

Mr. S. A. White Manager of Nuclear Power Tennessee Valley Authority 6N 38A Lookout Place 1101 Market Street Chattanooga, Tennessee 37402-2801

Dear Mr. White:

DISTRIBUTION Docket File NRC PDR Local PDR PD#2 Plant File LSpessard, IE RVollmer RBernero NThompson SNorris MGrotenhuis RClark BHayes; OI RWessman

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By letter dated August 28, 1986, you submitted the Browns Ferry Nuclear Performance Plan. During the meeting with your staff on September 15-17, 1986, we provided some preliminary overall comments on the Plan and your staff provided some scheduling information.

We are providing comments in the enclosed Comments and Request for Additional Information. Additional comments will be forthcoming. Our review schedule calls for an evaluation of the Plan by the end of 1986. A timely response will be necessary for us to maintain that schedule.

We note that your August 28, 1986 letter states that Browns Ferry Unit 2 could be restarted in the summer of 1987. In specifying that date you may have failed to consider the regulatory process within the NRC that will be needed for startup. In this regard, the TVA submittal is not yet scheduled on electrical calculations, and some plant modifications are not scheduled to be completed until June 1987. Given that upon submittal of information for review a Safety Evaluation must be prepared, upon completion of a plant modification an inspection must be conducted and a report prepared, and upon completion of the staff review, the Commission will consider plant startup, we suggest that your startup schedule has not accommodated the regulatory process and that the summer of 1987 may not be realistic. We recommend that you factor this information into your planning.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

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Sincerely,

Orkensi cigned by Daniel R. Huller

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Daniel R. Muller, Director BWR Project Directorate #2 Division of BWR Licensing

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Enclosures: As stated

cc/w enclosures: See next page

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Mr. Steven Roessler U. S. Nuclear Regulatory Commission Reactor Training Center Osborne Office Center, Suite 200 Chattanooga, Tennessee 37411 Browns Ferry Nuclear Plant Units 1, 2, and 3

Resident Inspector U. S. Nuclear Regulatory Commission Route 2, Box 311 Athens, Alabama 35611 Request for Additional Information Browns Ferry Nuclear Performance Plan Dockets Nos. 50-259/260/296

- 1. Section III, 1.0 Environmental Qualification of Electrical Equipment
 - 1.1. How does the qualification effort described in the NPP relate to any previous qualification efforts performed at Browns Ferry prior to August 1985? Describe and identify qualification efforts that are based on previous activities and data. Also discribed and identify qualification efforts which are considered entirely new.
 - 1.2. Does the "Browns Ferry Environmental Qualification Project Manual" (EQP-01) have any relationship to the Office of Engineering's "Environmental Qualification Project Manual" (EQP-01)? The Office of Engineering Manual was used by Office of Engineering personnel to establish qualification of equipment for Sequoyah; are Office of Engineering personnel doing the same for Browns Ferry or are Browns Ferry personnel utilizing the manual to establish qualification? Describe how the knowledge gained during the Sequoyah qualification activities is conveyed to the Browns Ferry effort. This transfer of knowledge is of particular concern if qualification of equipment is being established by Browns Ferry personnel.
 - 1.3. The discussion on the 50.49 list does not provide an indepth description of how items in paragraphs b(1), b(2), and b(3) of 10 CFR 50.49 are identified for inclusion on the list. This should be described in the discussion.

Additionally, there was no discussion of the use of environmental drawings and category and operating time drawings in the determination of equipment to be included on the list. Since these drawings were a critical part of the system at Sequoyah to identify equipment to be included on the list, it is anticipated that they would also be critical to the establishment of the Browns Ferry list. Are these drawings used in the list generation at Browns Ferry; if so, they should be addressed in the 50.49 list discussion.

1.4. The NPP indicates that an environmental qualification training program is being developed; however, it also indicated that qualification activities are ongoing. If this is the case, what environmental qualification training has been provided to the people performing qualification activities prior to the implementation of the training program presently under development?

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- 1.5. Since problems were identified at Sequoyah, Browns Ferry should give extra attention to its activities concerning field verification and maintenance verification. These verifications should ensure that the installed conditions of qualified equipment agree with documentation in the qualification files and that installation and maintenance activities have not invalidated qualification of the equipment.
- 1.6. Since the NPP appears to stress procedures under development rather than existing procedures, there is concern whether qualification activities (particularly plant activities) being performed at this time are being sufficiently controlled. If procedures are in place to cover these activities, then they should be discussed in the NPP.
- 2. Section III, 2.0 Configuration Management
 - 2.1. Page I-6

"Establish and maintain a documented design basis." TVA should define what they mean by a documented design basis.

2.2. Page II-2

What specific site engineering functions were not previously under the control of OE or its predecessor (ENDES), and consequently required transfer of function and/or personnel to DNE (from ONP)?

2.3. Page II-9

Post Modification Test Section - Describe how the DNE design engineer(s) participates and/or interfaces with the Post Modification Test Section regarding development and evaluation of test attributes and data.

2.4. Page II-10 Section 1.2.5 - Site Engineering

The role of the Project Engineer needs to be better defined. Clarify his reporting relationships to the Director of Nuclear Engineering and the Site Director. Clarify the reporting and responsibility relationships for DNE discipline project engineers.

Clarify whether BFN EA activities are directed by the Manager of EA in Knoxville, or by the BFN Project Engineer.

2.5. Page II-13

The EA organization provides quality-related procedure training to DNE engineers. Describe technical training (e.g., system description, calculational methods) provided to DNE engineers and discuss which organization(s) provide such training.

2.6. Page II-15

Describe the distinction in review functions and engineering products reviewed (for Quality Assurance oversight of engineering and design functions) between the Engineering Assurance group and the Quality Engineering and Control group.

2.7. Page II-22 - Section 1.2.8 - Site Modifications

Are the Modification Engineers assigned to DNE - Project Engineer permanently, or solely on an as-needed basis to assess "constructability" of modifications, and left with a permanent assignment within DNC?

2.8. Page II-26 - Section 1.4 - Training

Clarify whether or not the training program reference (Section II.2.3) applies to DNE BFN project engineers. Discuss training provided to DNE engineers who are used on an intermittent basis by the BFN project organization.

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2.9. Page II-10 - Sections 1.2.5 - Site Engineering and Page II.21 -Section 1.2.8 - Site Modifications

Past modification problems have been partially attributed to interface problems between the engineering organization (whether site or corporate located) and the modification implementation group of BFN. Describe the interface between these organizations, including enhancements implemented to identify and alleviate problems arising at this interface.

2.10. <u>Page III-2 - Section III - Environmental Qualification Program and</u> <u>Page III-14 - Configuration Management Program</u>

The review of ECNs versus the functional ability described in the FSAR is too limited. Will the ECN review also verify system functionality when compared to design basis documents?

2.11. Page III-14 Section 2.2 Design Baseline Program

Define what set of drawings is encompassed by the terminology "key plant drawings."

2.12. Page III-14

Provide a more precise description of the design basis documents for BFN. Include both those being developed, those being verified up-to-date and current, and any other specific design basis documents.

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2.13. Page III-14

Describe, for the post-restart phase, what portions of the program will be applied (if not all), a tentative schedule for implementation, and a description of long-term interim measures necessary during the transition.

It is mentioned that the design baseline will be established for balance-of-plant systems post-restart. By this, does TVA mean the balance of safety systems or the rest of plant?

2.14. Page III-15

Discuss verification/configuration information or other efforts which confirms the arrangement of instrument piping/tubing and instrument valves between the instrument(s) and their associated root valve(s).

Verification of plant configuration should include electrical, as well as instrumentation and control functions.

2.15. Page III-15

Is implementation of configuration control drawings (CCDs) a pre restart item. If not a comprehensive set, provide a schedule, including which CCDs must be in place prior to restart.

2.16. Page III-15

You are requested to provide onsite for our review a copy of the precedures that will be use to maintain the configuration control drawings (SDSP 9.1 and 9.2).

Will new, i.e., redrafted, key plant drawings be issued before restart or will drawings be allowed to be "red-lined."

Provide a description of the methods of control and revision for drawings which are not to be maintained as configuration control drawings. Describe in general how such drawings will be revised and distributed, and maintained during modification development and implementation. Discuss the types of drawings which are not to be maintained as configuration control drawings.

2.17. Page III-16

You are requested to define the term "safe" shutdown for BFN. Specifically, does the design baseline scope definition of "safe" shutdown include all necessary systems and portions required to achieve and maintain "cold" shutdown?

To what extent will the original design be reviewed? TVA should consider reviewing a selected number of systems of TVA design indepth, i.e., vertical slice.

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2.18. Page III-18 System Evaluation and Corrective Actions

Does TVA plan to generate new calculations if original design calculations or calculations supporting mods are unretrievable?

2.19. Page III-21 Permanent Design Control System

The permanent design control system should have some specified time frame after installation that revised drawings and design documents are issued and the modification package is closed out.

3. Section III, 3.0 Seismic Design Program

This program has been the subject of discussion and meetings between the NRC and TVA technical staffs. The information deemed necessary to evaluate the overall program has been requested (07-31-86). The tasks will be reviewed separately as TVA completes and submits the results of the reevaluations.

4. Section III, 4.0 Electrical Design Review

The electricl calculations program has not been the subject of any discussions between the NRC and TVA technical staffs. The program described in Volume 3 of the NPP appears to be comprehensive. Our impression from the description of the program is that if you determine there are any deviations from the design basis as described in the FSAR, modifications will be accomplished prior to startup of Unit 2 to bring the systems into compliance with the design basis.

- 5. Section III, 5.0 Fire Protection Improvement
 - 5.1. TVA still has not developed a comprehensive fire protection program for the three units. TVA continues to emphasize safety related/safe shutdown areas and to respond to issues raised by NRC, rather than define (or develop) a fire protection program for the three units. Such a comprehensive program would incorporate, but not emphasize, fire protection for safety related/safe shutdown areas and systems. This document provides no evidence that TVA has yet taken the initiation and responsibility for a fire protection program of excellence for the entire Browns Ferry plant. Such a program should address as a minimum;
 - A. Property loss,
 - B. Loss of production,
 - C. Industrial safety concerns associated with fires in the plant,
 - D. Radiological issues, including on-site and off-site releases, and decontamination

- 5.2. This document sets no schedules for implementation, implying a commitment to react in the future to additional NRC raised issues on a corporate level, but not to fire related issues at the plant on an operating level.
- 5.3. TVA has developed no "philosophy of excellence" for fire protection orginating with the Plant Manager and extending down through the organization to the operating staff and crafts people. There is no indication of specific responsibility for review and implementation of day-to-day operating and maintenance activities to assure adequate fire protection is provided, or that no unacceptable fire safety related consequences result. No mechanism is identified for flow of information pertaining to fire protection issues or concerns up and down the organization/management chain.
- 6. Section III, 6.0 Plant Welding Program

Page I-1 under "Plan Arrangement" states that "Volume 3 is written to describe programs and provide NRC with adequate information to plan and conduct audits of the program." Section 6.0 states that although the Phase I Evaluation is complete, the report is still under preparation and no schedule for its issuance is provided. It also states that the program evaluation portion of Phase II is complete and states that the welding inspections will be complete in late December 1986. To date, there has been no substantitive material provided to us for either our information or comments on the Browns Ferry welding program. The absence of interim NRC involvement is not acceptable.

Please provide the status of your welding inspection so that we can plan a site visit.

- 6.1. The recommendations for programmatic improvements which were made by the TVA-wide Welding Project are dismissed by saying they do not reflect on weld quality and are deferral or we should have sufficient information to conduct our own review to confirm the TVA conclusions.
- 6.2. It is stated that the scope of Phase II field inspections will be based on the "favorable results found thus far in the BFN inspections." Does this mean the scope will be reduced? The only information regarding the scope of the program was a draft submittal obtained from TVA about January 10, 1986.
- 6.3. There is a complete failure to provide quantitative schedules and milestones.
- 6.4. It is stated that the ongoing ISI program will be used to assure the quality of Section XI covered welds and that TVA meets or exceeds <u>minimum</u> Code requirements. In view of the new concerns that caused the initiation of the Welding Project, the adequancy of depending solely on Section XI requirements should be reviewed by NRC.

6.5 With respect to the statement that the APTECH review of existing inspection data concluded that the BFN program contains necessary controls to ensure that welds would be suitable for service, we have not seen the report and would like to determine if our own conclusions support this.

We intend to conduct audits of those areas where TVA has made use of "engineering judgement" to establish criteria for acceptance or identification of inspection requirements.

7. Section III, 7.0 Integranular Stress Corrosion Cracking

Section 7.0 provides a good summary of the inspections and stress relieving efforts that TVA has performed or plans to perform. The IGSCC in austenitic stainless steel piping is a wide spread problem in operating BWR plants. Augmented inspection to assure piping integrity has been performed at Browns Ferry Units 1, 2 and 3 in accordance with I&E Bulletins 83-02 and 82-3, and Confirmatory Order dated August 26, 1983, respectively. The NRC staff performed a safety evaluation of TVA's previously submitted inspection results and associated corrective actions, and approved continued operation of all three units for one more fuel cycle. Guidelines for IGSCC reinspection were provided in Generic Letter 84-11. The staff provided comments to TVA's reinspection plan in a letter dated March 26, 1986. So far, only Browns Ferry Unit 2 has completed the Generic Letter 84-11 reinspection.

During the current outage, the Browns Ferry staff inspected and replaced the wear rings in all four RHR pumps on their own initiative as a result of cracking of these wear rings in Browns Ferry's sister plant - Peach Bottom. Credit should be taken for this action by noting it in Section 7.0.

By letter dated March 11, 1986, TVA submitted the results of the pipe inspection and repairs. We requested additional information on the repairs in our letter of March 26, 1986. In your response, please include the results of the recent inspections of the recirculation inlet nozzle and core spray inlet nozzle safe-ends, and describe your proposed actions as a result of the cracks detected in the recirculation safe-ends.

TVA has done more in the way of inspections and stress reductions (IHSI) than required by NRC requirements (e.g., inspection of all accessible welds rather than the minimum sample specified by NRC). As the TVA staff has often noted, the susceptibility of materials to intergranular stress corrosion cracking is a function of three factors: 1) the material, 2) the weld residual stress and 3) the water chemistry environment. TVA has given consideration attention to the first two factors, although it is expensive to effect a significant change in either.

As the INPO and NRC inspection reports have noted, the importance of water chemistry has not been recognized by TVA management. In addition

to the effect this inattention has had on pipe cracking in Units 1 and 2. it has caused other significant safety and economic impacts. When Unit 2 was defueled in the fall of 1984, there were 56 fuel assemblies that TVA determined were corroded and failed to the extent they could not be reinstalled in the core for another cycle. Corrosion has also caused premature failure of equipment and piping. The plans discussed in Section 7.0 to reduce oxygen concentrations throughout the coolant systems by means of hydrogen addition is a commendable action. However, a good water chemistry program involves many other actions such as controlling impurities (iron, copper, hardness, etc., that plate out on the fuel), and most of all, management recognition that although there may not be any regulatory requirement, that operation without concern for water chemistry (e.g., operation with condenser inleakage) is going to result in more downtime and expense in the long run than correcting the condition when it occurs. As part of the RPIP and in response to the INPO findings and NRC inspections, TVA has previously proposed various actions to upgrade the water chemistry program at Browns Ferry and to emphasize awareness of the importance of the program to the operators and to management. The general plan to accomplish these objectives should be discussed somewhere in Volume 3.

8. Section III, 8.0 Restart Test Program

The Plan should discuss the involvement of the new systems engineers. The Plan does not indicate whether there will be input from the Design Baseline Evaluation Program. The NRC staff will want to discuss the restart test program with the TVA staff as the detailed program is developed.

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