UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

In the Matter of	)	
	)	
CAROLINA POWER & LIGHT COMPANY ET AL.	)	Docket Nos. 50-325
	)	and 50-324
(Brunswick Steam Electric Plant,	)	
Units 1 and 2)	)	(10 CFR 2.206)

DIRECTOR'S DECISION UNDER 10 CFR 2.206

I. INTRODUCTION

On October 14, 1993, the National Whistleblower Center (NWC), the Coastal Alliance for a Safe Environment (CASE), and Charles A. Webb (Petitioners) filed a Petition with the U.S. Nuclear Regulatory Commission (NRC) requesting that action be taken regarding the Brunswick Steam Electric Plant (Brunswick), Units 1 and 2, of the Carolina Power & Light Company (CP&L or the Licensee). The Petition requested that (1) the NRC staff enter into a confidentiality agreement with NWC to facilitate the release of additional information; (2) the NRC immediately require the Licensee to state whether it has, in fact, known about cracks in the reactor core shroud since at least 1984; and (3) the NRC's Office of Investigations (OI) determine whether CP&L management engaged in criminal wrongdoing, commencing in 1984, when CP&L initially failed to report the existence of cracks in the core shroud to the NRC. The Petitioners also requested an immediate suspension of the operating license for Brunswick pending the criminal investigation.

The Petitioners based their requests on allegations that (1) the Licensee falsely asserted to the NRC and to the public that cracks in the reactor shroud had just recently been discovered, but that, in fact, the Licensee had discovered the cracks nine years earlier and the Licensee's management instructed the engineers who detected the cracks to prepare paperwork that would ensure that no report would be made to the NRC; (2) this unwillingness to report a significant safety problem to the NRC demonstrates that the Licensee does not have the character or integrity to operate a nuclear facility; and (3) the Licensee is willing to take unreasonable risks with the public health and safety.

By letter dated November 15, 1993, Dr. Thomas E. Murley, then Director of the Office of Nuclear Reactor Regulation (NRR), informed the Petitioners that the Petition was being evaluated in accordance with Title 10 of the Code of Federal Regulations, Section 2.206 (10 CFR 2.206). Further, the letter stated that (1) the NRC would review the request for the NRC to immediately require the Licensee to state whether it knew of cracks in the Unit 1 shroud since 1984 and would take any action that the NRC may deem appropriate; (2) a formal decision would be issued within a reasonable time; and (3) the request to suspend operation of the Brunswick plant pending criminal investigation was denied.

My Decision in this matter follows.

II. BACKGROUND

As a result of the Petitioners' allegations, the NRC Office of Investigations (OI) commenced an investigation into the possibility of misconduct by the Licensee in connection with the reporting of core shroud cracks at the Brunswick facility. On November 23, 1993, OI staff interviewed Mr. R. Shackleford, who had signed the Petition on behalf of the Coastal Alliance for a Safe Environment. Mr. Shackleford stated that he had first become aware of the core shroud cracking issue approximately one week before the Petition was filed with the NRC and that he had no personal knowledge regarding the allegations made in the Petition. Mr. Shackleford stated, however, that Mr. Charles Webb and another individual, whose name was known only to Mr. Webb and the National Whistleblower Center, had personal knowledge of the matters alleged in the Petition. Mr. Shackleford also stated that he personally knew of three other individuals who might have some first-hand knowledge of concerns with welds, although not specifically related to the core shroud matters expressed in the Petition. However, he declined to identify them because the individuals were not willing to come forward. At the request of OI staff, Mr. Shackleford agreed to contact these three individuals to determine the extent and nature of their knowledge concerning the core shroud issue and to advise OI of what he had learned. To date, Mr. Shackleford has not responded to this request or provided this information to OI. Furthermore, between January and March 1994, the OI staff attempted to contact Mr. Kohn, who signed the Petition on behalf of both the National Whistleblower Center and Mr. Charles Webb, in order to arrange an interview with Mr. Webb. To date, Mr. Kohn has not responded to three telephone messages or to a March 3, 1994, registered letter requesting his cooperation. The U.S. Post Office provided a return receipt for this registered letter indicating its proper delivery to the National Whistleblower Center.

In order to investigate whether there was wrongdoing on the part of the Licensee's management associated with the allegedly deliberate failure to report core shroud cracks as early as 1984, OI sought facts pertinent to the alleged discovery of cracks and the alleged coverup. The Petitioners' representatives, however, never responded to the OI requests for (1) the identity of individuals whom the Petitioners stated had personal knowledge of the matters alleged in the Petition and (2) assistance in contacting Mr. Webb and the other individuals. OI concluded that it was unable to proceed with its investigation. Therefore, on April 26, 1994, OI closed its investigation.

Although OI terminated its investigation into the alleged wrongdoing, the NRC staff independently evaluated the core shroud cracking issue at the Brunswick facility and the Licensee's corrective actions.

III. DISCUSSION

In July 1993, the Licensee notified the NRC that cracks had been found in the core shroud of Brunswick Unit 1. The Licensee discovered the cracks through its invessel visual inspection of the core shroud during the unit's 1993 refueling outage. The inspection was performed in response to the

recommendations contained in General Electric Company (GE) Rapid Information Communication Service Information Letter (RICSIL) 054, "Core Support Shroud Crack Indications," dated October 3, 1990 (GE is the manufacturer for the reactor used at Brunswick). In this RICSIL, GE advised the owners of boiling-water reactors (BWRs) that cracks had been discovered in the core shroud of a foreign-owned GE BWR and recommended visual inspection of the core shroud seam welds at accessible surfaces inside and outside the shroud. Although the RICSIL discussed the occurrence of cracks in the shroud at elevations surrounding the reactor core, the Licensee had elected to inspect additional shroud areas. The Licensee inspected the accessible core shroud welds between the top guide support plate and the core support plate.

The Licensee's 1993 invessel visual inspection of the Brunswick Unit 1 core shroud revealed a circumferential crack at horizontal weld H-3, which joins the top guide support ring to the lower shroud and other shorter axial and circumferential cracks around the horizontal welds, H-2, H-4 and H-5. On the basis of the information submitted by CP&L concerning its inspection findings at Brunswick, the Institute for Nuclear Power Operations, an industry association, issued Significant Event Notice SEN-103, "Circumferential Cracking of a Boiling Water Reactor Core Shroud," on September 13, 1993. The NRC also informed licensees of these conditions through the issuance of NRC Information Notice 93-79, "Core Shroud Cracking at Beltline Region Welds in Boiling Water Reactors," on September 30, 1993. Further, GE issued Service Information Letter (SIL) 572, "Core Shroud Cracks," that discussed factors that could contribute to core shroud cracking and recommended specific visual inspection methodology as developed by CP&L during the Brunswick inspections. This SIL was revised on October 4, 1993, to, in part, inform BWR owners about a recommended plant service time after which shroud inspections need to be performed.

Because cracks were seen in the Brunswick Unit 1 shroud during the 1993 outage and invessel examination, the Licensee reexamined the video tapes of a previous invessel visual inspection of the Unit 2 core shroud conducted during its 1991 refueling outage. After computer enhancement of the video images, the Licensee, on July 10, 1993, located three small (approximately 1-inch long) indications at the outside diameter of the H-2 weld. The Licensee prepared an evaluation of these cracks and concluded that the cracks did not impair the structural integrity of the shroud.

During a meeting on October 22, 1993, with the Licensee to discuss the Brunswick Unit 1 inspection results, the draft crack evaluation methodology and acceptance criteria, and the proposed core shroud modification, the NRC asked the Licensee to submit the crack acceptance criteria and the core shroud modification design to the NRC for review. In a letter dated November 18, 1993, the Licensee submitted this information to the NRC. The NRC staff reviewed the design and supporting analysis and concluded in an NRC safety evaluation dated January 14, 1994, that the proposed modification of the Unit 1 core shroud provides adequate structural integrity in the location of the H-2 and H-3 welds for the remaining life of the unit. The NRC staff also concluded that, based on the structural integrity analyses, the flaws associated with the H-1, H-4, H-5, and H-6 welds would not adversely impact the structural integrity of the shroud during the next operating cycle. The

NRC staff will be reviewing the results of the Licensee's future shroud inspections and evaluations to verify that adequate structural integrity is maintained.

Prior to beginning the 1994 Brunswick Unit 2 refueling outage, the Licensee preliminarily decided to install the same modification on the Unit 2 core shroud that was used on Unit 1. The Licensee also performed invessel inspections of the core shroud welds and evaluated the observed flaws to the same acceptance criteria that was used on Brunswick Unit 1. The Licensee observed that the cracking at Brunswick Unit 2 was similar to that seen on Unit 1. On the basis of these invessel inspections, the Licensee made its final decision to install the modification at the H-2 and H-3 weld location. Since the degree of cracking of the H-1, H-4, H-5, and H-6 welds was within the acceptance criteria and since the modification was installed at the H-2 and H-3 weld location, the NRC staff concludes that the structural integrity of the Brunswick Unit 2 core shroud is acceptable for the next operating cycle.

During the Licensee's 1993 invessel visual inspections of the Brunswick Unit 1 core shroud, the NRC conducted periodic inspections to review the Licensee's conformance to acceptable inspection and installation practices. The NRC staff and its consultant from Pacific Northwest Laboratories also reviewed the process qualification and the performance of the ultrasonic testing used by the Licensee and GE to characterize the observed crack depths. The NRC documented its assessment of these activities in NRC Inspection Report Nos. 50-325, 324/93-34, dated September 14, 1993; 50-325, 324/93-43, dated October 20, 1993; and 50-325, 324/93-51, dated November 18, 1993. The NRC also reviewed and inspected the qualification and mockup testing for the core shroud modification used to repair the shroud at the H-2 and H-3 welds. Although some problems related to bolt preloading and quality assurance documentation were observed and corrected, the NRC generally found the activities to be satisfactory, as documented in NRC Inspection Report No. 50-325, 324/93-58, dated January 14, 1994. When the Licensee inspected the shroud and installed the modification at Brunswick Unit 2, the NRC similarly assessed these activities and documented the results in NRC Inspection Report Nos. 50-325, 324/94-08, dated May 13, 1994; and 50-325, 324/94-10, dated May 16, 1994. On the basis of these inspections, the NRC found that the inspection and installation techniques were satisfactorily qualified and performed. Many of the process techniques, such as precleaning and lighting placement, identified by the Licensee to enhance the video image quality and success in observing potential cracks, were incorporated into recommendations provided by GE to other BWR owners.

As stated above, the NRC staff issued NRC Information Notice 93-79 alerting other BWR owners of the shroud cracking at Brunswick and noting that GE had issued Revision 1 to RICSIL 054 on July 21, 1993, to update the information on the cracks and to provide revised interim recommendations for performance of visual examinations. On July 25, 1994, the NRC issued Generic Letter 94-03, "Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors," to request that BWR owners (1) inspect the core shrouds no later than the next scheduled refueling outage, and perform an appropriate evaluation and/or repair based on the results of the inspection; (2) perform a

safety analysis supporting continued operation of the facility until inspections are conducted; and (3) provide the NRC with the results of the core shroud inspections and the safety analysis. The NRC staff is monitoring the results of the inspections and evaluating the designs for proposed shroud modifications. On August 24, 1994, CP&L submitted the requested information in response to Generic Letter 94-03. The NRC staff's preliminary review of that response did not reveal information not already known to the staff.

By letter dated November 24, 1993, CP&L forwarded to the NRC a report entitled "Brunswick Nuclear Plant Review Team Potential Shroud Cracking in 1984." On the basis of its independent investigation conducted in response to the allegations in the Petition, the CP&L report states that no shroud cracks had been observed in either Unit 1 or Unit 2 shrouds between 1983 and 1985, or at any other time before 1993. The Licensee also states that it found no evidence of a "coverup" or "papering over" of cracks in the core shroud of Unit 1 or Unit 2 at any time, either by concealment of an as-found condition or by failure to report an as-found condition to the NRC. In partial support of its conclusions, the Licensee also states that, between 1983 and 1985, GE conducted invessel inspections at Brunswick and any attempt to conceal core shroud cracks would have required GE's participation. Furthermore, there was no NRC requirement during that period to inspect the core shrouds, and no inspections were planned or performed. Additionally, the Licensee states that there was no requirement to report core shroud cracks to the NRC until the Brunswick Unit 1 core shroud cracks were found in July 1993. The Licensee explains that the videographic records of the invessel visual inspection of the Brunswick Unit 2 shroud taken during the 1991 refueling outage did not reveal any cracking at the time of the inspection. When the videographic tapes were subsequently computer-enhanced in 1993 after cracks were discovered in the Unit 1 shroud, the Licensee observed three short crack-like indications in the H-2 weld of the Unit 2 shroud.

The Licensee is correct in stating that there was no basis to conduct inspections of the core shroud preceding the issuance of the GE RICSIL in 1990. A review of NRC inspection records between 1983 and 1985 did not indicate that any core shroud inspections were conducted by the Licensee, nor did any licensee report core shroud cracking. Considering the equipment staging, the necessary plant conditions, and the procedural aspects of performing invessel visual inspections with a remotely operated camera, it is unlikely that the NRC resident inspectors would have failed to notice these activities, if they had occurred at Brunswick. Therefore, on the basis of the above, the NRC has found no evidence to support a conclusion that the Licensee had knowledge of cracking in the Brunswick Units 1 and 2 core shrouds in the 1984 timeframe, or at any time prior to 1993. Additionally, the 1993 discovery of the core shroud cracking in Brunswick Units 1 and 2 was promptly communicated to the NRC staff. Because the core shroud cracking at Brunswick in this case did not constitute an emergency, significantly compromise plant safety, result in the plant being severely degraded, prevent fulfillment of safety functions, or constitute a substantial safety hazard, no report was required by 10 CFR 21.21, 50.72, or 50.73.

The NRC has been unable to meet the Petitioners' request that the NRC staff enter into a confidentiality agreement with NWC to facilitate the release of additional information because the Petitioners have not provided access to their sources. The NRC was unable to obtain the full cooperation of the Petitioners in identifying those persons who might have had first-hand knowledge and in arranging interviews with them. The NRC had inadequate information to evaluate any need to grant confidentiality. The Licensee's voluntary submittal on November 24, 1993, of the report entitled "Brunswick Nuclear Plant Review Team Potential Shroud Cracking in 1984," which stated that no shroud cracks had been observed in either Unit 1 or Unit 2 between 1983 and 1985, or at any other time before 1993, mooted the Petitioners' request that the NRC immediately require the Licensee to state whether it has, in fact, known about cracks in the reactor core shroud since at least 1984. In response to the Petitioners' request that the NRC's Office of Investigations determine whether CP&L management engaged in criminal wrongdoing concerning reporting the existence of cracks in the core shroud to the NRC, the NRC OI commenced an investigation regarding this allegation. Since there is no evidence to suggest that the Licensee had any reason to inspect the core shroud before 1990 or that the Licensee in fact inspected the core shrouds before 1991, since the Licensee reported that cracking when it was found in 1993, and since the Petitioners provided no evidence to support their allegations, there is no need to conduct additional evaluations. If the Petitioners decide to make knowledgeable individuals or additional information available to the NRC staff, the NRC staff will evaluate the information obtained and further pursue the matter, as appropriate.

In view of the above, the Petitioners have failed to raise a substantial health or safety concern regarding either the presence of core shroud cracks or the Licensee's knowledge of and reporting of core shroud cracking at the Brunswick facility.

IV. CONCLUSION

The Petitioners' request for an investigation into the alleged misconduct regarding the Licensee's reporting of core shroud cracking to the NRC was granted. The Petitioners' request for confidentiality of their sources was incapable of being fulfilled because the Petitioners failed to provide access to those sources. The Petitioners' request that the NRC require the Licensee to immediately state when it knew of core shroud cracking at the Brunswick facility became moot when the Licensee submitted the "Brunswick Nuclear Plant Report of Technical Review Team Potential Shroud Cracking in 1984." In view of the foregoing actions in response to the Petitioners' request and the NRC's review of the Licensee's actions in response to the core shroud cracking issue, no substantial health and safety issue remains that would warrant institution of further proceedings. See *Consolidated Edison Co. of New York* (Indian Point, Units 1, 2, and 3), CLI-75-8, 2 NRC 173, 176 (1975), and *Washington Public Power Supply System* (WPPSS Nuclear Project No. 2), DD-84-7, 19 NRC 899, 923 (1984). This standard has been applied to determine if any action is warranted in response to the Petition.

A copy of this Decision will be filed with the Secretary of the Commission for the Commission's review in accordance with 10 CFR 2.206(c). The Decision will become the final action of the Commission 25 days after issuance unless the Commission, on its own motion, institutes a review of the Decision in that time.

FOR THE NUCLEAR REGULATORY COMMISSION

William T. Russell

William T. Russell, Director
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland
this 19th day of October 1994

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October 19, 1994

DOCKET NO. 50-325, 50-324
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Division of Freedom of Information and Publications Services
Office of Administration

FROM: Office of Nuclear Reactor Regulation

SUBJECT: DIRECTOR'S DECISION DD-94-09

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- ☐ Notice of Receipt of Partial Application for Construction Permit(s) and Facility License(s): Time for submission of Views on Antitrust matters.
- ☐ Notice of Consideration of Issuance of Amendment to Facility Operating License. (Call with 30-day insert date).
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- ☐ Notice of Availability of NRC Draft/Final Environmental Statement.
- ☐ Notice of Limited Work Authorization.
- ☐ Notice of Availability of Safety Evaluation Report.
- ☐ Notice of Issuance of Construction Permit(s).
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- ☐ Order.
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