

UNITED STATES OF AMERICA  
 NUCLEAR REGULATORY COMMISSION

In the matter of	)	
COMMONWEALTH EDISON COMPANY	)	Docket No. 50-265
(Quad Cities Nuclear Power	)	
Station, Unit No. 2)	)	

IGSCC INSPECTION ORDER  
 CONFIRMING SHUTDOWN

I.

The Commonwealth Edison Company, (the licensee), is the holder of Facility Operating License No. DPR-30, which authorizes the licensee to operate the Quad Cities Nuclear Power Station, Unit 2, (the facility), at power levels not in excess of 2511 megawatts thermal (rated power). The facility is a boiling water reactor located at the licensee's site in Rock Island County, Illinois.

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 10 CFR Part 50 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 letter dated August 1, 1983. The licensee also attended a public meeting held in Bethesda, Maryland on August 9, 1983. In the correspondence and meetings, the following issues were discussed with the licensee: (1) costs and impacts of accelerating the inspection schedule; (2) an augmented leakage monitoring program; (3) 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.

By letters dated July 21, August 1 and August 15, 1983, the licensee committed to: (1) adopt tighter leak monitoring requirements, (2) reduce permissible outage time for leak detection systems, (3) perform visual leak inspection, (4) defer planned maintenance outages on ECCS, and (5) implement refresher training to all licensed operating personnel.

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The staff also considers it significant that the inspections conducted according to IEB 82-03 at Quad Cities 1, a unit similar in design, construction and operation to Quad Cities 2, did not detect any IGSCC. In addition, Quad Cities 2 will be operating at a reduced power level as the unit approaches the end of cycle.

As a result of meetings and review of information provided by the licensee, the schedule for conduct of these inspections has been accelerated to the maximum extent practicable. In view of the previously observed cracking at other operating facilities, the public health, safety and interest requires that the licensee's schedule for conducting these inspections and the compensatory measures proposed by the licensee be confirmed and that prior to startup the scope of the inspections be expanded as provided in Section III of this Order and appropriate remedial actions be taken.

In view of the foregoing, I have determine 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 or a total of 4 gpm (leakage shall be monitored once every 4 hours when the reactor is at operating pressure). If unidentified floor drain leakage increases by 1 gpm during any 4 hour period, or equals 3 gpm total, action will be taken to identify the source of the leakage. Should these leakage limits be exceeded, and if leakage is identified as coming from a cracked pipe, shut down the plant for further investigation and repair.
  2. In the event of an unplanned outage where the unit is expected to be in cold shutdown greater than 72 hours, perform a visual inspection of the recirculation system without insulation being removed.
  3. Reduce to three days the unidentified sump monitoring system outage time from the existing limit of seven days.
  4. Defer all planned maintenance outages on the emergency core cooling systems which would make the equipment inoperable.
  5. Improve operator awareness by implementing some refresher training 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 the reactor coolant system piping as soon as practicable but no later than September 4, 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 Water 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.

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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 the welds examined (e.g., stress rule index and carbon content). 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.

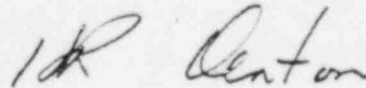
#### IV.

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



Harold R. Denton, Director  
Office of Nuclear Reactor Regulation

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