Public Service
Electric and Gas
Company

Steven E. Miltenberger

Public Service Electric and Gas Company P.O. Box 236, Hancocks Bridge, NJ 08038 609-339-1100

Vice President and Chief Nuclear Officer

JUL 18 1994

NLR-N94116

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

REPLY TO A NOTICES OF VIOLATION
INSPECTION REPORT NO. 50-354/94-09
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354

Pursuant to the provisions of 10CFR2.201, this letter submits the response of Public Service Electric and Gas Company to the notice of violation for the three violations issued to the Hope Creek Generating Station on June 15, 1994.

As required by the notice of violation and 10CFR2.201, this response includes a written statement or explanation in reply, including, where applicable, the corrective steps which have been taken and the results achieved, the corrective steps which will be taken to avoid further violations, and the date when full compliance will be achieved. This information is provided in the attachment to this letter.

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

Sincerely,

Steven E Miltenberger

Attachment

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C Mr. T. T. Martin, Administrator - Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. J. C. Stone, Licensing Project Manager - Hope Creek
U. S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Mr. C. Marschall (S05)
USNRC Senior Resident Inspector

Mr. K. Tosch, Manager, IV
NJ Department of Environmental Protection
Division of Environmental Quality
Bureau of Nuclear Engineering
CN 415
Trenton, NJ 08625

REF: NLR-N94116

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

S. E. Miltenberger, being duly sworn according to law deposes and says:

I am Vice President and Chief Nuclear Officer 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.

Steven E Miltenberger

Subscribed and Sworn to before me
this 18th day of July, 1994

Kimberly Jo Brown
Notary Public of New Jersey

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

ATTACHMENT

REPLY TO A NOTICE OF VIOLATION
INSPECTION REPORT NO. 50-354/94-09
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354 NLR-N94116

I. INTRODUCTION

During inspection activities conducted between March 27 and April 30, 1994, the NRC identified three potential violations of NRC requirements. These potential violations were subsequently documented and cited in Inspection Report 354/94-09 dated June 15, 1994. Our response to these three cited violations is provided below.

II. REPLY TO NOTICE OF VIOLATION FOR CONTAINMENT INTEGRATED LEAK RATE TESTING

A. Description of Violation

"10 CFR 50, Appendix B, Criterion XI requires, in part, that all testing required to demonstrate that structures, systems and components will perform satisfactorily in service is identified and performed. Procedure HC.RA-IS.ZZ-0008(Q), Revision 0 prerequisites require that non-seismic portions of the control rod drive system be vented during Containment Integrated Leak Rate Testing (CILRT). 10 CFR 50, Appendix J, Section II.A.1.b requires closure of containment isolation valves for the Type A test by normal operation and without any preliminary exercising or adjustments.

Contrary to the above, prior to Containment Integrated Leak Rate (Type A) Testing on April 11 and 12, 1994, the non-seismic portions of the control rod drive system were not vented, and the control rod drive directional control valves, listed as containment isolation valves in the FSAR, were exercised prior to the Type A test.

This is a Severity Level IV violation (Supplement I)."

B. Response to Violation

PSE&G denies this violation.

The following discussion provides the basis for our determination that our actions did not violate the provisions of Criterion XI of 10CFR50 Appendix B nor the provisions of 10CFR50 Appendix J.

1. Closing the CRD Vent Valves

a. Introduction and Summary

The following discussion will demonstrate that, although applicable documents (i.e., Appendix J to 10CFR50, ANSI/ANS-56.8-1987, the UFSAR, the Hope Creek CILRT procedure, and the applicable NRC inspection procedures) require venting of systems that may be open to the outside atmosphere under post accident conditions, these same documents contain provisions which allow closing the subject penetrations if their leakage interferes with the successful completion of the CILRT.

b. Background

Information relative to the applicable system design and the relevant regulatory and licensing basis requirements for containment integrated leak rate testing at Hope Creek is provided as follows. This information will form the basis for the subsequent discussion of the specific cited violation.

1. Containment Isolation Requirements

The provisions of 10CFR50, Appendix A, General Design Criteria 55 require each line that is part of the reactor coolant pressure boundary and that penetrates primary containment be provided with one of four specified isolation valve configurations unless it can be demonstrated that the containment isolation provisions for a specific class of lines are acceptable on some other defined basis. Due to the unique function of the CRD system, the the CRD insert and withdrawal penetrations are not provided with one of the four specified isolation configurations. As described in UFSAR Section 6.2.4.3.1.1.5, containment isolation provisions for these penetrations have been demonstrated to be an acceptable "other defined basis" for containment isolation. Specifically, automatic or locked closed isolation valves for the CRD insert and withdrawal lines have not been provided in order to preclude any possible failure of the scram function. In lieu of automatic or locked closed isolation valves, each line is isolated by a set of directional control solenoid valves provided on each CRD hydraulic control unit located outside the primary containment. The lines that extend outside primary containment are 1 inch or smaller and terminate in systems designed to prevent out-leakage. The directional control valves are listed as containment isolation valves for Penetrations P35A through D and P36A through D in UFSAR Table 6.2-24.

2. CILRT Requirements

The provisions of Appendix J to 10CFR50 (Section III.A.1.d), ANSI/ANS-56.8-1987 (Section 3.2.1.5), the UFSAR (Section 6.2.6.1.4), the Hope Creek CILRT procedure (Steps 5.1.5 and 5.1.8 of HC.RA-IS.ZZ-0008(Q), Revision 0), and the applicable NRC inspection procedures (Inspection Requirement 02.04 of NRC Inspection Procedure 70307 and Inspection Requirement 02.01e of NRC Inspection Procedure 70313) require, in general terms, that containment penetrations be in an alignment for Type A tests consistent with that which would exist following a design basis accident. Specific requirements which are relevant to the CRD penetrations are discussed as follows.

UFSAR Section 6.2.6.1.4.c requires the following:

"Fluid systems that are part of the primary containment boundary and that may open directly to the primary containment or outside atmosphere under post-accident conditions must be opened or vented to the appropriate atmosphere during the test."

Section III.A.1.d of Appendix J to 10CFR50 requires the following:

"Those portions of fluid systems that are part of the reactor coolant pressure boundary and are open directly to the containment atmosphere under post-accident conditions and become an extension of the boundary of the containment shall be opened or vented to the containment atmosphere prior to and during the test."

Section 3.2.1.5 of ANSI/ANS-56.8-1987 states the following:

"To place the primary containment system in as close to post accident conditions as possible, those portions of the fluid systems that are part of the reactor containment boundary that may be open directly to the containment or outside atmosphere under post accident conditions shall be opened and vented to the appropriate atmosphere during the test."

Inspection Requirement 02.04 of NRC Inspection Procedure 70307 and Inspection Requirement 02.01e of NRC Inspection Procedure 70313 specify the following:

"The system alignments for the CILRT are performed to reflect the conditions that would exist after a design basis LOCA."

Although, as noted above, applicable documents require venting of systems that may be open to the outside atmosphere under post accident conditions, these same documents contain provisions which allow closing the subject penetrations if their leakage interferes with the successful completion of the CILRT. Specifically, Appendix J (Section III.A.1.a), ANSI/ANS-56.8-1987 (Sections 3.2.1.4 and 3.2.6.a), the UFSAR (Section 6.2.6.1), the applicable Hope Creek procedure (Steps 5.2.17, 5.2.18, 5.4.8, and 5.4.9), and the applicable NRC inspection procedures (Inspection Requirement 02.05a of NRC Inspection Procedure 70307 and Inspection Requirement 02.02 of NRC Inspection Procedure 70313) recognize that leaks which interfere with the successful completion of the Type A test can occur, and include provisions to remove penetrations from the Type A test provided leakage through the penetrations is quantified as necessary to determine the "as found" and "as left" leakage rates. These documents do not exclude any penetration from this practice.

Section 6.2.6.1 of the UFSAR contains the following statement:

"If, during the performance of a Type A test, excessive leakage occurs through locally testable penetrations or isolation valves to the extent that it would interfere with the satisfactory completion of the test, the leakage paths should be isolated and the Type A test continued. A local leakage test must be performed before and after the repair of each isolated leakage path."

Section III.A.1.a of Appendix J states that, if potentially excessive leakage paths are identified during a Type A test which will interfere with the satisfactory completion of the test, or which result in the test not meeting the acceptance criteria, the test shall be terminated and leakage through such paths shall be measured using local leakage testing methods. It continues by stating that the corrective action taken and the change in leakage rate determined from the local leak and Type A tests shall be included in the report submitted in accordance with Section V.B.

Section 3.2.6.a of ANSI/ANS-56.8-1987 contains the following statement:

"If, during the performance of a Type A test, excessive leakage occurs through locally testable penetrations or isolation valves to the extent that it would interfere with the satisfactory completion of the test, these leakage paths may be isolated and the Type A test continued until completion. A local leakage test shall be performed before and after the repair of each isolated leakage path."

Inspection Requirement 02.05a of NRC Inspection Procedure 70307 and Inspection Requirement 02.02 of NRC Inspection Procedure 70313 specify the following:

"If a penetration leaks excessively and cannot be repaired prior to the CILRT, it may be blanked off. The LLRT penalty factor is required to be determined for this penetration in order to characterize the AF [as-found] condition. In addition, the AL [as-left] integrated leakage rate must also be adjusted to compensate for the leakage that will exist through this penetration after its repair. This is done by adding the post repair local leak rate of this penetration to the CILRT results."

3. CRD Leakage Monitoring

UFSAR Section 6.2.4.4.6.3 discusses leakage monitoring of the CRD system in lieu of performing Appendix J, Type C testing. This section contains the following statement:

"Furthermore, since the reactor pressure vessel and the non seismic portion of the CRD system are vented during Type A tests, leakage monitoring of CRD lines will be provided.

c. Sequence of Events

The non seismic portion of the CRD system was initially vented prior to the Type A Test as required by Procedural Step 5.1.5 (Attachment 1, Step 4.1.6). Following CRD system venting, a reduction in reactor vessel inventory was observed. The subsequent investigation revealed that water was leaking from the valves which had been opened to vent the non seismic portion of the CRD system, indicating leakage past the directional control valves. Once the Type A test pressure was reached, the water leakage through all directional control valves was measured and the penetrations were isolated by closing the vents of the non seismic portion of the CRD system as permitted by Appendix J, ANSI/ANS-56.8-1987, the UFSAR, and the procedure.

These actions satisfied the requirement to measure water leakage through the penetrations during the CILRT, but avoided jeopardizing the Type A test results by having an ongoing increase in the containment free air volume (decrease in reactor level) or by affecting the stability of the containment atmosphere by having to make up reactor level with water of a potentially different temperature.

d. Basis for Denying Violation

The Hope Creek CILRT was conducted in accordance with applicable requirements and none of the associated actions violated NRC regulations or requirements. The basis for this statement is as follows:

1. Closure of the vents was in accordance with the applicable provisions and requirements of Appendix J to 10CFR50, ANSI/ANS-56.8-1987, the UFSAR, the Hope Creek CILRT procedure, and NRC inspection procedures.

2. Closure of the vents did not require a determination of an unreviewed safety question because the actions taken were in compliance with the UFSAR.

3. The associated compensatory actions specified in Section III.A.1.a of Appendix J were completed (i.e, leakage through the subject paths was measured using local leakage testing methods, adjustments to equipment were made, and the corrective action taken and the change in leakage rate determined from the local leak and Type A tests were included in the our Section V.B report).

The potential violation has also been evaluated from the more general perspective of compliance with the provisions of 10CFR50, Appendix B, Criterion XI for our containment integrated leak rate test program. The provisions of Criterion XI include the following:

1. "A test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents."

2. "Test procedures shall include provisions for assuring that all prerequisites for the given test have been met, that adequate test instrumentation is available and used, and that the test is performed under suitable environmental conditions."

3. "Test results shall be documented and evaluated to assure that test requirements have been satisfied."

The following discussion demonstrates that PSE&G complies with the provisions of 10CFR50, Appendix B, Criterion XI with respect to containment integrated leak rate testing.

1. PSE&G has an established test program which assures that the containment will perform satisfactorily. An element of the test program is the CILRT which is performed in accordance with a written test procedure. The procedure used to perform CILRT testing is HC.RA-IS.ZZ-0008(Q). The subject procedure incorporates the requirements and acceptance limits contained in applicable design documents. Throughout the procedure, the requirements and acceptance criteria contained in the Technical Specifications, the UFSAR, Appendix J to 10CFR50, ANSI-N45.4-1972, ANS56.8-1987, and Revision 1 to BN-TOP-1 were included.

2. Appropriate prerequisites are contained in Section 2.0 of the subject procedure and provisions are included in Section 5.1 for assuring that all prerequisites for the given test have been met (Steps 5.1.5 through 5.1.9), that adequate test instrumentation is available and used (Steps 5.1.10 through 5.1.11), and that the test is performed under suitable environmental conditions (Steps 5.1.2 and 5.1.5).

3. The test results were documented and evaluated to assure that test requirements were satisfied.

2. Cycling the Directional Control Valves

a. Introduction and Summary

The following discussion will demonstrate that, since the directional control valves were stroked as a maintenance activity to establish conditions which would be expected to exist when the valves would be called upon to perform their specified function, compliance with Appendix J to 10CFR50 was maintained.

b. Background

The provisions of Appendix J to 10CFR50 (Section III.A.1.b), ANSI/ANS-56.8-1987 (Section 3.2.1.4), the UFSAR (Section 6.2.6.1.1), and NRC inspection procedures (Inspection Requirement 02.04 of Inspection Procedure 70307 and 02.01e of Inspection Procedure 70313) all prohibit cycling valves to improve leakage performance. These documents do, however, allow for the performance of valve maintenance.

Specifically, Section III.A.1.b of Appendix J to 10CFR50 states the following:

"Closure of containment isolation valves for the Type A test shall be accomplished by normal operation and without any preliminary exercising or adjustments (e.g., no tightening of valve after closure by valve motor). Repairs of maloperating or leaking valves shall be made as necessary."

Inspection Requirement 02.04 of Inspection Procedure 70307 and 02.01e of Inspection Procedure 70313 specify the following:

"Closure of containment isolation valves (CIVs) for the CILRT shall be accomplished by normal operation without any preliminary exercising (valve cycling) or adjustments (e.g., no tightening of valve after closure by the motor)." and "Repairs of any maloperating or leaking CIVs shall be made as necessary. The pre-repair leakage is to be measured to determine the LLRT correction factor."

It is noted that the CRD directional control valves are cycled many times (at least weekly) during normal operation.

c. Sequence of Events

For a number of days prior to the Type A test, the control rod drive system was in an operational condition other than that which would exist during normal power operation (the pumps were out of service with no flow through the directional control valves). Once the Type A test alignment of the control rod drive system was accomplished (approximately 3 days prior to containment pressurization), flow in the system was in a direction opposite the normal flow direction (from the reactor vessel through the directional control valves and out the open vents). With the CRD system out of service, sediment may have collected in the CRD lines.

As a result of the above noted conditions, it was suspected that some sediment had accumulated on the seats of the directional control valves. Maintenance was performed on certain directional control valves by cycling the valves with flow through the system. This maintenance activity was conducted in an attempt to flush away the sediment and restore the conditions which would be expected at the time the valves would be called upon to perform their specified function. The combined leakage through all the directional control valves was measured before and after flushing. In addition, the amount of leakage was again measured with the containment at Type A test pressure prior to isolating the penetrations.

d. Basis for Denying Violation

We agree that cycling the valves for the sole purpose of reducing leakage is a violation of Appendix J to 10CFR50; however, the directional control valves were stroked as a maintenance activity to establish conditions which would be expected to exist when the valves would be called upon to perform their specified function. Since the valves were stroked for maintenance purposes to establish the expected design basis condition, this activity does not constitute a violation of NRC requirements or regulations.

e. Root Cause and Corrective Actions

The CILRT was performed properly in accordance with all applicable requirements. As a result, there are no root causes or required corrective actions.

III. Fuel Pool Gate Seal Replacement Violation

1. Description of Violation

"Hope Creek Technical Specification 6.8.1.c requires, in part, that written procedures be implemented for refueling operations. Procedure HC.OP-IO.ZZ-0001(Q), Refueling to Cold Shutdown, step 5.2.21, requires that the fuel pool gate inter-space drain valve be opened upon completion of refueling activities. Nuclear Administrative Procedure NC.NA-AP.22-0015(Q), Safety Tagging Program, step 4.1 requires that the job supervisor ensure that equipment has been appropriately tagged and is safe to work on before beginning a work activity.

Contrary to the above, on April 11-13, 1994, after completion of refueling activities, licensee personnel failed to open the inter-gate drain valve, and performed maintenance on the spent fuel pool gate inner seal without an approved procedure, and manipulated the air supply valves without a tagout."

This is a Severity Level IV violation (Supplement I)."

2. Response to Violation

PSE&G does not deny the violation.

A. Root Causes

The root cause of the loss of spent fuel pool inventory to the reactor cavity has been attributed to the following:

1. The in-line check valves to the outer gate seals (KA-V337, 338, 339, and 340) leaked. A factor contributing to this root cause was lack of periodic preventive or corrective maintenance for these valves.

This root cause is addressed by Corrective Actions B.1, B.2, and C.1.

2. The position of the air supply isolation valve for the seals (1-KA-V7068) was not properly controlled in that the valve was closed sometime between completion of the gate installation activities on April 5 and completion of the inner gate seal replacement activities on April 13.

   A factor that may have contributed to this root cause was an improper listing of the supply isolation valve as normally closed in the Tagging Request Inquiry System (TRIS). This TRIS error is believed to be an isolated occurrence. A second factor that may have contributed was failure to follow procedures during the April 13 replacement of the inner gate seals.

   This root cause is addressed by Corrective Action B.3 and B.5.

3. The SFP gate inter-space drain valve, required to be open by Procedure HC.OP-IO.ZZ-0001(Q) was improperly left closed after gate installation; closure of this valve disabled the alarm for leakage into the inter-space region between the two SFP gates.

   The contributing factor for this root cause was personnel error resulting from failure to adhere to procedures.

   This root cause is addressed by Corrective Actions B.4 and C.4.

4. The work order for gate seal replacement referenced the wrong procedure, did not include the correct procedure in the package, and did not require a tagout.

   The contributing factor for this root cause was personnel error during preparation and processing of the work order package.

   This root cause is addressed by Corrective Actions B.7 and C.4.

5. Mechanical maintenance practices for SFP gate seal replacement did not meet management expectations in that the job supervisor proceeded and the replacement was performed without an approved procedure.

   The contributing factor for this root cause was personnel error in failing to adhere to management expectation relative to use of procedures.

   This root cause is addressed by Corrective Actions B.5 and C.4.

6. Maintenance personnel repositioned the air supply valves (KA-V327. KA-V329, KA-V339, KA-V340) without a tagout as required by procedure.

   The contributing factor for this root cause was personnel error in failing to adhere to management expectation relative to use of procedures.

   This root cause is addressed by Corrective Actions B.5 and C.4.

B. Corrective Actions Taken and Results Achieved

The following corrective actions have been completed.

1. The operations department has initiated a work order to replace the in-line check valves to each of the four gate seals.

2. Recurring tasks have been created for periodic replacement of in-line check valves.

3. The TRIS for the air supply isolation valve has been changed to reflect a normal position of locked open.

4. Operators responsible for the failure to reopen the gate inter-space drain valve were counseled relative to management expectations and appropriately disciplined.

5. The mechanical maintenance engineer has reemphasized and discussed management expectations and the importance of procedure compliance with all members of the mechanical maintenance shop. The responsible supervisor was appropriately disciplined.

6. The mechanical maintenance engineer has directed the creation of a new procedure dedicated to SFP gate seal replacement.

7. The outage manager counseled the individual who prepared the work order package relative to management expectations and proper preparation and processing of work order packages.

8. The mechanical maintenance engineer has instituted a work package evaluation program to ensure procedure effectiveness. This program consists of a weekly review of work packages for procedure effectiveness by first line supervisors. The results of this program are reviewed by the senior supervisors and the mechanical maintenance engineer.

9. A deficiency report was initiated and dispositioned to evaluate the effect of flooding the reactor well drywell cavity with the drywell head installed; this evaluation showed no negative impact on the drywell head by hydraulic forces or water damage/corrosion effects.

10. Periodic operator checks of SFP gate seal pressures have been instituted.

11. A recurring task for periodic calibration of the gate seal pressure gages has been created.

C. Corrective Actions to Be Taken

The following corrective actions will be taken.

1. The in-line check valves to each of the four gate seals will be replaced.

2. A new procedure dedicated to SFP gate seal replacement will be created and implemented.

3. A design change request to improve gate seal air supply reliability will be evaluated.

4. The General Manager - Hope Creek Operations, will communicate management expectation and reemphasize the importance of procedure adherence to all Hope Creek Station personnel.

D. Date When Full Compliance Will Be Achieved

Full compliance has been achieved.

IV. Refueling Bridge Mis-Operation Violation

A. Description of Violation

"10 CFR 50, Appendix B, Criterion XVI requires, in part, that licensees establish measures to assure that significant conditions adverse to quality are promptly identified, corrected, the cause is determined, and corrective action is taken to preclude repetition.

Contrary to the above, corrective actions implemented for a previous occurrence involving mis-operation on the refueling bridge on December 17, 1993 (in which the causal factors were identified as failure to self-check and adhere to procedures) were not effective, in that on March 9, 1993, the refueling bridge was again mis-operated (i.e., operators inadvertently moved the refueling bridge while the mast was still extended and grappled to a dummy fuel load) due to failure to self-check and adhere to procedures.

This is a Severity Level IV violation (Supplement I)."

B. Response to Violation

PSE&G believes that corrective actions taken to address the refuel bridge misoperation incident were appropriate and adequate to prevent recurrence of similar incidents.

1. Introduction and Summary

The two incidents differ in that the first occurred during fuel movement and the second occurred during surveillance testing. Criterion XVI of Appendix B to 10CFR50 requires that a licensee take corrective action to preclude repetition of significant conditions adverse to quality. As a result of the first incident, PSE&G took prompt and comprehensive corrective action based upon the root causes of that incident.

The following discussion will demonstrate that, although our corrective actions did not prevent the subsequent mis-operation of the refuel bridge during surveillance testing, our corrective actions were comprehensive and remain adequate relative to preventing repetition of mis-operation during movement of fuel.

2. Background

On December 17, 1993, the refueling platform bridge operator repositioned the refueling mast without properly verifying release of a grappled new fuel assembly. The operator moved a new assembly from the fuel preparation machine to its spent fuel pool location. The operator verified the location, lowered the mast and released the grapple. The operator lifted the mast to the full up position and proceeded to move the mast back to the fuel preparation machine to transport the next fuel assembly. A GE fuel inspector noticed that the fuel assembly, which was initially lowered into its spent fuel pool location, was still attached to the grapple. The operator was not aware that the assembly was still grappled. Personnel from the Reactor Engineering Department acted immediately to halt the fuel movement and placed the fuel assembly into the correct location. It was determined that the mast and grapple functioned as required. The cause of the mis-operation was that the operator apparently did not properly verify that the load was removed from the grapple. The operator was counseled by both the Reactor Engineering Department and the Operations Department on proper verification and attention to detail in operation of the refueling bridge. On December 20, maintenance conducted an additional operational check on the grapple and mast. Maintenance determined that the mast and grapple functioned properly in all aspects of operation.

The causal factors for this incident were identified as follows:

a. The responsible refuel bridge operator was inattentive to detail and failed to adhere to procedural requirements for proper verification of load status.

b. Guidance and requirements relative to the duties of the spotter (independent verifier) were not clearly defined and resulted in the spotter being distracted by other duties.

The actions taken for this incident were as follows:

a. The responsible operator was counseled and disciplined.

b. A night order was issued which ensured that, prior to operating the bridge, all applicable personnel were refamiliarized with the bridge controls and the relevant procedure and were required to review documents describing additional spotter requirements and industry refuel bridge incidents.

c. A memo was written to notify Reactor Engineering Department personnel of the additional spotter requirements.

d. A procedure change was initiated to enhance the requirements for spotters during movement of fuel.

Although a routine activity and not an action taken as a result of this incident, prior to the fifth refueling outage, all operators were retrained on the operation of the bridge and completed training which included discussion of recent relevant industry events.

We believe that these corrective actions are adequate to preclude recurrence of a mis-operation of the refuel bridge during movement of fuel.

It is also noted that Hope Creek has performed two consecutive "perfect" core reloads (i.e., no mis-oriented fuel assemblies) which, based upon current industry standards, is considered exceptional.

3. Sequence of Events

On March 9, 1994, an operator inadvertently moved the refueling bridge approximately two feet in a horizontal direction while the mast was still extended and grappled to a "dummy" fuel bundle. The mast flexed as the bridge began to move forward. The operator immediately recognized the problem and returned the bridge to its original, unflexed position. The operator had been performing retest activities following DCP work when Reactor Engineering Department and General Electric personnel arrived to set the frame mounted auxiliary hoist upper limits for control rod moves. During setting of the limits, General Electric personnel requested the bridge be moved for easier passage to the fuel prep/channel area.

The causal factors for this incident were identified as follows:

a. The responsible refuel bridge operator was inattentive to detail and failed to self verify the status of the last procedure step performed. This is considered an isolated personnel performance issue.

b. The responsible operator was distracted by personnel performing other activities.

The actions taken for this incident were as follows:

a. The responsible operator was counseled regarding self verification and maintaining focus on the task at hand.

4. Conclusion

The corrective actions for the personnel errors associated with the first refuel bridge incident were both proper and adequate to prevent a similar incident (i.e, mis-operation caused by attention to detail during movement of fuel). The corrective actions did not prevent the second incident because the two incidents differ in that the second occurred during surveillance testing of the bridge when independent verification techniques (i.e., a spotter) are not employed. The safety significance associated with mis-operation of the bridge during surveillance testing is minimal since the bridge is not carrying an actual fuel bundle and the load is not carried over actual fuel bundles. We have a high level of confidence that had the operator error occurred during movement of fuel, the corrective actions associated with improved spotter requirements would have provided the necessary barrier to prevent mis-operation.