

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

6N 38A Lookout Place

MAY 09 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, 328/90-01 -
RESPONSE AND ANSWER TO NOTICE OF VIOLATION (NOV) AND PROPOSED IMPOSITION OF
CIVIL PENALTY

This letter, including enclosures, is submitted to NRC in accordance with
10 CFR 2.201 and 2.205 in response to NRC's letter of April 12, 1990, which
transmitted the subject NOV and proposed imposition of civil penalty regarding
residual heat removal (RHR) pump deadheading issues. Pursuant to
10 CFR 2.201, Enclosure 1 provides TVA's response to the NOV. Similarly,
pursuant to 10 CFR 2.205, Enclosure 2 provides TVA's answer to the proposed
imposition of civil penalty.

TVA acknowledges that the violations cited in the subject NOV occurred.
Accordingly, Enclosure 1 provides TVA's discussion of the violations, root
causes, and corrective actions.

As discussed during the enforcement conference held February 14, 1990, and as
described in Licensee Event Report (LER) 50-327/89031, Revision 1, TVA has
implemented extensive corrective actions that address the causes of these
violations. Many of these corrective actions were already in place or
underway to address key programmatic weaknesses at the time the RHR pump
problem was discovered.

Further, as discussed in Enclosure 2, Inspection Report No. 50-327, 328/90-01
identifies November 29, 1989, as the date when the NRC resident inspector
first identified the RHR pump problem. Before this date, TVA had discovered
data suggesting the problem and was in the process of determining the
significance of the data. TVA's actions to address this issue both preceded
and occurred in parallel to NRC's involvement leading up to full
identification and confirmation of the RHR pump problem. Given the important
roles played by both TVA and NRC personnel, TVA questions the escalation of
the proposed base civil penalty based on NRC identification of the problem.

Accordingly, for the reasons given above and further detailed in the
enclosures, and after careful consideration of the NRC enforcement policy
outlined in 10 CFR, Part 2, Appendix C, TVA respectfully requests NRC to
reconsider the escalation of the proposed base civil penalty based on NRC
identification. As detailed in Enclosure 2 to this submittal, TVA believes
that this event resulted from past programmatic weaknesses that had been

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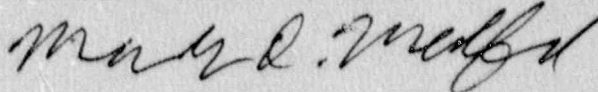
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previously recognized and for which extensive corrective actions had already been implemented or initiated. TVA further believes that the condition was discovered as a result of ongoing programmatic enhancements in the Systems Engineering organization. In light of this perspective, TVA believes that escalation of the civil penalty as proposed is unnecessary to emphasize the significance of past problems or to emphasize the need for TVA to aggressively identify and correct problems.

If you have any questions concerning this submittal, please do not hesitate to telephone me at (615) 751-4776.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



Mark O. Medford, Vice President
Nuclear Technology and Licensing

Sworn to and subscribed before me
this 9th day of May, 1990
Dandra D. Burk
Notary Public
My Commission Expires 11/4/92

Enclosures

cc: Ms. S. C. Black, Assistant Director (Enclosures)
for Projects

TVA Projects Division
U.S. Nuclear Regulatory Commission
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852

NRC Resident Inspector (Enclosures)
Sequoyah Nuclear Plant
2600 Igou Ferry Road
Soddy Daisy, Tennessee 37379

Mr. B. A. Wilson, Assistant Director (Enclosures)
for Inspection Programs

TVA Projects Division
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

ENCLOSURE 1

RESPONSE TO NRC INSPECTION REPORT
NOS. 50-327/90-01 AND 50-328/90-01
D. M. CRUTCHFIELD'S LETTER TO O. D. KINGSLEY, JR.,
DATED APRIL 12, 1990

Violation 50-327, 328/90-01-03

"A. 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, requires in part, that measures shall be established to assure that conditions adverse to quality, such as failures, deviations and nonconformances are promptly identified and corrected.

NRC Bulletin 88-04, Potential Safety Related Pump Loss, issued May 5, 1988, alerted licensees to a significant condition adverse to quality that involved the potential for the deadheading of one or more pumps in safety-related systems that have a miniflow line common to two or more pumps or other piping configurations that do not preclude pump-to-pump interaction during miniflow operation.

Licensee engineering calculation DNE SQN-74-D053, dated July 22, 1988, determined that RHR pump damage would occur for a pump that was run deadheaded for greater than 11 minutes.

10 CFR 50.9 requires, in part, that information provided to the Commission by a licensee, be complete and accurate in all material respects.

Licensee letter to the NRC in response to NRC Bulletin 88-04, dated August 2, 1988, stated that the potential existed for deadheading a safety-related RHR pump due to pump-to-pump interaction under miniflow conditions when the head differential between the pumps exceeded 11 pounds per square inch (psi). The letter also stated that recent surveillance test data demonstrated that the head differential between the two RHR pumps was less than 11 psi, ensuring a minimum flow of 100 gallons per minute to allow pump operation for up to 20 minutes without requiring operator intervention.

Contrary to the above, as of December 5, 1989, the licensee failed to adequately identify and correct a significant condition adverse to quality regarding the potential for safety-related RHR pump damage from deadheading due to pump-to-pump interaction during miniflow conditions in that:

1. No action had been taken to preclude damage to a RHR pump should deadheading develop due to pump-to-pump interaction under miniflow conditions, until a special test demonstrated that the Unit 1 RHR pumps deadheaded under those conditions on December 5, 1989.
2. The licensee's evaluation of Unit 1 RHR pump surveillance test data, referenced in their August 2, 1988 letter to the NRC, was inadequate to identify that an RHR pump was likely to deadhead due to pump-to-pump interaction, as the majority of the test data from July 1987 through August 1988 indicated that the head differential pressure between the pumps exceeded 11 psi. As a result inaccurate information was provided to the Commission on August 2, 1988."

Admission or Denial of the Alleged Violation (Violations A.1 and A.2)

TVA admits the violation.

Reason for the Violation (Violations A.1 and A.2)

The cause of this violation was an inadequate evaluation of and response to NRC Bulletin 88-04 in 1988. A brief review of the event chronology will illustrate this cause.

During TVA's evaluation of the bulletin, the potential for RHR pump-to-pump interaction was recognized, and an analysis was performed by Nuclear Engineering (NE) personnel in Knoxville, Tennessee. This evaluation showed that pump deadheading could occur if the head difference between the residual heat removal (RHR) pumps exceeded 11 pounds per square inch differential (psid). However, based on an evaluation of the most recent pump test data (second quarter 1988), the deadheading problem was thought not to exist on the RHR pumps at that time. Other historical pump test data was not considered during this evaluation. This oversight was the result of inadequate coordination and communication between Knoxville NE and knowledgeable site organizations. To provide for continued monitoring of the RHR pumps, a surveillance test program was set up to be performed during each refueling outage.

The surveillance test program averaged RHR pump performance data collected during routine testing over the operating cycle and specified an 8-psid acceptance criterion as the threshold value above which an evaluation of the data by NE would be required. The routine test data was from tests performed on each RHR pump individually. The tests were not performed with both RHR pumps running at the same time and were not performed on both RHR pumps on the same day. Consequently, the RHR surveillance test program did not contain a ready mechanism to signal developing pump-to-pump interaction problems between refueling outages. The first performances of the surveillance test program were scheduled for the Unit 2 Cycle 3 and Unit 1 Cycle 4 outages.

In preparation for the Unit 1 Cycle 4 outage, the RHR system engineer reviewed the Unit 1 surveillance test procedure during the week of November 20, 1989. The system engineer determined that the 8-psid acceptance criterion would not be met based on existing Unit 1 test data. He notified his supervisor of the situation on November 22, 1989. The system engineer also notified NE of the situation by correspondence dated November 27, 1989. At this point, the system engineer was not familiar with the problems identified in Bulletin 88-04 and did not recognize the full significance of not meeting the 8-psid acceptance criterion.

In parallel with but unrelated to the above-described system engineer's actions, routine quarterly American Society of Mechanical Engineers (ASME) pump testing was conducted on Unit 2 on November 28, 1989. During this testing, the 2A-A RHR pump exceeded the developed head acceptance criteria specified in the test procedure. Additional testing was performed, but the pump still exceeded the pump suction-to-discharge differential pressure requirements. The pump was determined to be acceptable and operable in accordance with ASME, Section XI, pump testing requirements on

November 29, 1989. However, because NE was concerned with the potential of a pump-to-pump interaction from the increased head on the 2A-A pump, an engineering evaluation was performed. The results of that evaluation demonstrated that the differential pressure between A and B train pumps did not exceed the 11-psid limit established for the NRC bulletin response. As a result of the disposition of the Unit 2 pump problem, the NRC resident inspector questioned the system engineering supervisor on November 30, 1989, about the Unit 1 RHR pump-to-pump differential head data. The NRC inspector was informed that NE was evaluating the Unit 1 data based on the November 27 notification by the system engineer. In parallel, Technical Support was further evaluating the Unit 1 RHR data in which considerable scatter had been observed. The data scatter, while not significant for evaluating differential pressure across the pump, did cause the system engineer to question the validity of the data for use in determining pump-to-pump differential pressures.

Review and evaluation of the Unit 1 RHR pump data from quarterly testing continued on December 1, 1989. Two basic problems were noted with the data. First, when data on a single pump was compared from one run to the next, there was significant data scatter. RHR Pump 1A-A showed up to 14 psid between performances with an average of approximately 7 psid. RHR Pump 1B-B showed up to 11 psid with an average of 4 psid. Second, when comparing single-point data over the time period following the Unit 1 Cycle 3 refueling outage, seven instances were observed when the pump-to-pump data would pass the 11-psid criteria and 10 other instances where it would not. When the data points since the last refueling were averaged, the computed value was between 12 and 13 psid as indicated in the memorandum to NE from the system engineer dated November 27, 1989. By the end of the day of December 1, Technical Support was not able to reach a firm conclusion because of doubts about both the accuracy of the data and the averaging methods used to evaluate deadheading. To resolve these doubts, a special surveillance test was proposed to test both RHR pumps at the same time to obtain a direct reading of pump-to-pump differential pressure. Operations management reviewed the system operating instruction for RHR and determined that both pumps could be run in parallel in accordance with that procedure. Operation of both pumps in parallel was conducted on the evening of December 5, 1989, and the Unit 1 RHR deadheading problem was confirmed.

In summary, the cause of this violation was an inadequate program review of the pump data in preparing the response to NRC Bulletin 88-04. This bulletin response contained a conclusion that was correctly drawn from the data used as its basis, but that was not predicated on a sufficient data base, i.e., only the most recent data pair was utilized rather than all previous data.

Corrective Steps That Have Been Taken and Results Achieved (Violations A.1 and A.2)

Immediate corrective actions included placing the 1B-B RHR pump handswitch in the pull-to-lock position to ensure one train of emergency core cooling system (ECCS) was operable. Subsequent corrective actions included consulting with Westinghouse Electric Corporation and then revising Emergency Instruction E-O, "Reactor Trip or Safety Injection," to ascertain if one RHR pump should be stopped. This revision resulted in the following change to the procedure: If the reactor coolant system (RCS) pressure is greater than 180 pounds per

square inch gauge and both RHR pumps are running, then one RHR pump is stopped and placed in standby. Because this action ensures RHR pump operability, it eliminated the need for future evaluation of the pump data for indications of deadheading. Consequently, that surveillance test program was cancelled. In addition, the RHR system operating instruction has been revised to ensure that the RHR pumps are not run in parallel on miniflow for greater than 10 minutes.

As a result of confirmation of the RHR pump deadheading condition, TVA also reevaluated its response to NRC Bulletin 88-04. A revised response was submitted to NRC on March 15, 1990, describing the revised short-term corrective actions (as described above) and long-term corrective actions. The long-term corrective action pertaining to the RHR pumps is to install check valves in the discharge piping downstream of the miniflow line branch. This measure will preclude the possibility of pump-to-pump interaction. As committed in the revised bulletin response, this installation will be complete before start-up from the Cycle 5 refueling outage for each unit. Installation of the check valves will alleviate the need for one of the RHR pumps to be stopped, as currently required by Emergency Instruction E-0.

Following identification of the inadequate Bulletin 88-04 response, TVA conducted a review of the 1987-1989 SQN bulletin responses and records. The conclusion reached was that the responses are appropriate and valid with this single exception, Bulletin 88-04. The review also established that condition adverse to quality reports (CAQRs) were written when deficiencies were identified, with the exception of a single prerestart item that was tracked as a specific nuclear performance plan restart item, rather than a CAQR.

TVA also reviewed the ASME, Section XI, program following this event to determine the cause for recent testing problems, including the RHR pump test data scatter mentioned previously. TVA concluded that the program is in overall compliance with requirements; however, several recommendations were made regarding (1) the use of snubbers on test instruments to reduce data scatter, (2) the use of dedicated test equipment for ASME, Section XI, testing, and (3) the consideration to upgrade installed instrumentation as an alternative to test equipment. The NRC senior resident inspector reviewed this report during routine monthly activities in January 1990. As reported in the associated exit meeting and subsequent inspection report, no specific safety or technical issues were identified.

Prior to discovery of this event, TVA had instituted major programmatic changes that improved the methods used to manage significant licensing issues, such as responses to NRC bulletins. The Licensing project management system was instituted in January 1989. In particular, Site Licensing now has the lead responsibility for evaluation of and responses to NRC bulletins. A licensing project manager (LPM) is assigned to each issue and is responsible for developing detailed action plans defining tasks, scope, schedules, and responsibilities. Additionally, the LPM ensures that the appropriate individuals, disciplines, and organizations are involved and are assigned clearly defined responsibilities regarding plan development and issue resolution. Information provided by the various organizations is handled through the formal licensing information request process that has the necessary controls to ensure completeness and accuracy. The LPM initiates and drives bulletin investigations and evaluations. Specific CAQRs are written

when deficiencies are identified. In summary, this change, initiated after the Bulletin 88-04 response but before this enforcement action, ensures that the appropriate parties are involved in evaluating licensing issues and developing responses. This new process addresses the root cause of the violation.

Several other programmatic changes that are having a positive impact on the resolution of licensing issues had been made at SQN prior to discovery of this event. For example, the SQN NE Project Engineer now has the sole responsibility for and control of engineering design activities at SQN. In addition, 90 percent of all engineering is now done at the SQN site. Technical Support is now the focal point at the plant for system-related problems. The close proximity and direct involvement of these organizations are contributing to a more systematic and thorough evaluation of plant problems.

In addition, major organization and management changes were made to the Technical Support group during the June to October 1989 timeframe to improve performance. A new Technical Support manager with experience in managing a successful system engineering program was hired from outside TVA, and the Institute of Nuclear Power Operations was requested to perform a peer evaluation of the Technical Support area during the November plant evaluation. A complete assessment of Technical Support was recently completed, and needed improvements are being implemented.

TVA is also actively recruiting experienced system engineers and has established a lead engineer concept to best utilize existing strengths. An evaluation of existing supervisors and engineers is also being conducted. In addition, the key elements of system engineering (ownership of problems, leadership in problem resolution, sensitivity to regulatory and operational aspects, and focus on operability and problem solving) will continue to be reinforced through direct involvement of senior plant and Technical Support management. These changes are intended to further strengthen the system engineering capabilities at SQN.

In addition, in February 1990, TVA conducted a review of two previous nuclear experience review (NER) items (NRC Information Notice 87-59 and a Westinghouse letter issued on October and November 1987). These items discussed two potential problems with the RHR system: deadheading of pumps with common miniflow lines and adequate miniflow capacity for single pump operation. Later, Westinghouse correspondence (November 1987) concluded that the earlier information was not applicable to SQN because of separate RHR miniflow lines and the hydraulic isolation of other ECCS pumps with common miniflow lines through the use of separate flow restricting orifices for each pump. TVA's evaluation of these items led to the same conclusion and also confirmed the adequacy of miniflow capacity for single RHR pump operation. The pump-to-pump interaction discussed in Bulletin 88-04 was not sufficiently defined until receipt of another Westinghouse letter in late May 1988, which described the interaction and noted that previous conclusions regarding pump deadheading potential were no longer correct. As a result, the RHR pumps were included in the evaluation for Bulletin 88-04 after receipt of the Westinghouse letter.

While the NER program was not directly involved in this problem, several changes to improve the NER program were made in June 1989. A dedicated and

expanded staff is now onsite at TVA plants. The experience and qualification of personnel in the NER program have been upgraded. Weekly reviews are conducted by conference calls between the sites and corporate NER groups to identify significant safety issues. The new organization and staffing provide improved capability to recognize and act on CAQRs and potential significant safety issues. In particular, items that are identified as potentially safety significant are designated as immediate attention items and hand carried to the appropriate principal managers for evaluation. The line managers complete the evaluation and make operability and immediate reportability determinations. Items that meet the criteria are written as CAQRs and are reviewed by the Management Review Committee.

Recent management actions have been taken to change personnel attitudes about problem reporting and to encourage problem identification to supervisors and management. Two site dispatches were issued from the Vice President, Nuclear Power Production, stating these expectations. This topic was also emphasized in the recent Site Director's quarterly meetings held with over 1,300 SQN employees (16 meetings). The CAQR Management Review Committee has been restructured to include senior site management to assess the extent to which the message regarding problem reporting is being understood, to ensure prompt corrective actions to identified problems, and to ensure quick resolution of potential problems. A multisite task force was formed in early November 1989 to evaluate the implementation and structure of the problem identification process and recommend improvements. The Vice President, Nuclear Power Production, was briefed on the team recommendations in January 1990. The planned changes to this program include the utilization of a single problem reporting document, a lower threshold for incident investigations, and the establishment of criteria to ensure the appropriate resolution of potential problems. The change to utilize a single problem reporting document will be implemented by June 1, 1990.

In summary, it is clear from the above discussion that the programmatic problems that led to these violations had been previously identified by TVA. Corrective actions to address these broad problem areas had been put in place or were ongoing at the time the deadheading issue was identified. Specific efforts were underway and continuing to improve engineering evaluations, to emphasize timely identification and resolution of problems, to upgrade the Technical Support organization, and to improve licensing submittals (including bulletin responses).

Corrective Steps That Will Be Taken to Avoid Further Violations
(Violations A.1 and A.2)

No further actions are required.

Date When Full Compliance Will Be Achieved (Violations A.1 and A.2)

SQN is in full compliance.

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

"B. Technical Specification 6.8.1, requires in part, that written procedures be established, implemented and maintained covering the applicable procedures recommended in Appendix 'A' of Regulatory Guide 1.33, Revision 2, February 1978.

Appendix 'A' of Regulatory Guide 1.33, Revision 2, requires procedures for combating emergencies and other significant events.

Technical Specifications [sic] 6.8.2, requires in part, that changes to procedures be reviewed and approved prior to implementation as set forth in Specification 6.5.1A.

Technical Specification 6.5.1.A, requires in part, that each review determine whether or not an unreviewed safety question is involved pursuant to 10 CFR 50.59.

Contrary to the above, on December 6, 1989 the licensee performed an inadequate review of Emergency Instruction E-0, Reactor Trip and Safety Injection, Revision 7, required by Regulatory Guide 1.33 to combat emergency events. The procedure change would terminate RHR operation prior to the procedure steps requiring operator examination of certain parameters to diagnose whether a LOCA was occurring. The review failed to ensure that the procedure change did not involve an unreviewed safety question pursuant to 10 CFR 50.59.

Violations A.1, A.2, and B are a Severity Level III Problem (Supplement I).

Civil Penalty - \$/5,000 (assessed equally among the violations)"

Admission or Denial of the Alleged Violation (Violation B)

TVA admits the violation.

Reason for the Violation (Violation B)

Revision 7 to E-0, which required stopping both RHR pumps, was technically deficient. The technical evaluation performed for Revision 7 was done solely on the basis of the accident analyses presented in the Final Safety Analysis Report (FSAR). During this evaluation, the reviewers did not adequately review the potential impact of the change in that they only considered the specific break sizes addressed in the FSAR.

Chapter 15 of the FSAR addresses a specific set of bounding 10 CFR 50, Appendix K, breaks. The reviewers considered these breaks to be bounding for all cases. There were however other break sizes than those in the FSAR that could be impacted by the procedure change. The FSAR did not explicitly define the key assumptions regarding RHR operation for small break loss of coolant accidents (SBLOCAs); therefore, the reviewers assumed that no credit was taken for RHR injection for these breaks. The Operations personnel responsible for implementation of the emergency procedure program had recently assumed this

responsibility during realignment of Operations staff duties. Special emphasis had not been provided during indoctrination in this function, and program requirements were not fully understood by the personnel involved with the subject revision. Although knowledgeable personnel previously responsible for changes to emergency operating procedures were consulted for this revision, the program did not require the appropriate checks and balances in that Westinghouse was not consulted regarding the change. Review by the Plant Operations Review Committee (PORC) was not required, and the emergency procedure change evaluation was not well documented.

During the preparation of the safety assessments for both Revisions 7 and 8 to E-0, the individuals involved made an incorrect determination that because the change had no consequences (based on their review of the accident analyses discussed in the FSAR), it had no effect on RHR system operation or information provided in the FSAR. Accordingly, the safety assessment questions were checked "no," indicating that a safety evaluation was not required. In both Revisions 7 and 8, it was clear that the reviewers were concerned with whether E-0 itself was described in the FSAR as well as whether the RHR system operation, as controlled by E-0, was described in the FSAR. A safety evaluation was performed for Revision 8 at the direction of plant management.

Corrective Steps That Have Been Taken and Results Achieved (Violation B)

TVA has taken prompt and comprehensive steps to address this aspect of the violation. First, the administrative controls have been strengthened for emergency operating procedure changes. PORC review and Plant Manager approval are now required for all emergency operating procedure changes. Administrative Instruction (AI) 2, "Guidelines for Preparing, Verifying and Validating Operating Instructions," has been revised to require Westinghouse concurrence with any change to the emergency operating procedures that deviates from the Westinghouse Owner's Group/Emergency Response Guidelines. Verification and validation requirements were also strengthened with particular emphasis on simulator validation whenever possible. In addition, the step deviation document process has been enhanced by detailing specific evaluation criteria in AI-2.

Second, training on the above changes has been conducted for the Operations personnel responsible for management of the emergency procedure change process. Westinghouse had previously confirmed the technical adequacy of the emergency procedures in September 1989. Revisions 7 and 8 to E-0 were the only emergency procedure changes made since the Westinghouse evaluation.

Third, TVA reviewed the safety assessment problem and identified two areas for correction. A clarification to the FSAR regarding RHR operation for SBLOCAs was submitted in the April 1990 update. A training letter was sent to Level I and Level II 50.59 reviewers describing the RHR event, the subsequent procedure changes, safety evaluations, and the lessons learned. Particular emphasis was placed on the fact that a change without ultimate adverse consequence could still result in having an effect on the system and therefore require a safety evaluation. This training is considered an enhancement to the major 50.59 program changes made in November 1989.

The inadequate safety evaluation is the single implementation problem identified under the revised 50.59 process as noted in NRC Inspection Report 90-01.

Corrective Steps That Will Be Taken to Avoid Further Violations (Violation B)

No further actions are required.

Date When Full Compliance Will Be Achieved

SN is in full compliance.

ENCLOSURE 2

ANSWER TO PROPOSED IMPOSITION OF CIVIL PENALTY
INSPECTION REPORT NO. 50-327, 328/90-01
D. M. CRUTCHFIELD'S LETTER TO O. D. KINGSLEY, JR.,
DATED APRIL 12, 1990

Introduction

Pursuant to 10 CFR 2.205, TVA hereby submits its answer to the proposed civil penalty. As discussed below, TVA has reviewed the history and chronology of the residual heat removal (RHR) pump deadheading issue and TVA's response to the issue. TVA has reviewed the escalation and mitigation factors set forth in Section V.B. of the "General Statement of Policy and Procedure for NRC Enforcement Actions" (10 CFR, Part 2, Appendix C).

TVA concludes that the Unit 1 RHR problem was identified by TVA with subsequent identification of the relationship to Bulletin 88-04 by NRC. Both the NRC and TVA management pursued resolution of the issue. In view of the chronology of events and the importance of TVA's efforts in identifying the issue, escalation of the proposed base civil penalty on the grounds that NRC identified the problem is not warranted.

Additionally, TVA believes that the extensive programmatic corrective actions that had been put in place both prior to and following discovery of the RHR pump problem merit consideration. Accordingly, TVA respectfully requests that in view of these extensive corrective actions, NRC reconsider the 50 percent escalation of the proposed base civil penalty.

Circumstances of Identification and Reporting

Inspection Report No. 50-327, 328/90-01 identifies November 29, 1989, as the date when the NRC resident inspector identified the RHR pump deadheading problem. In the subsequent notice of violation, NRC identification of the problem was cited as the sole basis for a 50 percent escalation of the proposed base civil penalty. While TVA recognizes that the NRC inspector played a role in this issue, TVA considers that it had itself discovered the underlying facts before November 29, 1989. At the time NRC became involved, TVA was in the process of determining the significance of the issue.

The chronology of events described in Enclosure 1 is incorporated herein by reference. Based upon that chronology of events, TVA concludes that its RHR system engineer began evaluation of the RHR pump deadheading problem as a result of his preparations to perform the surveillance test during the Unit 1 Cycle 4 refueling outage. Although the system engineer was not aware of the Bulletin 88-04 aspect of the issue, by discovering a problem with the test data and bringing it to the attention of his supervisor and Nuclear Engineering (NE), a process had been started that would have resulted in identification of the full scope of the problem in a reasonable time without the interaction of the NRC resident inspector. While the inspector's interaction doubtless emphasized the identification and consequent resolution of the problem by focusing greater attention on the matter, TVA was already moving from discovery to full identification and resolution of the problem.

Since TVA had not completed the process of analyzing the issue at the time the NRC resident inspector became involved, TVA is not suggesting that the proposed base civil penalty should be mitigated on the basis of licensee identification. At the same time however, escalation of the proposed base civil penalty on the basis of NRC identification of the problem does not seem appropriate either. TVA believes that the initial discovery of the problem by the RHR system engineer and the actions he initiated that ultimately led to identification of the problem were complemented by the emphasis added by the NRC inspector's involvement.

Further, and perhaps as significant, was TVA's previous identification and correction of conditions that were ultimately determined to be the underlying cause of this specific problem. TVA maintains that this fact should also be considered in the staff's decision regarding identification of the problem. For this reason, TVA's extensive corrective actions addressing the root cause of this issue are summarized in the following discussion.

Extensiveness of Corrective Actions Further Offset the Escalation of the Proposed Base Civil Penalty

Section V.B.(2) of the NRC enforcement policy indicates that in evaluating the corrective action of a licensee, consideration will be given to, among other things, "the timeliness of the corrective action, degree of licensee initiative, and comprehensiveness of the corrective action"

TVA implemented extensive corrective actions to address the causes of the RHR pump deadheading issue and the inadequate safety assessment, as described in Enclosure 1. That description is incorporated herein by reference.

To summarize however, TVA's key corrective actions addressing aspects of both violations include:

- " Revision of emergency procedures providing administrative controls to prevent pump damage.
- l Administrative changes regarding the requirements for processing revisions to emergency procedures.
- t Training letter to apprise Level I and Level II 50.59 reviewers of lessons learned from the RHR pump events.

Revision of the SQM response to Bulletin 88-04 and scheduling hardware modifications to replace administrative control in the long term.
- " Programmatic changes affecting how licensing issues are managed using the licensing project management concept.
- l Changes regarding how the Nuclear Experience Review program is staffed and managed.
- t Organizational and management changes made to the Technical Support organization.

- " Functional responsibility changes made to the NE organization.
- 1 Management actions taken to encourage safety consciousness with regard to problem identification and reporting.

TVA's corrective actions can be divided into two categories: reactive and proactive. The reactive corrective actions are those that were taken after the pump problem was identified and confirmed, to protect equipment and adjust the methods for operating the plant during emergencies. TVA believes that it promptly took appropriate actions to address this violation once the condition was confirmed.

However, of particular significance in this case were TVA's comprehensive proactive actions. These proactive corrective actions are those that were implemented before discovery of the RHR pump problem to address underlying weaknesses that TVA had already recognized. Several of the past weaknesses being addressed by TVA at the time this violation was identified were in fact the causes of the original inadequate response to Bulletin 88-04. The end result of the proactive approach taken by TVA was that corrective actions to address the key programmatic weaknesses had been put in place before discovery of the specific RHR pump deadheading problem. Further, the discovery of the RHR pump problem by the system engineer was a result of the ongoing proactive organizational and management improvements being made within the Technical Support organization.

Overall, TVA's proactive and reactive corrective actions are good examples of prompt and effective corrective actions intended to promote the aggressive identification and resolution of problems.

TVA believes that the actions taken both before and after identification of the subject problem demonstrate TVA's willingness and ability to aggressively identify and correct problems. Additionally, because many of the corrective actions addressing key programmatic weaknesses had been put in place before discovery of the RHR pump problem, escalation of the proposed civil penalty to emphasize the need for TVA to identify and address these past problems is clearly unnecessary at this time.

Conclusion

TVA believes that its efforts led to the discovery of the RHR pump deadheading problem. The RHR system engineer had taken the initiative and was in the process of determining the significance of the problem when NRC became involved. Consequently, TVA believes the escalation of the proposed base civil penalty, based on NRC identification of the problem, is neither consistent with the facts nor with enforcement policy objectives. Additionally, TVA believes that the extensive programmatic corrective actions that were put in place both before and after discovery of the RHR pump problem merit some consideration when considering the identification and corrective action factors. For these reasons, TVA respectfully requests that NRC reconsider the 50 percent escalation of the proposed base civil penalty.