

Public Service  
Electric and Gas  
Company

E. C. Simpson

Public Service Electric and Gas Company

P.O. Box 236, Hancocks Bridge, NJ 08038

609-339-1700

Senior Vice President - Nuclear Engineering

**NOV 22 1996**

**LR-N96379**

Mr. James Lieberman  
Director, Office of Enforcement  
U. S. Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852-2738

Gentlemen:

**REPLY TO NOTICES OF VIOLATION  
LETTER WITH PAYMENT OF CIVIL PENALTY  
INSPECTION REPORT NOS. 50-354/96-03 AND 354/96-06  
HOPE CREEK GENERATING STATION  
FACILITY OPERATING LICENSE NPF-57  
DOCKET NO. 50-354**

Pursuant to the provisions of 10CFR2.201, Public Service Electric and Gas Company (PSE&G) hereby submits a reply to the notices of violation (NOVs) issued to the Hope Creek Generating Station in a letter dated October 23, 1996. The details of the reply are contained in the attachments to this letter as follows:

Attachment 1 - Reply to the control rod post maintenance testing violations

Attachment 2 - Reply to the Appendix B Criterion XVI violations

Attachment 3 - Reply to the 10CFR50.59 violation

Attachment 4 - Reply to the service water throttle valve violation

PSE&G does not deny the violations nor request mitigation of the proposed civil penalties. However, PSE&G does not agree with the facts as stated in the notice of violation for 10CFR50.59 related to the service water system modifications. Information provided in the response to these violations provide our clarification of the facts.

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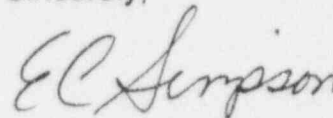
NOV 22 1996

An electronic transfer of funds payable to the Treasurer of the United States in the amount of the proposed civil penalty has been made.

In addition, your comments regarding independent oversight are being reviewed to determine what, if any, actions are necessary. The results of this review will be communicated to your resident inspectors.

Should you have any questions or comments on this transmittal, do not hesitate to contact us.

Sincerely,



Attachments (4)

C United States Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Mr. H. J. Miller, Administrator - Region I  
U. S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406

Mr. D. Jaffe, Licensing Project Manager - Hope Creek  
U. S. Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Mail Stop 14E21  
Rockville, MD 20852

Mr. R. Summers  
USNRC Senior Resident Inspector (X24)

Mr. K. Tosch, Manager IV  
Bureau of Nuclear Engineering  
33 Arctic Parkway  
CN 415  
Trenton, NJ 08625



CEM

BC Senior Vice President - Nuclear Operations (X04)  
Senior Vice President - Nuclear Engineering (N19)  
General Manager - Hope Creek Operations (H07)  
Director - QA/NSR (X01)  
Director - Nuclear Design Engineering and Projects (N25)  
Director - Nuclear System Engineering (X07)  
Operations Manager - Hope Creek (H01)  
HC Design Engineering Manager (N51)  
Manager - Nuclear Safety Review (N38)  
Manager - Joint Owners/Ext Aff Interface (N28)  
Onsite Safety Review Engineer - Hope Creek (H11)  
Supervisor - Salem Licensing (X09)  
Supervisor - Hope Creek Licensing (X09)  
Supervisor - Operations Assessment (X09)  
Senior Vice President and General Counsel, R. E. Selover (Newark, 5G)  
Perry D. Robinson, Esq.  
Records Management (N2 ; ,  
Microfilm Copy  
File Nos. 1.2.1, 3.1 (HC IR 354/96-03 and HC IR 354/96-06)

REF: LR-N96379

STATE OF NEW JERSEY     )  
  ) SS.  
COUNTY OF SALEM         )

E. C. Simpson, being duly sworn according to law deposes and says:

I am Senior Vice President - Nuclear Engineering of Public Service Electric and Gas Company, and as such, I find the matters set forth in the above referenced letter, concerning the Hope Creek Generating Station, are true to the best of my knowledge, information and belief.

EC Simpson

Subscribed and Sworn to before me  
this 22nd day of November 1996

Kimberly Jo Brown  
Notary Public of New Jersey

KIMBERLY JO BROWN  
NOTARY PUBLIC OF NEW JERSEY  
My Commission Expires April 21, 1998

My Commission expires on \_\_\_\_\_

**ATTACHMENT 1**  
**REPLY TO CONTROL ROD POST MODIFICATION TESTING VIOLATION**

**INSPECTION REPORT NO. 50-354/96-03 AND 354/96-06**  
**HOPE CREEK GENERATING STATION**  
**DOCKET NO. 50-354**

**LR-N96379**

**I. DESCRIPTION OF VIOLATIONS**

The description of the violations contained in the notice of violation received in the October 23, 1996 letter is as follows:

**A. Violation I.A**

"Technical Specification (TS) 6.8.1.a requires, in part, that written procedures in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978, shall be established, implemented and maintained. Sections 8 and 9, respectively, of Appendix A of Regulatory Guide 1.33 specify procedures for performing surveillance tests and for performing safety-related maintenance.

Hope Creek Nuclear Business Unit Administrative Procedure NC.NA-AP.ZZ-0009(Q), Revision 9, Work Control Process, Section 5.3.2.p, and Administrative Procedure NC.NA-AP.ZZ-0050(Q), Revision 3, Station Testing Program, Section 5.1.2, require, in part, that appropriate TS surveillance testing be planned and conducted following maintenance on safety-related equipment.

Contrary to the above, prior to March 13, 1996, the licensee did not plan the appropriate surveillance testing on certain safety-related equipment following maintenance. Specifically, although maintenance had been conducted on 68 control rods (such as packing adjustments on scram inlet or outlet valves, or replacement of scram solenoid pilot valves) during the November 1995 through March 1996 outage, the licensee did not plan for testing the scram insertion capability for the control rods following these maintenance activities that could affect the scram insertion time, but rather planned for deferral of testing until after the plant startup even though the TS would require testing prior to the startup. (01013)"

**B. Violation I.B**

"TS Surveillance Requirement 4.1.3.2.b requires, in part, that the maximum scram insertion time of control rods shall be demonstrated for specifically affected control rods following maintenance on the control rod or control rod system which could affect the scram insertion time.

**Reply to Control Rod Post Maintenance Testing Violation**

Contrary to the above, on February 15, 1991, the plant started up without completion of surveillance tests required for 24 control rods following maintenance; and on April 25, 1994, the plant was started up without completing the required surveillance testing on two control rods following maintenance. (01023)

These two violations are classified in the aggregate as a Severity Level III problem (Supplement 1),  
Civil Penalty - \$50,000"

**II. REPLY TO VIOLATION (POST MAINTENANCE CONTROL ROD TESTING)**

Pursuant to the provisions of 10CFR2.201, PSE&G hereby submits a written reply to the above notice of violation which includes an admission of the alleged violation, the reasons for the violation, a description of the corrective steps that have been taken and the associated results that have been achieved, a description of the corrective actions that will be taken to avoid further violations, and the date when full compliance will be achieved. This information is provided as follows:

**A. Admission of Alleged Violation**

PSE&G does not dispute the violation.

**B. Description of Event**

On March 13, 1996, the Hope Creek Generating Station was preparing for plant startup following its sixth refueling outage. On that date, the NRC resident inspector observing control room activities questioned the status of performance of Scram Time Testing (STT) for control rods. The question concerned Technical Specification (TS) 4.1.3.2.b, which states, "The maximum scram insertion time of the control rods shall be demonstrated through measurement with reactor coolant pressure greater than or equal to 950 psig and, during single control rod scram time tests, the control rod drive pumps isolated from the accumulators for specifically affected individual control rods following maintenance on or modification to the control rod or control rod drive systems which could affect the scram insertion time for those specific control rods."

As a result of this questioning, PSE&G concluded that deferring the scram time testing was inappropriate. Until that time, management personnel had 1) applied the provisions of TS 4.1.3.2.a (which allows STT to be deferred to prior to reaching 40% of rated thermal power) to the subject control rods which had

**Reply to Control Rod Post Maintenance Testing Violation**

maintenance performed on them and 2) recalled that STT had been performed after startup following previous outages.

Although no TS violation had occurred, a problem report was generated to investigate this "near-miss" and to determine the extent of the STT surveillance practices during previous outages. This investigation identified two previous occurrences where the requirements of TS 4.1.3.2.b were not satisfied prior to entering Operational Condition 2.

Following the third refueling outage, on 2/15/91, at 1751 hours, the plant entered Operational Condition 2, STARTUP, without completing the surveillance tests required by TS 4.1.3.2.b for 24 control rods. In addition, following the fifth refueling outage, on 4/25/94, at 0528 hours, the plant again entered into Operational Condition 2, STARTUP, without completing the required surveillance tests for two control rods. Failure to complete the required surveillances or to declare the control rods inoperable prior to the Operational Condition change resulted in a condition prohibited by TS, specifically TS 4.0.4, which states, "Entry into an Operational Condition or other specified applicable condition shall not be made unless the surveillance requirements associated with the Limiting Condition for Operation have been performed within the applicable surveillance interval or as otherwise specified."

**C. Reasons for the Violation**

The cause of the violations is attributed to the following:

1. Not verifying the Technical Specification requirements to generate the test schedule
2. Mis-applying the provisions of Technical Specification 4.1.3.2.a (which allows STT to be deferred prior to reaching 40% of rated thermal power) to the subject control rods which had maintenance performed on them
3. Lack of understanding of the provisions and relationship of Technical Specifications 3.0.4 and 4.0.4
4. Previous experience that STT had been performed after startup following previous outages

**D. Corrective Steps That Have Been Taken and Results Achieved**

1. The control rods were tested and were verified to be operable.

**Reply to Control Rod Post Maintenance Testing Violation**

2. To determine whether this finding had broader implications, startup was delayed by the Senior Vice President - Nuclear Operations for three days while an extensive review of work activities to verify Technical Specification compliance was completed by station personnel. This review included the following:
  - a. An Operations Department review of activities that were completed during the outage, the inoperable equipment log and the pending surveillance re-tests to ensure that the required surveillance tests and re-tests were identified and appropriately performed
  - b. Department reviews were conducted on specific Technical Specifications to ensure compliance prior to plant startup (each department affirmed compliance with the Technical Specifications)
  - c. The Quality Assurance, Nuclear Safety Review, and Licensing organizations performed an independent assessment of the Technical Specification affirmation process
  - d. The Technical Specification Surveillance Improvement Program (TSSIP) team performed a review of start-up procedures to ensure specific Technical Specification surveillances were addressed.

During these reviews, three minor deficiencies were identified and corrected prior to entering startup (as described in a letter sent to the NRC on 4/18/96).

3. A list of conditional Technical Specifications was developed and reviewed to ensure that sufficient controls are in place to maintain compliance with these requirements during plant operation and outages.
4. Technical Specification training was provided by the Senior Vice President of Nuclear Operations, the station General Manager and the Training Department to licensed operators and management personnel to improve the understanding of the Technical Specification requirements and to reinforce Senior Management expectations concerning strict compliance with Technical Specifications and the licensing basis.

This event has been incorporated into licensed operator requalification training.

Reply to Control Rod Post Maintenance Testing Violation

E. Corrective Steps That Will Be Taken to Avoid Further Violations

The corrective actions identified in Section D are sufficient to avoid further violations.

F. Date When Full Compliance Will Be Achieved

With the completion of the scram time testing, full compliance was achieved.

**ATTACHMENT 2  
REPLY TO APPENDIX B CRITERION XVI VIOLATIONS**

**INSPECTION REPORT NO. 50-354/96-03 AND 354/96-06  
HOPE CREEK GENERATING STATION  
DOCKET NO. 50-354**

**LR-N96379**

**I. DESCRIPTION OF VIOLATION**

The description of the violation contained in the notice of violation received in the October 23, 1996 letter is as follows:

**A. Violation II.A**

"10 CFR Part 50, Appendix B, Criterion XVI, requires, in part, that measures 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. Also, for significant conditions adverse to quality, measures shall assure that the cause of the condition is determined and corrective action taken to preclude recurrence.

1. Contrary to the above, from January 1992 to February 27, 1996, the licensee did not establish measures to assure that a certain condition adverse to quality was promptly identified and corrected. Specifically, in January 1992, the licensee identified that 15 pairs of High Energy Line Break (HELB) reactor building ventilation supply duct backdraft isolation dampers were installed backwards (since original plant construction) in various reactor building filtration, recirculation, and ventilation system supply ducts. This configuration deviated from plant design requirements, in that the "self-sealing" feature was invalidated, thereby causing a condition adverse to quality, and this condition adverse to quality was not corrected until February 27, 1996. (02013)
2. Contrary to the above:
  - a. From May 10, 1992 to October 12, 1992, the licensee did not establish measures to assure that a condition adverse to quality was promptly identified and corrected. Specifically, on May 10, 1992, the flow control needle valve for Control Rod 22-35 was adjusted in an attempt to correct a double notching condition. This adjustment resulted in a rod withdrawal speed of 5 inches per second, which was in excess of the value of 3.6 inches per second assumed in Section 15.4.1.2 of the Updated Final Safety Analysis Report for rod withdrawal error analysis. The withdrawal speed was also in excess of the speeds bounded by previously performed

General Electric analyses. However, the rod withdrawal speed was not corrected until October 12, 1992.

- b. On several occasions prior to March 1996, the withdrawal speeds were in excess of 3.6 inches per second and, although actions were taken in each case to adjust the withdrawal speed to be within limits, the licensee did not establish measures to address the cause of this significant condition adverse to quality. (02023)

This is a Severity Level III problem (Supplement 1).  
Civil Penalty - \$50,000"

**II. REPLY TO VIOLATION II.A.1 (BACKDRAFT ISOLATION DAMPER)**

Pursuant to the provisions of 10CFR2.201, PSE&G hereby submits a written reply to the above notice of violation which includes an admission of the alleged violation, the reasons for the violation, a description of the corrective steps that have been taken and the associated results that have been achieved, a description of the corrective actions that will be taken to avoid further violations, and the date when full compliance will be achieved. This information is provided as follows:

**A. Admission of Alleged Violation**

PSE&G does not deny the violation.

**B. Description of Event**

On January 20, 1992, the Filtration Recirculation Ventilation System (FRVS) supply side backdraft isolation dampers for rooms within the reactor building with the potential to experience a high energy line break (HELB), were identified to be installed in the reverse direction. On January 21, 1992, a Discrepancy Evaluation Form (DEF) was initiated which documented the discrepancy between the Hope Creek Generating Station's Updated Final Safety Analysis Report (UFSAR) and the as-built configuration of the plant. Based on engineering judgment, it was concluded that steam released from a potential HELB would not adversely affect equipment in adjacent rooms. This assessment was based on the assumption of successful detection and isolation of the postulated HELB.

During the maintenance outage of March 1992, the supply side backdraft isolation dampers for the Main Steam Tunnel were restored to the proper configuration. The remaining backdraft isolation dampers were left as is. An

engineering evaluation to document the effect of the mis-oriented backdraft isolation dampers was completed in August of 1992. The evaluation concluded that the ability to safely attain and maintain plant shutdown was not compromised by the mis-orientation of the supply side backdraft isolation dampers. Actions to update the Hope Creek licensing basis were not initiated.

On March 1, 1996, prior to the completion of Hope Creek Generating Station's sixth refueling outage (RFO6), the mis-oriented supply side backdraft isolation damper issue was re-reviewed. As a result, it was determined that from initial plant startup until March 1996 the mis-oriented supply side backdraft isolation dampers resulted in Hope Creek Generating Station being operated outside of its design basis.

**C. Reasons for the Violation**

As discussed in LER 96-006-01 dated June 11, 1996, the causes of the failure to implement timely corrective actions were determined to be the following:

1. Non-conservative decision making
2. Failure of management to ensure adequate appreciation for the importance of and knowledge of the design and licensing basis
3. Conflicting organizational goals
4. Previous lack of management commitment to the corrective action program implementation within the NBU in that we failed to adequately challenge conditions adverse to quality
5. An inadequate corrective action program

**D. Corrective Steps That Have Been Taken and Results Achieved**

The following corrective actions have been taken:

**1. Dampers Were Re-Oriented**

The orientation of the supply side backdraft isolation dampers was corrected prior to restart from RFO6. The outage was extended to accomplish this activity.

2. Implementation of an Enhanced Corrective Action Program

The NBU's current corrective action program, implemented in July 1995, consolidated and improved programs that had existed previously when the backdraft damper issue was identified. The program includes a low threshold for reporting problems, provides for aggressive and timely problem assessment and root cause determination, and management controls on completion schedules for specified corrective actions. Accountability for the corrective action program rests with station line management. As such, station managers are responsible to ensure thorough cause determination and identification of corrective actions to prevent recurrence.

3. Implementation of the Hope Creek IMPACT Plan

To implement cultural change and to improve individual performance, corrective actions in the areas of Human Resources, Work Management, Self Assessment, and Corrective Action are continuing in accordance with the Hope Creek IMPACT Plan. In addition, there are new members on the Hope Creek management team who are focusing on and emphasizing operating in a desired state. Management expectations were communicated regarding the accountability to 1) understand the design and licensing basis impacts in daily decision making and 2) understand what day to day operational challenges mean from the standpoint of equipment fulfilling it's safety function.

4. Issue Being Addressed Under the New CAP

- a. A multi-disciplinary team was assembled to assess the root cause of the failure to resolve the incorrect installation of the backdraft isolation dampers in a timely manner. The root cause analysis has been completed with its results summarized in Section C above. A summary of the significant completed corrective actions are described as follows. Corrective actions that are underway are described in Section E below.
- b. Engineering Evaluations, open Discrepancy Evaluation Forms (DEFs), open Design Change Requests (DCRs), open Design Change Packages (DCPs), and a sample of closed DEFs for selected safe shutdown and risk significant systems have been reviewed. The result of the review was confirmation that no new items needed to be added to Hope Creek's sixth refueling outage; however, several Action Requests were initiated to enhance, clarify or improve the design basis documentation.

- c. System Managers re-reviewed a sample of the systems in accordance with the guidance in the System Readiness Review procedure. No items were identified that should have been included in RFO6.
- d. On June 28, 1996, an article was printed in PSE&G's site wide newsletter to discuss the backdraft damper issue and reiterate the importance of operation within the design and licensing basis. The article defined the licensing basis and design basis and what they each consisted of, and also discussed actions to be taken upon discovery of a condition contrary to the design or licensing basis. The article stressed the need to improve our sensitivity to design and licensing basis issues and concluded that 1) the bottom line is that operating within our licensing and design basis is our desired state for operating the plant and 2) everyone is responsible to report design and licensing basis issues.
- e. On July 25, 1996, the Senior Vice President - Nuclear Operations provided written expectations to Licensed Operators regarding their knowledge of the licensing and design bases. This memo defined the terms licensing and design bases and stated that operating the plants in accordance with our design and licensing bases constitutes a fundamental approach to staying within our desired state. Management expectations were communicated regarding the accountability to: 1) understand the design and licensing basis impacts in daily decision making; and 2) understand what day to day operational challenges mean from the standpoint of equipment fulfilling its safety function, and the authority to demand the necessary support from support organizations in this matter.
- f. System Engineering and Design Engineering have received training on operability determinations and their role of making conservative decisions in providing recommendations to operations staff concerning operability of plant systems.
- g. Engineering Support Personnel received general training on the design and licensing basis with specific training relative to the backdraft damper issue. Training on the backdraft damper issue was incorporated into Licensed Operator Requalification Training as part of Operational Experience Feedback.
- h. As a result of performance issues at Hope Creek, including this issue, there has been a major change in the management personnel at Hope Creek including the management personnel in Engineering and Licensing that support Hope Creek. The management personnel involved in this issue in the above organizations have either, 1) left the Company, obtained jobs outside the NBU, 3) been reassigned management

positions outside Hope Creek, or 4) been assigned non-management positions within the NBU. The current management team is keenly aware of senior management's expectations regarding operating the plant within its design and licensing basis.

**E. Corrective Steps That Will Be Taken to Avoid Further Violations**

Additional corrective steps that will be taken to avoid further violations include the following:

1. A Design and Licensing Basis Overview Training Course is being developed and will be available to Engineering Support Personnel by March 31, 1997. The training will emphasize the importance of the design and licensing basis and the role each individual has in the safe conservative operation of the plants.
2. System specific design basis training covering the contents, use of, and importance of design bases and licensing bases will be established and conducted for System Managers and Design Engineers by March 31, 1998.
3. The Sr. Vice President - Nuclear Engineering will meet individually with each member of the Engineering organization that was involved with the backdraft isolation damper issue to counsel them on our position that, 1) operating within our licensing and design basis is our desired state for operating the plant, and 2) everyone is responsible to report design and licensing basis issues. This action will be complete by December 13, 1996.

**F. Date When Full Compliance Will Be Achieved**

Full compliance was achieved on March 12, 1996 upon completion of correct orientation of the backdraft dampers.

**III. REPLY TO VIOLATION II.A.2 (ROD WITHDRAWAL SPEED)**

Pursuant to the provisions of 10CFR2.201, PSE&G hereby submits a written reply to the above notice of violation which includes an admission of the alleged violation, the reasons for the violation, a description of the corrective steps that have been taken and the associated results that have been achieved, a description of the corrective actions that will be taken to avoid further violations,

and the date when full compliance will be achieved. This information is provided as follows:

**A. Admission of Alleged Violation**

PSE&G does not deny the violation.

**B. Description of the Event**

On March 14, 1996, a discrepancy was discovered by an NRC inspector between the Hope Creek Rod Withdrawal Error (RWE) analysis in the Updated Final Safety Analysis Report (UFSAR) and the procedure that is used to adjust control rod withdraw speeds [HC.OP-FT.BF-0001(Q)]. The RWE analysis assumes a withdrawal speed of 3.6 inches per second, which corresponds to a stroke time of 40 seconds for a rod to withdraw its full length (144 inches). The procedure allowed a minimum stroke time of 39 seconds (3.69 inches per second).

It was identified in our investigation of this discovery that, on May 10, 1992, Control Rod 22-35 was documented as having a withdrawal speed of 28.8 seconds which is equivalent to a rate of 5.0 inches per second. Control Rod 22-35 was adjusted to 51.8 seconds (2.78 inches per second) on October 12, 1992, after work was performed during RFO 4. The delay between discovery of the Rod 22-35 out of specification condition and implementation of corrective actions was approximately 5 months.

During our investigation of this event, data from previous control rod withdraw speed testing was reviewed. The results of this review indicated that the withdrawal speed for Control Rod 10-35 during a plant startup conducted on August 4, 1994, was 26.4 seconds which is equivalent to a rate of 5.5 inches per second. Control Rod 10-35 was adjusted to 46.8 seconds (3.08 inches per second) on August 5, 1994. Several other control rods were identified as having as left stroke times between 39.0 and 40.0 seconds during past refueling outages.

**C. Reasons for the Violation**

The root causes of the failure to perform a cause analysis when out of specification withdrawal speeds were recorded include the following:

1. The procedure did not include the UFSAR rod speed values.

2. No deficiency report was generated when Rod 22-35 was recorded with an out of specification withdrawal speed. This was due to personnel error on the part of the SNSS who signed the procedure off as being OPERABLE. This individual is no longer with PSE&G.
3. Personnel were not familiar with the impact of rod withdrawal speed on design basis assumptions. This was due to the failure of management to ensure adequate appreciation for the importance of and knowledge of the design and licensing basis.
4. Operations training did not address rod speed requirements or the adverse effects associated with excessive withdrawal speed.
5. Rod withdrawal speed testing was infrequently performed therefore allowing degradation to occur undetected.

**D. Corrective Steps That Have Been Taken and Results Achieved**

The following corrective actions have been completed:

**1. Implementation of Enhanced Corrective Action Program**

An enhanced corrective action program was implemented in July 1995 (this is discussed in detail in the response to the backdraft isolation damper issue). A comprehensive root cause analysis has been completed in accordance with the enhanced program. The results of the analysis are provided in Section C above.

**2. Issue Being Addressed Under the New CAP**

- a. All control rods were properly set to within UFSAR assumed values before completing plant startup from RFO 6.
- b. RWE analyses performed by General Electric for other plants, which were determined to be applicable to Hope Creek were assessed. This assessment indicates that changes to rod withdraw speeds from 3.0 to 5.0 inches per second are bounded within the margins of the RWE analysis.
- c. The procedure used for adjusting rod withdrawal speeds, HC.OP-FT.BF-0001(Q), has been revised to incorporate the UFSAR rod speed values and require that all rods are stroke timed at least once every 18 months. The 18 month frequency and the tighter acceptance criteria improve our capability to maintain the rods within their design basis values.

- d. Control Rod Drive system operation and maintenance procedures have been reviewed to ensure consistency between these procedures and the UFSAR and GE Operation and Instruction Manuals (GEKs). There were no additional discrepancies identified as a result of this review.
- e. On June 28, 1996, an article was printed in PSE&G's site wide newsletter to reiterate the importance of operation within the design and licensing basis. The article defined the licensing basis and design basis and what they each consisted of and also discussed actions to be taken upon discovery of a condition contrary to the design or licensing basis. The article stressed the need to improve our sensitivity to design and licensing basis issues and concluded that 1) the bottom line is that operating within our licensing and design basis is our required state for operating the plant and 2) everyone is responsible to report design and licensing basis issues.
- f. System Engineering and Design Engineering have received training on operability determinations and their role of making recommendations to operations staff concerning operability of plant systems.

**E. Corrective Steps That Will Be Taken to Avoid Further Violations**

Additional corrective steps that will be taken to avoid further violations include the following:

- 1. A Design and Licensing Basis Overview Training Course is being developed and will be available to Engineering Support Personnel by March 31, 1997. The training will emphasize the importance of the design and licensing basis, and the role each individual has in the safe conservative operation of the plants.
- 2. Initial licensed operator training materials have been updated. Operator continuing training on rod speed requirements and the adverse effects associated with excessive withdrawal speed will be completed by August 31, 1997.
- 3. System specific design basis training covering the contents, use of, and importance of design bases and licensing bases will be established and conducted for System Managers and Design Engineers by March 31, 1998.

F. Date When Full Compliance Will Be Achieved

Full compliance was achieved when all control rods were stroke timed and adjusted to within UFSAR values prior to startup from RFO 6 (March 1996).

**ATTACHMENT 3**  
**REPLY TO BACKWASH VALVE MODIFICATION (10CFR50.59) VIOLATION**

**INSPECTION REPORT NO. 50-354/96-03 AND 354/96-06**  
**HOPE CREEK GENERATING STATION**  
**DOCKET NO. 50-354**

**LR-N96379**

**I. DESCRIPTION OF VIOLATION**

The description of the violation contained in the notice of violation received in the October 23, 1996 letter is as follows:

**A. Violation II.B**

"10 CFR 50.59(a)(1) states, in part, that the holder of a license may make changes in the facility as described in the safety analysis report, without prior Commission approval, unless the proposed changes involve changes in the TS incorporated in the license, or an unreviewed safety question. 10 CFR 50.59(a)(2) states, in part, that an unreviewed safety question shall be deemed to exist if the margin of safety as defined in the basis of any TS is reduced.

Contrary to the above, the licensee made changes to the facility as described in the Section 9.2.1.4 of the FSAR. Section 9.2.1.4 of the FSAR stated, in part, that a self-cleaning strainer downstream of each station service water pump continuously backwashes a small amount of water via a bypass valve and when the strainer is subjected to an excessive differential pressure, a high differential switch opens the main backwash valve. The changes to the facility involved unreviewed safety questions, without prior Commission approval. Specifically,

1. In February 1996, the licensee implemented design change DCP 4EC3546 that would automatically open the main backwash valve whenever the associated service water pump started, and leave the valve open as long as the pump was running, rather than maintain the valve in the normally closed position. The modification constituted an unreviewed safety question because it reduced the margin of safety as defined in the basis of TS 3/4.7.1, "Service Water Systems" in that it decreased the amount of station service water system flow available for the safety auxiliary cooling system by diverting some of the flow away from the heat exchangers to backwash the strainers. However, this change was made without Commission approval.
2. After installation of design change DCP 4EC3546 which permitted automatic opening of the main backwash valve whenever the associated

**Reply to Backwash Valve Modification 50.59 Violation**

service water pump started, the licensee discovered that flow measurements taken during post modification testing did not compare favorably to SW flow benchmarks. However, this discrepancy was not considered important because a flow balance completed in 1992 had verified adequate flow through the station auxiliaries cooling system heat exchangers with the backwash valve full open. As a result, the licensee allowed the condition to continue and compensated for it by revising the 10 CFR 50.59 safety evaluation performed to support the modification, by administratively limiting the ultimate heat sink (UHS) temperature to 84.6 degrees F, a value less than the TS limit of 88.6 degrees F. This temporary reduction in UHS water temperature was necessary to ensure design basis heat removal requirements could be met until a complete service water flow balance could be conducted following plant restart. The licensee approved this change in March 1996 and continued to control the system with this administrative limit substituted for a TS limit, rather than closing the valve or obtaining a change to the TS. (02033)

This is a Severity Level III violation (Supplement I).  
Civil Penalty - \$50,000"

**II. REPLY TO VIOLATION II.B (BACKWASH VALVE MODIFICATION)**

Pursuant to the provisions of 10CFR2.201, PSE&G hereby submits a written reply to the above notice of violation which includes an admission of the alleged violation, the reasons for the violation, a description of the corrective steps that have been taken and the associated results that have been achieved, a description of the corrective actions that will be taken to avoid further violations, and the date when full compliance will be achieved. This information is provided as follows:

**A. Admission of Alleged Violation**

PSE&G does not deny that a violation occurred; however, PSE&G's assessment of the events differ from the NRC's assessment as described below.

**B. Description of Event**

On February 12, 1996, during development of the design change package (DCP) to change the backwash valve logic and improve the reliability of the station service water system (SSWS), Engineering identified that the SSWS calculations did not properly account for the actual flow through the backwash line. In consideration of this condition, a flow balance was included as a post-modification requirement to address the flow discrepancy concern and to

**Reply to Backwash Valve Modification 50.59 Violation**

baseline a SSWS flow model that was being developed. This requirement was included in the DCP and the 10CFR50.59 safety evaluation.

At the time of the modification installation on March 8 and 9, it is PSE&G's position that assurance existed that the diversion of flow (including maximum potential flow through the backwash valves) had been accounted for. Specifically, as stated in the violation, flow balancing had been performed in 1992 with the valves full open, and as described in the HC UFSAR Section 9.2.1.4, the valves were always capable of cycling full open and remaining in that position. The Hope Creek Technical Specification Bases do not discuss this aspect of the system. As a result, the modification was approved for implementation.

The flow balance activities were also initiated; however, the calculational model could not be baselined and the flow balance could not be completed due to inconsistencies between the flow model and the collected data. A decision was made to defer the post-modification flow balance testing because the window that had been provided to perform the testing expired. As a result of the deferral, the DCP was re-evaluated. Since the flow balance could not be completed as required by the original 10CFR50.59 safety evaluation for the DCP, a revision to the safety evaluation was promptly prepared which deferred that requirement.

The suspicion was that the SSWS/safety auxiliaries cooling system (SACS) throttle valves might not be properly positioned. An operational administrative limit on the ultimate heat sink (UHS) temperature was established to account for the unreconciled data. This information was included in the revised 10CFR50.59 safety evaluation. No corrective action program Action Request was written to identify the data discrepancies.

On March 17, the flow balancing activities were completed. The results confirmed that the SSWS/SACS throttle valves were in an improper position as hypothesized. Following identification of the mis-positioned valves, they were re-positioned and the flow balance was completed thereby eliminating the need for the administrative control on the UHS temperature limit (Reference: LER 354/96-009 dated April 14, 1996). The throttle valve mis-positioning issue has been cited as a separate violation, and information on that violation is provided in Attachment 4.

**C. Reasons for the Violation**

The original modification to allow for the continuous backwash of the SSWS strainers was bounded within the licensing basis and therefore was not a "reduction in the margin of safety". The Hope Creek TS Bases are silent on the

**Reply to Backwash Valve Modification 50.59 Violation**

specifics of the system in this regard. In addition, the UFSAR clearly states how the system responds and clearly acknowledges that the valves go open in response to expected events. In conclusion, our previous system set-up clearly imposed system capability requirements consistent with the licensing basis by our inclusion of full open backwash valves.

Regarding the revised safety evaluation: PSE&G believes that the revision was properly generated to defer testing (flow balancing). However, a separate condition report in accordance with the corrective action program should have been generated to evaluate the concern with the discovered information (i.e., flow data). Then, in accordance with 10CFR50 Appendix B and Generic Letter 91-18, an operability determination which included an administrative control for a degradation discovered at our facility could have been properly imposed until the condition adverse to quality was dispositioned and closed through repair, rework, or accept as is through an amendment to the Technical Specifications. PSE&G acknowledges that the 10CFR50.59 Safety Evaluation cannot be used to impose administrative controls on Technical Specifications.

**D. Corrective Steps That Have Been Taken and Results Achieved**

The following corrective steps have been taken:

1. An enhanced operability determination process has been implemented at Hope Creek that more clearly describes how to use Generic Letter 91-18. System Engineering and Design Engineering have received training on operability determinations and their role in making recommendations to operations staff concerning operability of plant systems.
2. PSE&G has implemented the April 1996 NRC guidance on 10CFR50.59.

**E. Corrective Steps That Will Be Taken to Avoid Further Violations**

Additional corrective steps that will be taken to avoid further violations include the following:

1. 10CFR50.59 training will be modified to discuss this issue and clearly indicate when a condition report should be generated and not controlled via 10CFR50.59.

**F. Date When Full Compliance Will Be Achieved**

Full compliance has been achieved.

**ATTACHMENT 4**  
**REPLY TO MIS-POSITIONED THROTTLE VALVE VIOLATION**

**INSPECTION REPORT NO. 50-354/96-03 AND 354/96-06**  
**HOPE CREEK GENERATING STATION**  
**DOCKET NO. 50-354**

**LR-N96379**

**I. DESCRIPTION OF VIOLATION**

The description of the violation contained in the notice of violation received in the October 23, 1996 letter is as follows:

**A. Violation III**

"TS 3.7.1.2.(b) requires, in part, that the service water system loops be comprised of an operable flow path capable of taking suction from the Delaware River (ultimate heat sink) and transferring the water to the Safety Auxiliary Cooling System (SACS) heat exchangers.

Contrary to the above, from November 1992 until March 17, 1996, the service water flow throttle valves to the SACS heat exchangers were improperly set following modification activities in November 1992. As a result, the flow path was not capable of transferring sufficient cooling water from the Delaware River to the SACS heat exchangers for certain design basis postulated operating conditions, namely, extreme low river water level, pump degradation, and high river water temperature.

This is a Severity Level III violation (Supplement 1)."

**II. REPLY TO VIOLATION III (MIS-POSITIONED THROTTLE VALVE)**

Pursuant to the provisions of 10CFR2.201, PSE&G hereby submits a written reply to the above notice of violation which includes an admission of the alleged violation, the reasons for the violation, a description of the corrective steps that have been taken and the associated results that have been achieved, a description of the corrective actions that will be taken to avoid further violations, and the date when full compliance will be achieved. This information is provided as follows:

**A. Admission of Alleged Violation**

PSE&G does not deny the violation.

## Response to Mis-Positioned Throttle Valve Violation

**B. Description of Violation**

As described in LER 96-009-00, in March 1996, during Hope Creek Generating Station's sixth refueling outage, flow balancing of the SSWS was being performed in concert with a design change being implemented for the SSWS backwash strainer valves. During the flow balancing, flow and pressure drop measurements were taken to evaluate SSWS/SACS performance. From these measurements, Engineering personnel determined that the SSWS/SACS heat exchanger throttle valves were in a position that restricted the SSWS from supplying sufficient flow through the SSWS/SACS heat exchangers for the most limiting design basis conditions. Specifically, the as-found positions of the throttle valves were such that flow was inconsistent with assumptions (for low river water level, maximum pump degradation, maximum heat exchanger fouling and high ultimate heat sink {UHS} temperatures) used in the design calculations for SSWS/SACS performance. Please note that the revised positioning of the backwash strainer valves (the Design Change Package {DCP} was placing the valves in the continuous full open position) did not impact SSWS/SACS performance since the last flow balance was performed with these valves fully open.

The follow-up root cause evaluation determined that, following SSWS/SACS throttle valve replacement during the fourth refueling outage (November 1992), the SSWS was flow balanced with the throttle valves set in their as-found position. This flow balance was performed under a separate work order and was not performed as part of the valve replacement DCP re-test requirements. The flow balance work order acceptance criteria at that time required measurement of SSWS/SACS heat exchanger pressure drops to ensure that minimum SSWS/SACS flows would be available during normal operation and design basis accidents. However, the acceptance criteria did not appropriately consider the effects of degraded SSWS/SACS performance or worst case environmental conditions (i.e., extreme low river water level and UHS high temperature). In addition, because the flow balance was not performed as part of the valve replacement DCP re-test section, normal controls for re-test were not implemented.

As a result, the SSWS/SACS valves were set in a position (as-found in March, 1996) that reflected the current SSWS/SACS pump performance, current river water level, and current UHS temperature existing at the time (November, 1992) and not in a position that ensured adequate SSWS/SACS flow during combined worst case design basis conditions.

On 3/17/96, the initial assessment of SSWS/SACS operability determined that there were no immediate concerns since SSWS/SACS was capable of providing adequate cooling for either shutdown or power operation conditions under the existing plant conditions (i.e., low UHS temperatures). On the same day, with

**Response to Mis-Positioned Throttle Valve Violation**

the design change for the SSWS backwash strainers already installed, proper SSWS flow balancing was completed. The flow balancing utilized acceptance criteria established to set the proper throttle valve position for design basis maximum UHS temperatures, SSWS and SACS pump performance, SSWS/SACS heat exchanger efficiency, lowest postulated river water level and potential instrument inaccuracies.

**C. Reasons for the Violation**

The causes of this event were attributed to procedural and personnel deficiencies. The details are as follows:

1. The procedures used for the development of engineering evaluations were inadequate and the design change process was ineffectively implemented when flow balance verification was not included as part of the DCP.
2. The engineer conducting the November, 1992 flow balance test, under a separate work order, was not aware of the need to compensate for worst case conditions while performing the test on the SSWS.

**D. Corrective Steps That Have Been Taken and Results Achieved**

The following corrective actions have been taken:

1. On 3/17/96, with the design change for the SSWS backwash strainers already installed, proper SSWS flow balancing was completed. The flow balancing utilized acceptance criteria established in system calculations generated to set proper throttle valve position for design basis parameters (See LERs 96-015-00 and 96-022-00 for additional information).
2. As committed in LER 96-009-00, procedure enhancements were completed which clarify the requirements for field verification of plant conditions against the assumptions in the engineering evaluations.
3. As committed in LER 96-009-00, a sample of Hope Creek engineering evaluations has been reviewed to determine if appropriate acceptance criteria had been provided. This review sampled approximately 15% of engineering evaluations and identified no additional occurrences where acceptance criteria were deficient.

**Response to Mis-Positioned Throttle Valve Violation**

4. As part of the comprehensive corrective actions described in LER 95-037-00, the Configuration Baseline Document validation review of SSWS and SACS has continued. Additional issues concerning SSWS/SACS conformance with the licensing and design basis have been identified and are being resolved in accordance with Hope Creek's Corrective Action Program. These issues include the events reported in LER 96-015-00 and 96-022-00. Final reconciliation of these issues with SSWS/SACS operation will take place upon the completion of Engineering's evaluation of these issues. This reconciliation will include any required procedure changes, Technical Specification changes, plant modifications or SSWS/SACS valve repositioning. Compensatory administrative controls will continue to be implemented to ensure continued operability of the SSWS/SACS.

**E. Corrective Steps That Will Be Taken to Avoid Further Violations**

The following corrective actions will be taken to avoid further violations:

1. The training program for test engineers has been enhanced since November, 1992. Although the current program has been determined to adequately qualify test engineers to perform system flow balances, the system flow balancing procedure will be enhanced to provide guidance on the need to add margin to system flows to account for design basis conditions and postulated system degradation. These revisions will be completed by December 31, 1996.
2. SSWS/SACS issues identified during the Configuration Baseline Document validation reviews will continue to be tracked by and resolved using the Hope Creek Corrective Action Program. SSWS/SACS operability will continually be assessed as issues are identified.
3. As described in PSE&G letters, dated September 5, 1996 (LR-N96276) and October 16, 1996 (LR-N96327), a Service Water System Operational Performance Inspection (SWSOPI) will be conducted in November, 1996, to confirm the validity of the design and licensing basis reviews which have been completed. The inspection will independently assess the SSWS and interfacing systems using selective sampling vertical-slice inspection methods.

**F. Date When Full Compliance Will Be Achieved**

With the re-positioning of the throttle valves on March 17, 1996, full compliance with Technical Specification 3.7.1.2 was achieved.