May 5, 1994

Docket No. 50-155

Consumers Power Company
ATTN: Mr. P. M. Donnelly
Plant Manager
Big Rock Point Nuclear Plant
10269 US 31 North
Charlevoix, MI 49720

Dear Mr. Donnelly:

SUBJECT: NOTICE OF VIOLATION AND UNRESOLVED ITEM (NRC INSPECTION REPORT NO. 50-155/94002(DRS))

This will acknowledge receipt of your letter dated April 21, 1994, in response to our letter dated March 25, 1994, transmitting a Notice of Violation (NOV) and a request for a response to an unresolved item associated with Inspection Report No. 50-155/94002(DRS). This report summarized the results of our review of engineering and maintenance activities at your Big Rock Nuclear Power Plant.

We have reviewed your response to the NOV and the unresolved item, and have no further questions at this time. These issues are considered closed.

In accordance with 10 CFR 2.790 of the Commission's regulations, a copy of this letter will be placed in the NRC Public Document Room.

Your cooperation is appreciated.

Sincerely,

Geoffrey C. Wright, Chief
Engineering Branch

cc: R. A. Fenech, Vice President
Nuclear Operations

cc w/ltr dtd 3/25/94:
OC/LFDCB
Resident Inspector, RIII
James R. Padgett, Michigan Public
Service Commission
Michigan Department of Public Health
Big Rock Point, LPM, NRR
SRI, Palisades

RIII	RIII	RIII	RIII	RIII	RIII
Gill/kjc	Salehi	Tella	Shafer	Phillips	Wright
05/5/94	05/5/94	05/5/94	05/5/94	05/5/94	05/5/94

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Consumers Power
POWERING MICHIGAN'S PROGRESS
Big Rock Point Nuclear Plant, 10269 US-31 North, Charlevoix, MI 49720

Patrick M Donnelly
Plant Manager

April 21, 1994

Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

DOCKET 50-155 - LICENSE DPR-6 - BIG ROCK POINT PLANT - REPLY TO A NOTICE OF VIOLATION - NRC INSPECTION REPORT 94-002; ENGINEERING AND MAINTENANCE SAFETY INSPECTION

During the period February 7, 1994 through February 25, 1994, Mr. C. Gill and others of your office conducted a routine safety inspection at the Big Rock Point facility. NRC Inspection Report 50-155/94002 concluded that certain of Big Rock Point's activities appeared to be in violation of NRC requirements. An unresolved item was also identified.

The violations concern a failure to promptly correct an identified root cause for overloading the emergency diesel generator during testing; and for a failure to adhere to procedural requirements to document unacceptable conditions identified by the quality verification process.

The unresolved item concerns measured surveillance closure times for the emergency condenser outlet valves being less than the committed minimum closure time; possibly creating a potential for the system to be subjected to significant water hammer under postulated design basis accident operational conditions.

Pursuant to the direction required by the report, find attached a Reply to the Notice of Violation dated March 25, 1994.

Patrick M Donnelly (Signed)

Patrick M Donnelly
Plant Manager

CC: Administrator, Region III, USNRC
NRC Resident Inspector - Big Rock Point

ATTACHMENT

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ATTACHMENT

CONSUMERS POWER COMPANY
BIG ROCK POINT PLANT
DOCKET 50-155

REPLY TO A NOTICE OF VIOLATION
INSPECTION REPORT 94002

APRIL 21, 1994

5 Pages

REPLY TO A NOTICE OF VIOLATION - NRC INSPECTION REPORT 94-002; ENGINEERING AND MAINTENANCE SAFETY INSPECTION

VIOLATION 94002-01

During an NRC inspection conducted from February 7 through 25, 1994, violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C, the violations are listed below:

10 CFR Part 50, Appendix B, Criterion XVI, states, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected.

Contrary to the above, on January 8, 1992, during testing of the emergency diesel generator, it was loaded above the specified maximum limit. The deviation report generated for this incident identified two root causes. The resulting corrective action initially addressed one root cause. The second root cause was not corrected until June 30, 1993, more than 16 months later, when a procedure was revised.

This is a Severity Level IV violation

Consumers Power Company's reply is provided below:

1) Reason for the violation.

Consumers Power Company agrees with the violation as stated. The deviation report identifies the "other root cause" as the auxiliary operator not recognizing that he was outside the limits that were stated in the procedure. The corrective actions taken to prevent recurrence were directed at revising two related surveillance procedures so that the acceptance criteria would be more obvious to the procedure user. However, the human performance issue of ***why*** the auxiliary operator did not recognize that he was outside the procedural limits was neither appreciated nor addressed by the Big Rock staff.

2) The corrective steps that have been taken and the results achieved.

Surveillance procedures TR-42, Emergency Diesel Generator Full Load Test, and TR-57, Standby Diesel Generator Load Test, were revised on 8/13/92 and 7/15/92 respectively to include the following:

a) Operations' personnel are required to ensure that contractors adhere to procedure limits and Consumers Power Company safety limits.

b) Procedure tolerances are reviewed with the contractor.

c) Acceptance criteria added next to the steps that record the required data.

d) A note was added stating that the full load rating shall not be exceeded.

REPLY TO A NOTICE OF VIOLATION - NRC INSPECTION REPORT 94-002; ENGINEERING AND MAINTENANCE SAFETY INSPECTION

3) The corrective steps that will be taken to avoid further violations.

Other examples of varying degrees of procedure compliance were becoming apparent in early 1992, therefore Administrative Procedure 2.1.2, Operations Documents, was revised in June of 1993, as noted in the NRC inspection report. These revisions are addressed in Appendix 1, affixed to this attachment; and are directed at enhancing the human performance issues encountered with procedural usage at Big Rock Point.

4) The date when full compliance will be achieved.

The facility is currently in full compliance with NRC requirements.

VIOLATION 94002-02

Big Rock Point Technical Specification 6.8.1 requires that written procedures be established, implemented, and maintained for all structures, systems, components, and safety actions defined in the Big Rock Point Quality List. Section 5.2 of Chapter 13 of Volume 17 of the Big Rock Point Quality List requires procedures for operations and maintenance activities.

Administrative Procedures 1.16, "Quality Verification Program", Revision 1, Section 5.3.4.a.4 requires that "The work crew and/or verifier shall document existing condition on controlling document", when the work being inspected was unacceptable.

Contrary to the above, the work crew or the Quality Verifier did not document the unacceptable condition of the gasket on the Safety Related valve SV-4987 at a Quality Verification hold point, during maintenance of this valve on February 9, 1994. The work crew returned the work package to the maintenance supervisor without documenting the Quality Verifier's finding at the hold point.

This is a Severity Level IV violation.

1) Reason for the violation.

Consumers Power Company agrees with the violation as stated. The quality verifier and his supervisor did not recognize the need to document the existing nonconforming condition at the time of discovery. They believed that the condition could be documented any time prior to the work order being closed out.

2) The corrective steps that have been taken and the results achieved.

A training session including the maintenance personnel and their supervisors was conducted on February 28, 1994. The following issues were discussed/reviewed:

a) Importance of documentation and when to document the results of the quality verification inspections.

b) Proper pre-job review of the work package by the quality verifier prior to performing the inspection.

c) Administrative Procedure 1.16, Quality Verification Program.

3) The corrective steps that will be taken to avoid further violations.

Administrative Procedure 1.16, Quality Verification Program, will be revised. The reporting options for the quality verifier will be expanded to include an independent supervisor or Nuclear Performance Assessment Department person for resolution of quality verification problems.

THIS ACTION WILL BE COMPLETE JUNE 30, 1994.

4) The date when full compliance will be achieved.

The facility is currently in full compliance with NRC requirements.

UNRESOLVED ITEM

Emergency Condenser Isolation Valve Testing Criterion

The first example of the engineering assessment weakness was the failure to incorporate an appropriate valve closure time criterion into testing and operating procedures, even though the criterion had been known by the licensee for 20 years. After this oversight was identified by the inspectors early in the inspection, the licensee failed to initiate a comprehensive engineering assessment of the system operability concerns by the end of the inspection.

The lack of minimum valve closing time limits in applicable test procedures, as well as exceeding those limits, is an apparent failure to meet the commitments made in Section 6.8.4.4 of the FHSR and in a letter to the Commission dated February 14, 1983.

Licensee Response

The report states that " the licensee failed to initiate a comprehensive engineering assessment of the system (Emergency Condenser) operability concerns by the end of the inspection." The inspector was provided with the results of about one manweek of investigation. The licensee considered the system to be fully operable with respect to valve opening and closure times and stated so to the inspector.

As explained to the inspector, the February 14, 1983 letter responding to USI A-1, Water Hammer, stated that after Emergency Condenser System (ECS) repairs, a test was performed in 1974 to verify ECS capacity. It was at this time that unusual vibration was noted. The reactor was in power operation at ~30 mwe, not a normal condition for ECS initiation. The original FHSR, Rev 1 dated 3/27/62, section 5.8.7 states in part:

"After the decay heat load has fallen off, one of the condensate return valves is closed by a remote manual switch in the control room to keep the cooldown rate below 100°F/hr."

It is apparent that the original designers did not intend the ECS to operate with the reactor in power operation. It is intended that the ECS comes into service when reactor pressure reaches 100 psig over normal operating pressure. It should be noted that the reactor protection system shuts down the reactor before this point, at 50 psig over normal operating pressure. Design basis accidents do not call for the ECS outlet valves to be closed under power conditions but are closed on decaying power.

The Updated FHSR in section 6.8.4.4 refers to the fact that the ECS was, in the past, used on numerous occasions for pressure control and shutdown cooling. This type of use was discontinued when the inlet divider plate was found damaged. It was repaired and the system tested in 1974 as explained above. On December 17, 1975, Bechtel provided CPCO the results of an analysis requested by CPCO in summary form that stated in part:

" As is evident from the tabulated stresses, instant valve closure would produce a serious water hammer problem. However, if the valve closes in nine seconds, as we have been told, no significant water hammer effects should occur."

This is the source of information that went into the updated FHSR, resulting in "....closure time of about 9 seconds."

IST data for the ECS outlet valve timing data that was provided to the inspector indicates that on occasion the outlet valve on loop #2 (MO-7053) has a measured closure time of less than 9 seconds, (as low as 7.9 seconds). Loop #1 outlet valve recorded close timing values were above 9 seconds, as were the closed times for both loops inlet valves. It was explained that time measurements are taken "from open light to closed light" as a visual verification is not possible at power. From information obtained during MOV work, the fully closed light indication is received when the valves are still ~ 8% off their seats, therefore, actual full closed times are longer than those recorded for IST purposes. (IST valve timing criteria is meant to provide trending data to indicate deterioration of valve performance such that corrective measures can be taken before failure. It was never meant to be construed as an absolute value). Further, the IST testing is performed at power with no steam flow through the condenser. If the ECS were in operation and the valves were called on to close with steam flow present, it is expected that the closure time would increase due to lateral loading of the disc.

During the last refueling outage, VOTES diagnostic testing recorded closure times of 10.15 seconds for MO-7063 (loop #1) and 8.43 seconds for MO-7053 (loop #2). This test was performed in a static condition with no system pressure; therefore, if it were possible to measure valve closure times by VOTES with the plant at power and at a pressure of 1335 psig, it is expected valve closure times would be higher due to the piston effect against valve closure.

Both outlet valves have the same gear ratios, however, other variables may cause differing closure times, for instance, the motor rpm's may vary as much as 10%, switch setting accuracies may vary, the DC voltage at the motor at any given time may vary, valve friction factors may vary. Without modification, there is no known way for the outlet valve closure speed to increase over time; therefore, the need to incorporate a minimum closure time criteria into the IST program and procedures is not deemed necessary.

Per Operating Procedure SOP-6, after the ECS automatically comes into service at Pr+100 psig, the operator is instructed to isolate one loop after primary system heat load has been reduced and to throttle the remaining loop to maintain a cooldown rate at <100°F per hour. Since the reactor trips at Pr+50 psig, heat load rapidly decreases and "significantly lower plant pressure and energy output" exists when the outlet valve is started closed (Ref. FHSR 6.8.4.4). Under these conditions, the potential for water hammer will be reduced even if a slightly faster closing time (<9 seconds) is experienced with loop #2 outlet valve MO-7053.

SOP-6, Emergency Condenser System, instructs the operator to isolate one loop of the ECS when plant heat load is reduced. After some consideration, it does not seem appropriate to burden the operator, during an evolution that required the ECS operation, to remember to slowly close the outlet valve such that valve closure exceeds 9 seconds. In addition, time versus valve position would take on importance. Rule of thumb is that a gate valve is at full flow when ~40% open.

CONCLUSION:

To the best of knowledge, the Big Rock Point staff does not believe the ECS is being operated in a condition contrary to the commitments made in the FHSR. As explained above, the 1.1 second difference in valve timing becomes inconsequential and does not create the potential for water hammer. In summary, several actual system conditions contribute to this conclusion:

- the ECS is not intended to operate with the reactor at power.

- design basis accidents do not call for the ECS outlet valves to be closed under power conditions.

- the ECS had been used in the past to control pressure and shutdown cooling. (The nine-second criteria came from this actual experience with the ECS).

- measurements are taken from "open light to closed light " valve position indication. The valves are still about 8% off their seats when the closed light illuminates, therefore the real closure time is actually longer than the measured time, offsetting the 1.1 second difference that is of concern.

- testing is performed with no steam flow through the condenser. Closure time would increase under design base conditions because steam flow would be present. This would also offset the 1.1 second difference.

APPENDIX 1

CONSUMERS POWER COMPANY
BIG ROCK POINT PLANT
DOCKET 50-155

REPLY TO A NOTICE OF VIOLATION
INSPECTION REPORT 94002

APRIL 21, 1994

5 Pages

APPENDIX 1

I. Activities Requiring A Procedure

NOTE: Where there is a procedure that covers an activity, that activity shall be performed in accordance with that procedure.

a. Manipulation or operation of inservice, safety-related equipment, described in Step b below, requires a procedure. A component is defined to be inservice if it is not isolated from its system by closing of boundary valves, opening breakers or slide links, etc. Returning a component to service (inservice) will also require a procedure, such as a System Operating Procedure, Plant Tagging Procedure or a System Checklist.

b. Safety-related systems or components are those which provide the following safety functions:

   1. Preserving the integrity of the Containment, Primary Coolant System or nuclear fuel pressure boundaries.

   2. Reactor shutdown capability.

   3. Maintaining the Reactor in a safe shutdown condition.

   4. Removal of residual heat.

   5. Controlling the release of radioactive material.

   6. Mitigating the consequences of an accident.

c. Operational activities of a non-routine and sensitive nature, or outside the normal skills of the operator, shall be accomplished using procedures. These activities include but are not limited to the following:

   1. Activities which affect personnel and public health and safety.

   2. Complex or infrequently performed tasks including Infrequently Performed Tests or Evolutions (IPTEs).

   3. Activities which may result in an Engineered Safety Feature (ESF) actuation or Plant transient.

   4. Activities which may degrade the performance of a component, equipment, or system.

   5. Required surveillance activities.

   6. Activities which could seriously impact Plant production capabilities.

d. The Shift Supervisor is responsible for determining the need for an approved Operating Procedure and ensuring adequate procedures or written instructions exist for work performed by the Operators.

e. When a situation arises for which no Operating Procedure exists, and it is determined that a procedure is required, then a procedure shall be developed and approved prior to the commencement of the evolution. In the event of an emergency not covered by a procedure, Operators shall take action as necessary to minimize personnel injury, damage to the facility, and to protect the health and safety of the public.

f. For activities other than those described in a, b, or c above, a Temporary Operating Instruction should be used, particularly if the sequence of the steps is important.

II. Levels of Usage

a. The level of use designation applied to a procedure identifies how the procedure is to be utilized during performance of an activity. All sections of the SOPs are designated a level of usage for that section. All other Operating Procedures should use, as a minimum, the level of usage designated below. A more restrictive procedure usage level may be necessary or desirable in some situations. The Shift Supervisor can direct a more restrictive procedure usage, or the procedure user may request one. Despite the procedure usage level deemed appropriate for a respective work activity, the accountability for procedure adherence is the same. Personnel are expected to comply with procedures and understand the consequences of their actions.

1. Continuous Use - Provides reading each step of the procedure before performing that step, performing each step in the sequence given, and where required, signing off each step as complete before proceeding to the next step. A controlled or working copy of the procedure shall be present, and the procedure shall be referred to directly while the task is being accomplished. The Continuous Use designation is for activities that are difficult or complex, infrequently performed, or have a direct impact on nuclear safety and reliability. These activities include the following:

   A. Periodic Surveillance Tests.

   B. Plant Tagging.

   C. ONPs (Off Normal Procedures).

   D. EOPs/EIPs (Emergency Operating/Emergency Implementing Procedures).

   E. Special Tests (O-RWS-3, for example).

   F. SOPs, where designated (System Operating Procedures).

APPENDIX 1

2. Reference Use - The procedure should be referred to periodically to confirm that all procedure steps have been performed and where required, signing appropriate steps to certify they've been performed. This designation is for activities which have no immediate consequences of improper actions, and although they may be complex and/or infrequently performed, the steps are short and easily accomplished from memory. These include:

   A. O-TGS-1 (Master Checklist).

   B. GOPs (General Operating Procedures).

   C. ALPs (Alarm Operating Procedures)

   D. SOPs, where designated

3. Informal Use - Work activities can be performed without referring to procedures. However, the user still adheres to the procedures, which are available as information on how to conduct the activities. These activities should be frequently performed, not complex in nature and able to be completed from memory. Each person who performs activities from memory should review the procedure periodically to ensure that the correct steps are being performed and verify that any procedure revisions have not been overlooked. Performance of an activity from memory, without referring to the procedure, does not relieve the individual from the responsibility to perform the activity in accordance with the procedure. Listed among these activities:

   A. Shift Routines

   B. SOPs, where designated

III. Procedure Implementation

a. Before approving a procedure to be performed, the Shift Supervisor should consider all of the following items:

   1. Do Plant conditions permit this procedure to be performed and what Plant conditions will result from its performance?

   2. Are personnel available to perform the procedure, including personnel from other departments, when required?

   3. Do the Operators assigned to perform the procedure have the skills and experience necessary? Should a more restrictive procedure usage level be considered?

   4. Are there ALARA and/or safety concerns?

   5. Is a pretest briefing necessary? Test frequency, complexity, duration and number of personnel required may dictate the need for a briefing.

   6. Does this procedure meet the requirements of an Infrequently Performed Test or Evolution (IPTE) as defined in Administrative Procedure 1.15?

APPENDIX 1

b. Shift Supervisors are responsible for conducting briefings with Operators, as deemed necessary, for complex or infrequently performed tasks to ensure that the process and sequence are clearly understood.

c. Procedure copies that are stamped "Working Copy" or Working Controlled Copy" shall be used to perform work. Copies stamped "Information Copy" may be used for activities not involving manipulation of Plant equipment, such as system walk-throughs for training purposes. Yellow copies of Volume 3 are "Controlled Copies" and may be used without being stamped.

d. Immediate actions of Off-Normal Procedures and entry conditions of EOPs shall be committed to memory. In an emergency, immediate actions may be performed without a procedure present. Performance of all follow-up or subsequent actions shall have either a controlled or working copy of the procedure present and it shall be referred to continuously.

e. Prior to using a procedure, the user should:

   1. Review Technical Specifications and Plant Requirements, if any.

   2. Verify initial conditions, if any, are met.

   3. Verify prerequisites, if any, are accomplished.

   4. Note any precautions or cautions in the procedure.

   5. Determine what level of usage is required.

   6. Verify that the procedure revision is current.

f. A sign-off on a procedure indicates that to the best of the signer's knowledge and belief the step has been performed completely and accurately.

g. If a procedure calls for a step to be performed and the step is already completed (such as starting a pump that is already running), verifying the step completed is the same as completing the step, and the step should be signed off.

h. When more than one individual is performing steps in a procedure at different locations, individuals at each location should have a copy of the procedure to follow and refer to as the activity proceeds. One individual will coordinate the actions of all personnel participating in the activity, and this individual shall have the Working Controlled Copy of the procedure that will contain all sign-offs. Individuals participating in the activity may sign off the Working Controlled Copy at the completion of their portion of the activity, or the individual coordinating the activity may sign off the completion of the steps. Only personnel who actually performed procedural steps or are in direct communication with those persons performing the work may sign off the completion of the steps.

APPENDIX 1

IV. Procedure Compliance

a. Approved written procedures shall be adhered to by all Plant personnel, in the performance of duties that necessitate their use, within the guidelines of this procedure.

b. Operations Procedures are written to be used by trained and qualified Operators. These procedures are not written for blind compliance. Individuals using a procedure should assure that they understand what is to be done and anticipate results prior to performing each step. Results achieved should be evaluated, and if the desired or anticipated results are not achieved, then the individual should not proceed. If the reason for the unanticipated results is not readily evident, then the Operator should place the equipment in a safe condition and contact the Shift Supervisor.

c. If an Operator performing an activity cannot follow or believes the procedure governing that activity should not be followed as written, the system/component shall be placed in a stable and safe condition and the Shift Supervisor notified as soon as possible. The Shift Supervisor shall resolve the identified discrepancy/concern in the procedure by one of the following methods:

   1. Determine the methods by which the activity can be performed using the procedure as written (within the guidelines of this procedure) and conveying this to the individual performing the activity.

   2. Approve deviation from the procedure.

   3. Initiating a temporary or permanent procedure change following the requirements of Volume 1, Administrative Procedure 1.1, Procedures Program. No further procedural steps should be accomplished until the procedure change is approved for use.