U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-254/82-26(DPRP); 50-265/82-26(DPRP)

Docket Nos. 50-265; 50-254 Licenses No. DPR-29; DPR-30

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, IL 60690

Facility Name: Quad Cities Nuclear Power Station, Units 1 and 2

Inspection At: Quad Cities Site, Cordova, IL

Enforcement Conference At: U.S. NRC Region III Office, Glen Ellyn, IL

Inspection Conducted: November 18 through 22 and December 13 through 16, 1982

Enforcement Conference Conducted: January 14, 1983

Inspectors: C. E. Norelius for N. J. Chrissotimos 4/8/83

C. E. Norelius for S. G. DuPont 4/8/83

Approved By: C. E. Norelius for Roger D. Walker, Chief 4/8/83
Reactor Projects Section 2C

Inspection and Enforcement Conference Summary

Inspection on November 18 through 22, December 13 through 16 and January 14, 1983 (Report Nos. 50-254/82-26(DPRP); 50-265/82-26(DPRP))

Areas Inspected: Special, unannounced inspection by the resident inspectors of two events involving inoperability of Reactor Protection System instrumentation during operation of Unit 2 and overpressurization of the Unit 1 reactor vessel during hyrostatic testing. The inspection involved a total of 96 inspector-hours onsite by two NRC inspectors including 16 inspector-hours onsite during off-shifts.

Results: Of the two areas inspected, two items of noncompliance were identified (Exceeding technical specification limiting condition for operation for Reactor Protection System instrumentation - Paragraph 2; Inadequate test procedure for reactor vessel hydrostatic test - Paragraph 3).

DETAILS

1. Persons Contacted

   a. Quad Cities Nuclear Power Station

   *N. Kalivianakis, Superintendent
   *T. Tamlyn, Assistant Superintendent Operations
   L. Gerner, Assistant Superintendent for Administration
   G. Tietz, Technical Staff Supervisor

   The inspectors also interviewed various licensed operators.

   b. Commonwealth Edison Company Corporate Office

   *C. Reed, Vice President
   *D. Galle, Division Vice President, Nuclear
   *L. DelGeorge, Staff Assistant, Nuclear
   *T. Rausch, Nuclear Licensing Administrator

*Indicates those persons present at the Enforcement Conference held on January 14, 1983.

2. Licensee Event Report Review

(Open) LER (50-265/82-21): Reactor Protection System instrument found inoperable. On October 13, 1982, during a maintenance outage, test taps for the turbine first stage pressure switches were replaced using a Work Request Authorization (WRA) as the controlling procedure governing the activities being performed. The instrument isolation valve for pressure switch "B" leaked sufficiently to require the instrument rack stop valve to be closed. The instrument mechanic performing the work closed the rack stop valve and did not note this isolation on the WRA or inform the Operating Department that the valve had been shut. When the instrument mechanic completed replacement of the test tap, he opened the instrument isolation valve but failed to open the rack stop valve because it was not the normal isolation valve called out in the instrument calibration procedures. Thus, redundancy of the Reactor Protection System trip logic was compromised by having the B1 subchannel inoperable.

This pressure switch is associated with the generator load reject and stop valve scram bypass relays. A control room annunciator on the reactor panel is displayed when the relays are closed. The pressure switch activates when turbine first stage pressure is greater than 45% of the rated first stage pressure and the pressure switch signal causes the relays to open and allows the operator to reset the annunciator.

The annunciator was actuated (displayed) on October 8, 1982, when Unit 2 was shut down for a maintenance outage. Isolation of the pressure switch during maintenance caused the annunciator to be continuously displayed. However, no abnormal conditions would be recognized following

maintenance on October 13, 1982, through startup to approximately 40% rated power because the annunciator is normally displayed in those circumstances.

On October 13, 1982, at 6:00 p.m., Unit 2 was at approximately 45% rated power as determined by log book entries and computer printouts. At this time, Step 6.r of the normal unit startup procedure, QGP 1-1, requires that the annunciator be cleared. Additionally, if this cannot be accomplished, annunciator Procedure QOA 900-5 requires the operator to check for a faulty relay or alarm circuit to correct the situation. On October 15, 1982, at approximately 9:45 a.m., 39 hours and 45 minutes after the unit was above 45% power, the Unit 2 operator found that the "tubine generator load reject and stop valve scram bypass" annunciator would not clear. At the time of discovery, reactor power was 86% of rated. By procedure, the operator inspected Panel 902-17 and found that a generator load reject and stop valve closure scram bypass relay was closed, while the redundant relays in the Reactor Protection System circuit were open as they should have been.

The Shift turnover procedure for the Shift Engineer (SE), QAP 300-3, Step C.7, requires the SE to perform a visual control room panel check at the beginning of the shift. The shift change procedure for the Station Control Room Engineer/Shift Technical Advisor (SCRE/STA), QAP 300-21, Step C.1, requires the off-going SCRE/STA inform the oncoming SCRE/STA of any abnormal operating conditions. Step C.2.c of that procedure requires that the oncoming SCRE/STA should perform control room panel checks of safety-related equipment following shift change. The shift turnover procedure for Nuclear Station Operators (NSO), QAP 300-4, Step C.6.e, requires the NSO's check the control room panels following shift change and report any abnormal conditions to the SE. The inspector determined that the SE, SCRE/STA and NSO's failed to recognize that the RPS was in a degraded condition through five shift turnovers while sufficient information existed (control room annunciator) that should have alerted them that they were in a Technical Specification Action Statement condition.

The failure to follow plant startup, alarm response, and shift change procedures was contrary to Technical Specifications 6.2.A.1 and 6.2.A.3. Those specifications require adherence to normal startup and operations procedures and alarm response procedures. Technical Specification 3.1.A specifies minimum Reactor Protection System instrumentation requirements and actions to be taken when those requirements cannot be achieved. The failure to take compensatory actions while turbine first stage pressure switch "B" was inoperable was contrary to Technical Specification 3.1.A. These findings represent an item of noncompliance (265/82-26-01).

3. Inservice Testing

On December 12, 1982, the licensee began to perform the required vessel hydrostatic test on Unit 1 in accordance with Procedure QOS 201-5, "Reactor Vessel and Class I Systems Hydrostatic Test for Inservice Inspection."

During the first phase of the vessel hydrostatic test, the vessel pressure was maintained at approximately 400 psig. When this was accomplished, walkdowns were conducted to observe any leakage or water build-up underneath piping or components. Concurrently, maintenance personnel began to gag all safety valves in preparation for phase two. These valves were gagged to prevent inadvertent operation at higher pressures during system walkdowns by personnel. This action also inhibited vessel overpressure protection.

Additionally, the licensee decided to have the Instrument Department perform checks of the reverse flow check valves on the instrument lines. Normally, this is accomplished at full test pressure. In making this decision, the licensee did not foresee any reason for not conducting these checks at this stage of the hydrostatic test.

Upon completion of system walkdowns and reverse flow check valve tests, the licensee began phase two of the hydrostatic test. This involved increasing pressure to meet the test requirement of 1.10 times normal operating pressure, which is approximately 1100 psig.

As phase two began, the operating engineer who was being utilized for communications became contaminated. He told personnel involved in the test that he was leaving the area. Based on previous experience, it was believed that this interruption in communications was acceptable because pressure increase during the beginning of phase two is gradual and thus a personnel replacement was not deemed necessary.

Following start of the control rod drive system to increase pressure, no control room indication for pressure increase was observed. This was a result of the reverse flow check valves not operating properly because the check valve tests were conducted at a lower pressure. This also affected the calibrated test gauge; thus, the lack of communication with the operating engineer was inconsequential.

Upon realizing that a problem existed, personnel went into the reactor building. At this time it was noticed that reactor pressure had risen to 1225 psig as indicated by a local gauge that was unaffected by the reverse flow check valve problem. The control room was immediately notified, and the control rod drive pump was tripped. A calibration check was made of this local gauge following the event and the 1225 psig indication was verified to be correct.

Section XI of the ASME Code requires that some form of overpressurization protection be provided to prevent system overpressurization during hydrostatic testing. These requirements are not specific and could be satisfied with administrative measures (for example, an operator instructed to isolate the pressure source at a specified system pressure). However, ANSI N45.2.8, 1974, requires that controls be established over pressure relief devices to prevent system overpressurization during hydrostatic testing. The licensees quality assurance program requires implementation of ANSI N45.2.8, 1974 to satisfy 10 CFR Part 50, Appendix B, Criterion XI requirements concerning control over testing activities. Additionally, the hydrostatic test procedure for the

reactor vessel and piping, QOS 201-5, Step 16, requires that system pressure not exceed 1120 psig during the hydrostatic test.

The failure to control pressure relief devices to prevent system overpressurization during hydrostatic testing is contrary to the requirements of 10 CFR Part 50, Appendix B, Criterion XI, and the licensees Quality Assurance Program. The failure to follow the reactor vessel hydrostatic test procedure by exceeding 1120 psig is contrary to Technical Specification 6.2.A.6. That specification requires the adherence to surveillance and test procedures. These findings represent an item of noncompliance (254/82-26-01).

4. Enforcement Conference

The Region III staff met with licensee representatives (denoted in Paragraph 1) for an Enforcement Conference on January 14, 1983. The purpose of the Enforcement Conference was to discuss the inspection findings and planned or completed corrective actions.

The Region III staff provided a discussion of the facts surrounding the isolation of a turbine first stage pressure switch during a maintenance activity and the subsequent failure of control room personnel to identify the isolation of this instrument through five shift turnovers while a control room panel annunciator was lit indicating a system malfunction. The Region III staff identified these findings as violations of the Technical Specification Limiting Condition for Operation for Reactor Protection System instrumentation and failure to adhere to the normal

unit startup procedure, the annunciator response procedure and shift turnover procedures.

In addition, the Region III staff provided a discussion of the circumstances surrounding the performance of the reactor vessel and piping hydrostatic test on Unit 1 that resulted in exceeding the hydrostatic test pressure. This finding was identified as a violation of the quality assurance requirements concerning test control.

The licensee responded by stating that the facts were correct as presented by the Region III staff and provided a discussion of proposed and completed corrective actions and actions to prevent recurrence.