August 26, 1983

Docket No. 50-324

Mr. E. E. Utley
Executive Vice President
Carolina Power & Light Company
Post Office Box 1551
Raleigh, North Carolina 27602

Dear Mr. Utley:

SUBJECT: IGSCC INSPECTION ORDER CONFIRMING SHUTDOWN

Re: Brunswick Steam Electric Plant, Unit No. 2

The Commission has issued the enclosed subject Order related to intergranular stress corrosion cracking (IGSCC) inspection for the Brunswick Steam Electric Plant, Unit No. 2.

A copy of this Order is being filed with the Office of the Federal Register for publication.

Sincerely,

Original signed by/

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Enclosure:
Order

cc w/enclosure:
See next page

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DEisenhut	ELJordan	JMTaylor	

Docket No. 50-324

Mr. E. E. Utley
Executive Vice President
Carolina Power & Light Company
Post Office Box 1551
Raleigh, North Carolina 27602

Dear Mr. Utley:

SUBJECT: ISSUANCE OF ORDER DIRECTING LICENSEE TO CONDUCT IGSCC INSPECTIONS

Re: Brunswick Steam Electric Plant, Unit No. 2

The Commission has issued the enclosed subject Order necessary in view of the previously observed cracking at other operating facilities and the results of testing at your facility to date.

A copy of this Order is being filed with the Office of the Federal Register for publication.

Sincerely,

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

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Order

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OFFICE	DL:ORB#2	DL:ORB#2	DL:ORB#2	DL:AD-OR	OELD	DL:DIR	DL:ORAB
SURNAME	SNorris:ajs	SMacKay	DVassallo	GLainas	JLieberman	DEisenhut	GHolahan
DATE	8/24/83	8/26/83	8/26/83	8/26/83	8/26/83	8/ /83	8/26/83

Mr. E. E. Utley
Carolina Power & Light Company
Brunswick Steam Electric Plant, Units 1 and 2

cc:

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	Docket No. 50-324
CAROLINA POWER AND LIGHT COMPANY	)	
	)	
(Brunswick Station, Unit 2)	)	
	)	

IGSCC INSPECTION ORDER CONFIRMING SHUTDOWN

I.

The Carolina Power and Light Company, (the licensee), is the holder of Facility Operating License No. DPR-62, which authorizes the licensee to operate the Brunswick Station, Unit 2 (the facility), at power levels not in excess of 2436 megawatts thermal. The facility is a boiling water reactor located at the licensee's site in Brunswick County, North Carolina.

II.

As a result of inspections conducted at 18 operating Boiling Water Reactors (BWRs) in conformance to recent IE Bulletins (IE Bulletin No. 82-03, Revision 1, "Stress Corrosion Cracking in Thick-Wall, Large-Diameter, Stainless Steel, Recirculation System Piping at BWR Plants," and IE Bulletin No. 83-02, "Stress Corrosion Cracking in Large-Diameter Stainless Steel Recirculation System Piping at BWR Plants"), a potential safety concern regarding intergranular stress corrosion cracking (IGSCC) in primary system piping was identified. These bulletins requested selected licensees to perform a number of actions regarding inspection and testing of pipe welds.

Results of these and other inspections pursuant to IE Bulletins 82-03 and 83-02 have revealed extensive cracking in large-diameter recirculation and residual heat removal system piping. In almost every case, where inspections were performed, IGSCC was discovered and, in many cases, repairs, analysis, and additional surveillance conditions were required. In view of the foregoing and the fact that the facility is similar in design to plants where IGSCC has occurred, there is a significant potential for IGSCC to exist in this facility and this facility may not fully satisfy all applicable General Design Criteria. Therefore inspection is required to determine the extent of IGSCC and to ascertain, if necessary, the degree of remedial action.

By letter dated July 21, 1983, the staff, pursuant to 10 CFR 50.54(f), requested the licensee to provide a justification for continued operation of the facility prior to completing the inspections of IE Bulletin 83-02. The licensee responded by letters dated July 28 and August 12, 1983. The licensee also attended a public meeting held in Bethesda, Maryland on August 8, 1983. In the correspondence and meetings, the following issues were discussed with the licensee: (1) costs and impacts of accelerating the inspection schedule; (2) augmented leakage monitoring program; (3) a visual inspection for leakage during shutdown; and (4) informing the reactor operators of the concern about pipe cracks and the greater potential need to implement LOCA emergency procedures and leak detection procedures.

The following information was provided by the licensee. The ultrasonic testing inspection and a system leak test performed on Brunswick-2 in February 1983 and the relatively minor findings on Brunswick-1 indicate that there is no immediate concern on Brunswick-2 which justifies an immediate shutdown. Therefore, CP&L believes that the continued operation of Brunswick 2 until the November 1983 maintenance outage is justified.

CP&L has upgraded their current surveillance measures for monitoring drywell leakage to exceed their existing Technical Specification requirements. The drywell sumps are monitored every 4 hours, and the unit will be shut down if an increase in unidentified leakage exceeds 2 gallons per minute (gpm) for a 24 hour period. The On-Site Nuclear Safety group will review the drywell leakage data on a daily basis until the inspections required by IEB 83-02 are complete. A channel check of the primary containment atmospheric particulate activity monitoring system is performed every shift (8 hours) to verify operability; the frequency given in the Technical Specifications is once per 12 hours. Should the system become inoperable, grab samples of the containment atmosphere will be obtained at least once per 8 hours.

CP&L has committed to instituting an administrative limit of three days for the Sump Flow Integrating System to be inoperable, after which the unit will be placed in at least hot shutdown within 12 hours and in cold shutdown within the following 24 hours. The current operability requirement is that any one leak detection system may be inoperable for up to 31 days. This limit will apply only until the inspections required by IEB 83-02 are complete.

CP&L committed to the following action plan to peform inspections of large diameter recirculation pipe welds during unscheduled outages on Brunswick Unit No. 2. Should an unscheduled outage occur, the duration will be estimated based on the cause of the shutdown; if this duration is ten days or longer, three recirculation welds will be ultrasonically inspected. If the initial outage duration is estimated to be less than ten days, but is subsequently extended, the inspections will be performed if at any time the estimated remaining duration is ten days or longer. If any of the joints inspected requires repair by the criteria as stated in CP&L's August 12, 1983 letter, an additional three large diameter ($\geq$ 12") weld joints will be inspected. If any joints in the second group require repair, an additional three joints will be inspected.

In view of the previously observed cracking at other operating facilities and the results of the licensee's testing to date, the public health, safety and interest requires that (1) the licensee's schedule for conducting UT inspections be confirmed (2) the proposed compensatory measures be modified as provided in Section III, and (3) prior to startup the scope of the inspections be expanded as provided in Section III and appropriate remedial actions be taken.

Accordingly, I have determined that the public health, safety and interest require that these actions should be implemented by an immediately effective Order, and that the compensatory measures required provide reasonable assurance that the facility can operate safely prior to conducting the inspections.

III.

Accordingly, pursuant to sections 103, 161i, 161o, 182 and 186 of the Atomic Energy Act of 1954, as amended, and the Commission's regulations in 10 CFR Parts 2 and 50, IT IS HEREBY ORDERED EFFECTIVE IMMEDIATELY THAT:

A. Notwithstanding the current Technical Specifications for the facility and during the interim period prior to the conduct of the inspection discussed in III.C below, the following compensatory measures shall be implemented:

1. The reactor coolant system leakage shall be limited to a 2 gpm increase in unidentified leakage within any 24 hour period (leakage shall be monitored and recorded once every 4 hours). Should this leakage limit be exceeded, the unit shall immediately start an orderly shutdown. The unit shall be placed in at least hot shutdown within the next 12 hours and in cold shutdown within the following 24 hours.
2. At least one primary containment sump collection and flow monitoring system shall be operable. With the primary containment sump collection and flow monitoring system inoperable, restore the inoperable system to operable status within 24 hours or immediately initiate an orderly shutdown and be in at least hot shutdown within the next 12 hours and in cold shutdown within the following 24 hours.
3. A visual examination for leakage of the reactor coolant piping shall be performed during each plant outage anticipated to be 48 hours or more. The examination shall be performed consistent with the requirements of IWA-5241 and IWA-5242 of the 1980 Edition of Section XI of the ASME Boiler and Pressure Vessel Code. The system boundary subject to the examination shall be in accordance with IWA-5221.
4. All systems/subsystems of the ECCS shall be operable as defined in the plant Technical Specifications. With any one system/subsystem of the ECCS inoperable, restore the inoperable system/subsystem to operable status within 72 hours or immediately initiate an orderly shutdown. The unit shall be placed in at least hot shutdown within the next 12 hours and in cold shutdown within the following 24 hours.

5. Within 24 hours of receipt of this Order, the licensee shall initiate refresher training on leak monitoring and LOCA mitigation to all licensed personnel who would be expected to manipulate reactor controls or supervise control room activities.

B. The licensee shall shutdown the facility to conduct UT examinations of reactor coolant system piping as soon as practicable but no later than November 1, 1983.

C. The facility shall remain in cold shutdown until the Director, Office of Nuclear Reactor Regulation, finds that the licensee has satisfactorily completed the following actions or has provided adequate justification for not completing a given action.

1. To the extent practicable, the licensee shall conduct an ultrasonic examination of 100%, but in no case less than the number specified in Attachment A to the July 21, 1983 50.54(f) letters, of the welds involving 304 stainless steel piping of greater than or equal to 4" in the following systems or portions thereof:

   a. Recirculation System

   b. ASME Code Class 1 Portion of the Residual Heat Removal System

   c. ASME Code Class 1 Portion of the Core Spray System external to the Reactor Vessel

   d. ASME Code Class 1 Portion of the Reactor Cleanup System

2. Within 10 days of the date of this Order or prior to the commencement of the inspections required by this Order, whichever is later, the licensee shall provide to the Director, Office of Nuclear Reactor Regulation, a list of the welds specified above that it does not intend to inspect during

this current outage together with a suitable technical justification for not conducting such inspections at this time. This list should identify each weld not being inspected by system, location and size.

3. All UT personnel conducting these inspections shall have received appropriate training in IGSCC inspection using cracked thick-wall pipe specimens. All Level II and III UT operators shall have successfully completed the performance demonstration tests described in IEB 83-02. The footnote on page 4 of IEB 83-02, which allowed qualification under IEB 82-03, Revision 1, is no longer applicable.

4. Based on the results of the inspections, the licensee shall take appropriate corrective actions.

5. The licensee shall provide a report of the results of the inspection and the corrective actions taken. This report should also include the susceptibility matrix for welds selected and examined (e.g., stress rule index, carbon content, high stressed welds examined for the RHR system). The written report shall be submitted to the Director, Office of Nuclear Reactor Regulation, Washington, D. C. 20555, under oath or affirmation, under provisions of Section 182a, Atomic Energy Act of 1954, as amended, with copies to the appropriate Regional Administrator and the Director, Office of Inspection and Enforcement. Other reports generated, such as may be required by Technical Specifications, shall also be provided.

D. The Director, Office of Nuclear Reactor Regulation, may relax or rescind any of the above conditions in writing for good cause shown by the licensee.

IV.

The licensee may request a hearing on this Order within 20 days of the date of publication of this Order in the Federal Register. Any request for a hearing shall be addressed to the Director, Office of Nuclear Reactor Regulation, U. S. Nuclear Regulatory Commission, Washington, D. C. 20555. A copy shall also be sent to the Executive Legal Director at the same address. A REQUEST FOR HEARING SHALL NOT STAY THE IMMEDIATE EFFECTIVENESS OF THIS ORDER.

If a hearing is to be held, the Commission will issue an Order designating the time and place of any such hearing.

If a hearing is held concerning this Order, the issue to be considered at the hearing shall be whether, on the basis of the matters set forth in Section II of the Order, the licensee should comply with the requirements set forth in Section III of this Order. This Order is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

HR Denton

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 26th day of August, 1983.