

50-325



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

April 20, 1994

Ms. S. K. Adair
Route 3 Box 912
Boone, North Carolina 28607

Dear Ms. Adair:

I am replying to your letters of February 11 and 12, 1994, addressed to both the Chairman of the Nuclear Regulatory Commission (NRC) and the NRC Executive Director for Operations, in which you expressed concerns about the past performance and reliability of the Brunswick Steam Electric Plant (Brunswick), Units 1 and 2, operated by Carolina Power & Light Company (CP&L). The following information is being provided to address your concerns.

After a year-long shutdown to correct structural steel deficiencies and inadequate seismic response and maintenance issues that initially began with problems with the interior masonry walls in its diesel generator building, the NRC concurred with the restart of Brunswick Unit 2 on April 29, 1993. The NRC closely monitored CP&L's execution of the Unit 2 restart ascension plan and, being satisfied with the performance, authorized CP&L to resume normal unit operation on June 3, 1993. The restart of the unit proceeded without significant technical difficulty, and the unit operated continuously until the start of the refueling outage on March 26, 1994. Regarding Brunswick Unit 1, CP&L decided to conduct a refueling outage and perform a repair modification on the reactor core shroud that delayed its restart until January 28, 1994. The restart of Unit 1 also proceeded well, and the unit is online and performing properly. Throughout this period, the NRC has observed that CP&L has continued to make progress in improving the overall material condition of the plant.

The NRC has observed notable progress in Brunswick's performance, overall plant condition, and equipment maintenance, particularly of the emergency diesel generators. These changes were, in part, due to increased management oversight by CP&L, the effective system readiness reviews by the CP&L system engineers and operators, and the new work control process at Brunswick. On December 6, 1993, the NRC issued its Systematic Assessment of Licensee Performance (SALP) report for the period from November 1, 1992, to November 6, 1993. As indicated in this report, the NRC has observed positive signs of improvement during the period, especially in plant operations. The NRC gave Brunswick Category 1 (superior) ratings in both Operations and Plant Support and Category 2 (good) ratings in maintenance/surveillance and engineering. You noted in your letter of February 12, 1994, that you have a copy of this SALP report.

Although the NRC has noted a significant improvement in the management and operation of Brunswick, NRC management has decided to continue to include this facility on the list of facilities requiring additional NRC attention. The NRC staff will reconsider its decision after observing the operation of Brunswick Unit 1, which recently resumed operation.

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You highlighted some of the concerns that the NRC stated in the December 6, 1993, SALP report. The NRC noted these areas for CP&L to ensure adequate management attention and will monitor them to verify that satisfactory improvements are realized. Along with these items, you listed some concerns that you characterize as recently discovered dangers not adequately corrected. The first concern is cracks in both reactors. In July 1993, CP&L informed the NRC of numerous cracks in the core shroud of Brunswick Unit 1 that were discovered during visual examinations of the core shroud during the then-current refueling outage. The visual examinations were performed in accordance with the recommendations in General Electric Company (GE) Rapid Information Communication Service Information Letter 054, "Core Support Shroud Crack Indications," which was issued as a result of cracking previously discovered in the core shroud of a foreign-owned GE boiling water reactor. The core shroud is a cylindrical barrel inside the reactor vessel that directs the flow of reactor feedwater up through the core. It does not form a part of the reactor vessel pressure-retaining boundary. After conducting a detailed engineering analysis of the cracks, CP&L installed a design modification. The NRC reviewed the modification and the CP&L engineering analysis and found them satisfactory. During the Brunswick Unit 2 refueling outage, CP&L will inspect the Unit 2 core shroud and will install the same modification as completed on Unit 1 even if the inspection results show that it is unnecessary at this time.

Your second concern is the presence of Thermo-Lag 330-1 fire barrier systems. The NRC staff has three principal concerns regarding the use of Thermo-Lag 330-1 barriers: (1) the fire endurance capability of fire barriers, (2) the ampacity derating of cables enclosed in this material, and (3) the evaluation and application of the results of tests conducted to determine the fire endurance ratings and ampacity derating factors of these barriers. The NRC is concerned that the Thermo-Lag 330-1 fire barriers may not provide the level of fire endurance that licensees intend for specific applications. It is working with all affected licensees and the Nuclear Management and Resources Council to determine the qualification of each type of fire barrier installation for which Thermo-Lag is used. All licensees will be required to ensure that these qualification tests bound the designs of their fire barrier installations. Additional actions will be required should they have fire barrier configurations that are not qualified by these tests. In your letter, you also indicate that Thermo-Lag is a combustible material. The issue of combustibility remains under staff review and is included in the NRC staff's action plan for addressing the issues regarding the use of Thermo-Lag. It should be noted that compensatory measures such as the maintenance of fire watches are required when a fire barrier is found to be degraded. The NRC considers these measures as an appropriate response until a permanent solution is implemented.

As your third concern, you named faulty water level instrumentation. This is a reference to the problem noted in NRC Bulletin 93-03 regarding reactor vessel water level instruments during depressurization transients. Before the restart of Brunswick Unit 1, CP&L installed a modification that the NRC staff considers satisfactory to eliminate the potential problem. The same

modification will be made during the upcoming Brunswick Unit 2 refueling outage.

With regard to your concern about the vulnerability of Brunswick to hurricanes, the NRC considered this environmental factor thoroughly during the design-basis review of the facility and found it to be satisfactory. Additionally, it has reviewed CP&L's procedures for this natural occurrence, as part of its normal inspection process, and found them to be acceptable.

You also raised a concern that the hardened wetwell vent system (HWWVS) installed at Brunswick would allow more radioactive steam to escape to help reduce containment pressure and to lessen the likelihood of more serious releases. In addition to a valve kept closed during plant operation, the HWWVS design incorporates a device called a rupture disc that provides a second leaktight barrier to further prevent the transport of the atmosphere in the wetwell to the outside. The HWWVS is not in use during normal plant operation, nor is it expected to be used during anticipated transient conditions. The HWWVS is a capability that is beyond the required licensing basis for the facility. Its installation along with the procedures for its use will reduce the likelihood of a core melt from accident sequences involving the loss of long-term decay heat removal. Further, as a severe accident mitigation measure, it is a reliable means of pressure relief through a path with significant scrubbing of fission products. The HWWVS is an improvement that the NRC staff recommended in its Mark I Containment Performance Improvement Program that identified plant modifications that could enhance the capability to both prevent and mitigate the consequences of severe accidents.

Because of a GE recommendation regarding the intergranular stress corrosion cracking of reactor vessel internals, CP&L has included the addition of hydrogen in its reactor vessel water chemistry program. The addition of hydrogen does increase the radiation in the main steam system. However, CP&L has conducted thorough radiation surveys and added appropriate radiation shielding to compensate for the increased radiation levels in and around the turbine building so that worker doses are maintained as low as is reasonably achievable (ALARA). Nonetheless, the NRC has found that CP&L is in compliance with the NRC requirements for the radiation protection of the public and workers.

In reply to your question regarding the next issuance of an updated study of radiation exposure to air and water around Brunswick, the NRC issued NUREG/CR-2850, "Dose Commitments Due to Radiation Releases from Nuclear Power Plant Sites in 1989," Volume 11, in February 1993. It issued a companion document NUREG/CR-2907, "Radioactive Materials Released from Nuclear Power Plants - Annual Report 1990," Volume 11, in October 1993. These documents are updated and released yearly.

You stated that the organization, Public Citizen, contends that 40 percent of the problems identified in evaluations conducted by the Institute for Nuclear Operations (INPO) for Brunswick have not been corrected. Since no specific

information was provided on either the Public Citizen report or the particular INPO evaluations upon which Public Citizen based its contention, the NRC cannot do a detailed analysis to investigate this contention. However, the NRC is aware that INPO does follow up on licensee responses to their evaluation findings during subsequent plant evaluations and emphasizes the need to resolve their findings. The NRC staff periodically reviews the INPO evaluation reports, and it is an NRC regulation that licensees report significant safety matters to the NRC. The NRC is, therefore, confident that any significant safety issues identified by INPO have been reported to the NRC by licensees. In particular, for Brunswick, no significant safety issues have been identified by INPO as part of their evaluation process.

You also asked if the NRC is investigating the possibility of closure of 30 GE boiling water reactors with Mark I containments. The NRC has no investigation of this type in progress.

The NRC is unable to address your questions regarding the utility rates for electric service supplied by CP&L and the capital cost recovery for Brunswick. The process of setting these rates and evaluating the basis is the responsibility of the North Carolina Public Utilities Commission. As with your previous correspondence on this subject, the NRC is forwarding, by copy of this letter and your February 11, 1994, letter, your questions in this area to this State agency. Your concerns regarding the Martin Marietta Aggregates' permit application to operate a limestone quarry had previously been forwarded to the State of North Carolina, Department of Environment, Health, and Natural Resources.

Finally, you submitted a copy of your April 30, 1993, letter to the Chairman of the NRC that was never received at the NRC. The following information addresses the concerns in that letter that have not been addressed above or in the earlier correspondence provided to you by Congressman Neal. The loss of offsite power in March 1993 was caused by salt buildup on electrical insulators causing arcing across the insulator, not by salt erosion. The salt buildup was caused by high winds blowing in from the ocean with little or no associated rain. The insulator arcing caused protective relays in various switchyards to actuate as designed. Although both units were in cold shutdown when offsite power was lost, this event is one of the previously analyzed transients in the licensing basis for the plant. There were no associated equipment problems that would lead one to believe that the plant would not have responded as designed.

In your April 30, 1993, letter, you raised another point about the HWWVS; that is, a possible malfunction of a wetwell-to-torus vacuum breaker where it remains open could cause the suppression pool to be bypassed during operation of the HWWVS. Although this scenario could reduce the capability of the torus volume to reduce radioactive effluent going to the HWWVS, the probability of the vacuum breaker malfunction is low, especially when coupled with the low probability of the need to operate the HWWVS. The wetwell-to-torus vacuum breaker is periodically tested as part of Brunswick's surveillance program, which ensures the high reliability of this equipment.

Ms. S. K. Adair

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The NRC is reviewing the Brunswick Steam Electric Plant Individual Plant Examination (IPE), dated August 1992. In Generic Letter 88-20, "Accident Management Strategies for Consideration in the Individual Plant Examination Process," the NRC requested that licensees perform an IPE to identify any plant-specific vulnerabilities to severe accidents and report the results to the NRC. This was in reply to the Commission's policy statement on severe accidents. Since the completion of a probabilistic risk assessment (PRA) forms part of the basis of the IPE, the NRC's priorities were those facilities where a PRA had not previously been prepared. A PRA had been previously submitted to the NRC by CP&L for Brunswick. Thus, the NRC is reviewing the Brunswick IPE without the need for special prioritization.

I hope you find this information helpful in answering your questions about Brunswick.

Sincerely,

Original Signed By
WILLIAM T. RUSSELL

William T. Russell, Director
Office of Nuclear Reactor Regulation

cc: See next page

*See previous concurrence

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ACTION

EDO Principal Correspondence Control

FROM: S. K. Adair
DUE: 03/15/94
EDO CONTROL: 0009819
DOC DT: 02/11/94
FINAL REPLY:

TO: Chairman Selin

FOR SIGNATURE OF : ** GRN **
Russell
CRC NO: 94-0189

DESC: CONCERNS RE BRUNSWICK
ROUTING: Taylor
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DATE: 03/02/94

ASSIGNED TO: NRR
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SPECIAL INSTRUCTIONS OR REMARKS:

REF: EDO 9812
No record of receipt of previous correspondence.

NRR: March 2, 1994
NRR ACTION: DRPE:VARGA
NRR ROUTING: WTR/EJH
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ACTION
DIRECTOR'S OFFICE
March 10

