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OCT 26 1990

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

Gentlemen:

In the Matter of	)	Docket Nos. 50-327
Tennessee Valley Authority	)	50-328

SEQUOYAH NUCLEAR PLANT (SQN) - NRC INSPECTION REPORT NOS. 50-327, 328/90-28 - RESPONSE TO NOTICE OF VIOLATION 50-327, 328/90-28-01

Enclosed is TVA's response to B. A. Wilson's letter to O. D. Kingsley, Jr., dated September 28, 1990, which transmitted the subject notice of violation regarding a failure to promptly identify and correct a significant condition adverse to quality.

Enclosure 1 provides TVA's response to the notice of violation. Enclosure 2 provides TVA's response to the additional concerns expressed by NRC relative to corrective action for Nuclear Experience Review issues.

If you have any questions concerning this submittal, please telephone M. A. Cooper at (615) 843-6422.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

Mark O. Medford

Mark O. Medford, Vice President
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Enclosures
cc: See page 2

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U.S. Nuclear Regulatory Commission

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ENCLOSURE 1

RESPONSE TO NRC INSPECTION REPORT
NOS. 50-327/90-28 AND 50-328/90-28
B. A. WILSON'S LETTER TO O. D. KINGSLEY, JR.,
DATED SEPTEMBER 28, 1990

Violation 50-327, 328/90-28-01

10 CFR 50, Appendix B, Criterion XVI, Corrective Action, states that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective action shall be documented and reported to appropriate levels of management.

Contrary to the above, from December 12, 1988 to August 22, 1990, the licensee failed to promptly identify and correct a significant condition adverse to quality pertaining to gas accumulation in safety-related pumps in that the licensee's evaluation of the potential problem did not utilize the vendor recommendations to identify the problem, did not identify 5.9 cubic feet of charging pump suction piping configured such that it could not be vented by normal venting processes, and concluded that the centrifugal charging pumps were not susceptable [sic] to gas binding. On August 22, 1990 a significant amount of gas accumulation in the 2 B-B Centrifugal Charging Pump and suction lines required two separate venting operations to restore the pump to service.

This is a Severity Level IV violation (Supplement I)

Admission or Denial of the Alleged Violation

TVA admits the violation.

Reason for the Violation

The cause of the violation was the failure by TVA to identify the potential for hydrogen accumulation in the centrifugal charging pump (CCP) suction lines after receipt of industry information. Several possible precursor events in the industry had been previously addressed through TVA's Nuclear Experience Review (NER) program. The principal causes for the failure to identify the potential condition were:

1. An incomplete review was performed for the event reported in NRC Information Notice (IEN) 88-23, "Potential for Gas Binding of High Pressure Safety Injection Pumps During a Loss-of-Coolant Accident," dated May 12, 1988, which was also reported in the Institute of Nuclear Power Operations (INPO) Operating Experience Notice (OEN) 88-2477, "Gas Accumulation in Charging Pump Suction at Farley," dated March 17, 1988. The TVA review principally focused on piping elevations located above

the volume control tank (VCT) because of the emphasis on this configuration in the industry information. In responding to IEN 88-23, the major emphasis was placed on comparing SQN to Farley Nuclear Plant, where the IEN 88-23 event occurred. Because SQN has no emergency core cooling system piping above the VCT, it was concluded that an event similar to Farley's would not occur. In hindsight, it appears that TVA did not fully understand the mechanism by which hydrogen was coming out of solution.

2. An inadequate review was performed on Westinghouse Electric Corporation Letter TVA-88-825, "Potential Gas Binding of SI Pumps," dated November 1, 1988. This letter referenced the local pressure phenomena discussed by IEN 88-23, referring to it as a "two-phase" mixture and identified mechanisms for gas desorption at low pressure points in piping systems, such as valves, tees, elbows, or orifices. Westinghouse Letter TVA-88-825 indicated that evaluation of the issue was plant-specific and recommended that because hydrogen accumulation is difficult to predict, the accumulation is best determined by venting. The TVA evaluation conducted did address the issue on a plant-specific basis. However, because indications did not exist in the plant at the time that the potential existed for hydrogen to come out of solution, a recommendation to vent was not made. In general, during the 1987-1988 timeframe, the tendency was to approach engineering issues analytically. This tendency was based on the strength of TVA's engineering staff and the perceived sensitivity to causing unnecessary plant perturbations during the later stages of the restart effort.

3. INPO recurring Significant Event Notification (SEN) 89-02, "April-June 1989," dated January 5, 1990, identified 11 events, one of which was gas accumulation in charging pump suction piping. The SEN specifically discussed gas stripping as a result of a large pressure drop across the CCP recirculation orifice. Because this report identifies a mechanism for hydrogen desorption not evaluated by SQN for IEN 88-23 and amplifies information contained in Westinghouse Letter TVA-88-825, it could have resulted in a reevaluation of previous responses. However, the SEN was distributed "for information" rather than "for action," and no reevaluation occurred.

4. A gas accumulation event was discovered at SQN on June 28, 1990, when an emergency boration line flange leak resulted in recognition that hydrogen was being accumulated in the lines. Corrective action included a review of the NER items related to this Licensee Event Report (LER), but the connection between the events was not recognized. When the CCP event occurred, the connection was recognized and Nuclear Engineering began reviewing the related NER history and responses at SQN.

Other opportunities also occurred to identify the potential for gas accumulation at SQN. However, these other opportunities were not as directly related to the subject event as the previously mentioned IEN, OEN, and safety evaluation report; and they are considered a contributing rather than primary cause.

Corrective Steps That Have Been Taken and Results Achieved

The subject event has been previously reported by LER 50-328/90012. Corrective actions to control and address the physical phenomenon involved in the gas accumulation are discussed in the LER.

A special review team was formed to investigate the adequacy of the disposition of the previously noted NER items to determine if the hydrogen accumulation problem at SQN could have been recognized at an earlier date. The team concluded that TVA should have identified the potential for gas accumulation after receipt of industry information and recommended several corrective actions that are discussed below.

Corrective Steps That Will Be Taken to Avoid Further Violations

The following corrective actions were committed to in LER 50-328/90012 as additional follow-up actions and to address the incomplete review of IEN 88-23:

1. TVA will reevaluate IENs 82-19, 83-77, 87-57, and 88-23 (plus supplements), and Westinghouse Letter TVA-88-825. The reevaluation will include consideration of corrective actions taken by other utilities and those suggested by Westinghouse. This action will be completed by March 1, 1991.

2. TVA will review IENs received during 1987 and 1988, which required an engineering evaluation, to determine if there were associated Westinghouse letters or INPO information related to the notice and whether TVA's analytical evaluation concluded the notice was not applicable at SQN. If, during the look-back process, notices are identified that require further resolution, the NER items will be reopened, and a response date will be established. This action will be completed by March 1, 1991.

3. TVA will review Westinghouse letters received during 1987 and 1988 to determine whether TVA's evaluation specifically addressed Westinghouse recommendations and whether the response was concurred with by the SQN project engineer. This action will be completed by March 1, 1991.

4. The NER program has been modified to require that for future Westinghouse generic letters (i.e., those carbon copied to NER by Westinghouse) for which the site is not specifically complying with the Westinghouse recommendations, a documented concurrence between the project engineer and the plant manager shall be made.

These corrective actions are considered adequate to address the cause of the violation. Consequently, no additional commitments are made by this submittal.

Date When Full Compliance Will Be Achieved

SQN will be in full compliance by March 1, 1991.

ENCLOSURE 2

RESPONSE TO ADDITIONAL CONCERNS

NRC Inspection Report 50-327, 328/90-28 stated three concerns relative to corrective actions for Nuclear Experience Review (NER) issues:

1. That licensee employees may consider NER as a separate corrective action program (CAP) from the established CAP,

2. That procedural requirements may need strengthening to reinforce the requirements for NER issues to be evaluated for conditions adverse to quality, and

3. That other corrective actions for NER items may not have been entered into the CAP and similarly may not have been adequately evaluated and reviewed.

The CAP at SQN is defined in Site Standard Practice 3.2, "Problem Reporting, Evaluation, and Corrective Action," which implements the requirements of Nuclear Power Standard (STD) 3.1.1, "Corrective Action." The CAP consists of (1) administrative control programs (ACPs) such as work requests, test deficiencies, incident investigations, and licensee event reports (LERs); and (2) the condition adverse to quality report (CAQR) program. CAQRs are used to document conditions that meet the threshold requirements given in Appendix B of STD-3.1.1.

The NER program is a system to obtain pertinent in-house and industry information concerning operating experience and provides a method for screening, prioritizing, distributing, and tracking the timely review by the responsible line organization of such information. The program is defined in STD-1.3.1, "Managing the Nuclear Experience Review Program." In-house information entered in the NER program includes LERs, incident investigations, and internal 10 CFR 21 Reports. Industry information entered in the program includes NRC information notices, external 10 CFR 21 Reports, vendor technical bulletins, and Institute of Nuclear Power Operations significant operating experience reports and significant event reports.

The NER program is not part of the CAP and is not intended by TVA to be used as a substitute for the CAP. However, NER items undergo a level of review comparable to items dispositioned under ACPs and similarly can escalate items to the CAQR process. STD-1.3.1 specifically references the CAQR program in several places during the NER process. During the initial screening review, if an item meets the CAQR threshold criteria, then a CAQR is promptly initiated. During the screening review, items that are identified as significant and applicable to SQN are designated immediate attention items and are hand carried to the appropriate managers for evaluation. The potential for initiation of a CAQR and evaluation for reportability at this point is outlined in the standard. During the ensuing technical review of the item by the responsible line organization, the reviewer is again reminded that evaluations that indicate a possible safety problem or a condition adverse to quality are to be appropriately documented, meaning by CAQR or through an administrative control program if the CAQR criteria are not met. Additionally, a CAQR is specifically required at each plant when the noncompliance, deficiency, condition, or equipment described in a 10 CFR 21 Report exists at the plant. Thus, NER is not a separate CAP, but does interface with and, when appropriate, does provide input to the established CAP through existing procedural requirements.

As noted above, STD-3.1.1 clearly addresses the requirements for initiating ACP or CAQR documents. However, to strengthen the NER program, STD-1.3.1 has been revised to state that if during screening or technical evaluation of NER items, a condition adverse to quality is identified, then the appropriate ACP or CAQR document shall be initiated. The revision is approved and will be effective December 26, 1990.

The NER program was recently assessed as part of an NRC inspection of the CAP. As discussed in paragraph 2.e of Inspection Report 50-327, 328/90-08, it was determined that the "corrective action program was being properly used for issues or concerns received by the licensee from outside organizations." Also, the results of a review of specific items relating to vendor-supplied information and 10 CFR 21 Reports that were processed through the NER program are documented in paragraph 13 of Inspection Report 50-327, 328/90-06. It concluded that the 11 issues reviewed were properly dispositioned through the NER program, and CAQRs were initiated by TVA when appropriate.