVA Response

As stated in PV-9 and the May 1982 review meeting, these valves cannot be exercised without introducing torus water into the vessel.

14. NRC Question

Guidance provided to you by the NRC in a letter dated January 13, 1978 stated that your IST program should include all safety related valves. It appears that you do not include all safety related valves in your program. For example, you do not include valves in the diesel generator fuel oil transfer lines or in the diesel generator starting air system. Why are such items not included in your program?

TVA Response

It has always been the position of TVA that the scope of the Section XI pump and valve test program, prepared for Browns Ferry in accordance with NRC guidelines at the time of program submittal, only includes those valves that are in water, steam, or radioactive waste type systems. The reasoning for this being the basis for TVA's original submittal for Browns Ferry was discussed by NRC representatives at the May 1982 review meeting and was agreed to be applicable to the latest program submittal. The fact that the program submitted does not satisfy subsequent NRC recommendations or NRC recommendations that were, and apparently still are, in contention at the time of the submittal is not surprising. While TVA understands the difficulty of auditing a program submittal several years after the date of submission, we do not understand why the May 1982 meeting, which was to resolve such difficulties, was not nearly as successful as it originally appeared. If the NRC no longer agrees with decisions reached before and during the May 1982 meeting, please provide approved NRC position documentation that specify otherwise.