U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-254/81-11; 50-265/81-11

Docket No. 50-254; 50-265 License 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 & 2

Inspection at: Quad-Cities Site, Cordova, IL

Inspection Conducted: May 16, 1981, through June 30, 1981

Inspectors: N. J. Chrissotimos 6-30-81

S. G. DuPont 6-30-81

Approved by: F. W. Reimann, Acting Chief 7-7-81
Reactor Projects Section 1C

Inspection Summary

Inspection on May 16 through June 30, 1981 (Reports No. 50-254/81-11; 50-265/81-11)

Areas Inspected: Operational Safety Verification, Monthly Maintenance Observation, Monthly Surveillance Observation, Licensee Event Reports Followup, IE Bulletin Followup, IE Circular Followup, Surveillance, Meeting with Local Officials, Transportation of Irradiated Fuel and Review of Licensee's Monthly Performance Report. The inspection involved a total of 377 inspector-hours by two NRC inspectors including 39 inspector-hours onsite during off-shifts.

Results: No items of noncompliance were identified.

DETAILS

1. Persons Contacted

*N. Kalivianakis, Superintendent
T. Tamlyn, Assistant Superintendent Operations
D. Bax, Assistant Superintendent Maintenance
L. Gerner, Assistant Superintendent for Administration
*J. Heilman, Quality Assurance, Operations
*R. Flessner, Technical Staff Supervisor

The inspector also interviewed several other licensee employees, including shift engineers and foremen, reactor operators, technical staff personnel and quality control personnel.

*Denotes those present at the exit interview on June 30, 1981.

2. Operational Safety Verification

The inspector observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the month of June, 1981. The inspector verified the operability of selected emergency systems, reviewed tagout records and verified proper return to service of affected components. Tours of Units 1 and 2 reactor buildings and turbine buildings were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibrations and to verify that maintenance requests had been initiated for equipment in need of maintenance. The inspector by observation and direct interview verified that the physical security plan was being implemented in accordance with the station security plan.

The inspector observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. During the month of June, 1981, the inspector walked down the accessible portions of Units 1 and 2 ECCS Systems to verify operability. The inspector also witnessed portions of the radioactive waste system controls associated with radwaste shipments and barreling.

These reviews and observations were conducted to verify that facility operations were in conformance with the requirements established under technical specifications, 10 CFR, and administrative procedures.

No items of noncompliance were identified.

3. Monthly Maintenance Observation

Station maintenance activities of safety related systems and components listed below were observed/reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry codes or standards and in conformance with technical specifications.

The following items were considered during this review: the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; radiological controls were implemented; and, fire prevention controls were implemented.

Work requests were reviewed to determine status of outstanding jobs and to assure that priority is assigned to safety related equipment maintenance which may affect system performance.

The following maintenance activities were observed/reviewed:

Unit 1

Q11606 1A Recirculation Pump Discharge Valve
Q12648 Backup Scram Solenoid
Q12135 1001-16A RHR Valve
Q11421 1001-19A RHR Valve
Q12651 2001-16 D/W Equipment Drain Sump Valve
Q11166 Reactor Building Vent Damper

Unit 2

Q12209 2A RHR Pump Seal
Q12210 2B RHR Pump Seal
Q12549 RHR 1001-7B Valve
Q12546 Diesel Generator Voltage Regulator

Unit 1/2

Q05883 Rebuild Spare CRD
Q11633 MSIV Main Disc
Q12612 1/2 Diesel Generator

Following completion of maintenance on the Unit 2 Diesel Generator, the inspector verified that these systems had been returned to service properly.

No items of noncompliance were identified.

4. Monthly Surveillance Observation

The inspector observed technical specifications required surveillance testing on the Unit 1 Safety Relief Valve Operability and Unit 2 Core Spray and RHR Room Doors and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that limiting conditions for operation were met, that removal and restoration of the affected components were accomplished, that test results conformed with technical specifications and procedure requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identifed during the testing were properly reviewed and resolved by appropriate management personnel.

The inspector also witnessed portions of the following test activities: Unit 2 RHR Containment Cooling Valve Operability.

No items of noncompliance were identified.

5. Licensee Event Reports Followup

Through direct observations, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished in accordance with technical specifications.

Unit 1

RO 81-09, dated April 7, 1981, during operability test, 1A RHR Service Water Pump did not meet technical specifications flow requirements.

RO 81-10, dated April 14, 1981, during normal operation, RCIC Steam Line Drain Valve closed in excess of limits.

Unit 2

RO 81-09, dated May 5, 1981, during RHR Containment Cooling Valve Operability Test, a Valve Breaker tripped from high starting current.

RO 81-10, dated May 15, 1981, during normal operation, Control Room received Unit 2 Diesel Generator alarm.

In regards to RO 81-10, the cause of this occurrence has been designated as equipment failure. The 4 KV breaker in bus 24-1 which connects the Unit Two Diesel Generator with the emergency bus spuriously closed in, causing the bus to energize the the generator stator and motor the generator. The cause of the breaker closing in was postulated to be a ground fault in the 125 volt DC control power circuit which operates that breaker. Four wires inside the breaker cubicle were found to have the insulation worn off. One of these wires probably shorted to ground or another wire causing the breaker closing mechanism to energize, thus closing the breaker. Damage to the generator was limited to the three power current transformers which go to a neutral ground detector. These transformers are directly wired into the 4 KV circuit coming off the generator. The transformers had overheated resulting in internal damage to the transformers, also, a lead to the primary winding of one of the transformers was burned off.

The emergency Diesel Generator is manufactured by the Electro-Motive Division of General Motors Corporation, model A-20-C1; rated at 4160 volts, 452 amps, 3250 KVA. The 4 KV circuit breaker is manufactured by General Electric Company, model MC-4.76. There have been no previous failures of this type at Quad-Cities Station.

The licensee's immediate corrective action taken was to verify operability of the 1/2 Diesel Generator and its associated emergency bus. Extensive inspections and tests were performed on the generator and equipment connected to it. The rotor and stator were meggered and revealed no indications of faults or degraded insulation. A visual inspection of generator internals showed signs of localized heating on the rotor pole faces and slight flaking of the insulation. The loose insulation was removed and new insulation material was applied. New power current transformers were installed in the neutral ground detector circuit. The four wires with worn insulation in the 4 KV breaker cubicle were replaced. No other problems were found in the breaker cubicle. At 0957 on May 17, 1981, the Diesel Generator was successfully started and loaded to 2500 kilowatts on bus 24-1. Vibration readings were taken with the Diesel Generator loaded and unloaded to verify no damage was incurred in the shaft or coupling. Approximately 15 minutes after loading the generator, all generator electrical indication was lost in the Control Room. The output breaker was immediately opened and the Diesel was shutdown. Operability of the 1/2 Diesel Generator and the associated low pressure core and containment cooling systems were readily verified. Two

off-site lines capable of supplying 345 KV power were available. The problem was found to be a failed diode in the voltage regulator circuit. The diode had probably overheated when the generator was motored, but had not completely failed. The failed diode was replaced, and on May 19, 1981, at 9052, the Diesel Generator was successfully started and loaded to the bus to verify operability.

To prevent recurrence, modification M-4-2-77-21 will be installed during the next Unit Two Refueling Outage in the fall of 1981. This modification will trip the Diesel Generator to bus 24-1 breaker from loss of excitation, generator neutral voltage, generator reverse power, and overcurrent relays. This modification will also be installed on the 1/2 Diesel Generator during the Unit Two fall Refueling Outage. These protective tripping devices were installed on the Unit One Diesel Generator in the fall of 1980.

No items of noncompliance were identified.

6. IE Bulletin Followup

For the IE Bulletins listed below the inspector verified that the written response was within the time period stated in the bulletin, that the written response included the information required to be reported, that the written response included adequate corrective action commitments based on information presentation in the bulletin and the licensee's response, that licensee management forwarded copies of the written response to the appropriate onsite management representatives, that information discussed in the licensee's written response was accurate, and that corrective action taken by the licensee was as described in the written response.

IE Bulletin 81-02, dated April 9, 1981, Failure of gate type valves to close against differential pressure.

No items of noncompliance were identified.

7. IE Circular Followup

For the IE Circulars listed below, the inspector verified that the Circular was received by the licensee management, that a review for applicability was performed, and that if the circular were applicable to the facility, appropriate corrective actions were taken or were scheduled to be taken.

IE Circular 81-04, dated April 30, 1981, The role of Shift Technical Advisors and importance of reporting operational events.

IE Circular 81-06, dated April 14, 1981, Potential deficiency affecting certain Foxboro 10 to 50 milliampere transmitters.

IE Circular 81-07, dated May 14, 1981, Control of radioactively contaminated material.

No items of noncompliance were identified.

8. Surveillance

The inspector observed technical specifications required surveillance testing (other than calibrations and checks) on the Unit 1 Safety Relief Valve Operability and Unit 2 Core Spray and RHR Room Doors and verified that testing was performed in accordance with technically adequate procedures, that results were in conformance with technical specifications and procedure requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during testing were properly reviewed and resolved by appropriate management personnel.

The following surveillance performed between December, 1980, and June, 1981, were reviewed:

Unit 1

QFD-100-3	QOS-1600-14	QTS-300
QOS-20-1	QOS-1600-15	QIS-2
QOS-300-1	QOS-1600-18	QIS-5
QOS-1600-2	QOS-1600-19	QIS-8
QOS-1600-4	QOS-1600-20	QIS-11
QOS-1600-5	QOS-1600-23	QIS-14
QOS-1600-7	QTS-1300	QIS-17
QOS-1600-9	QTS-1311	QIS-20
QOS-1600-10	QTS-100	QIS-23
QOS-1600-11	QTS-130	QIS-26
QOS-1600-12	QTS-160	QIS-29
QOS-1600-13	QTS-260	QIS-32
QIS-35	QIS-46	QIS-55
QIS-38	QIS-49	QIS-58
QIS-41	QIS-52	QIS-68

Unit 2

QTS-1300	QOS-1600-2	QOS-1600-14
QTS-1512	QOS-1600-4	QOS-1600-15
QTS-100	QOS-1600-5	QOS-1600-18
QTS-130	QOS-1600-7	QOS-1600-19
QTS-160	QOS-1600-9	QOS-1600-20
QTS-260	QOS-1600-10	QOS-1600-23
QTS-300	QOS-1600-11	QIS-32
QTS-1104	QOS-1600-12	QIS-35
QOS-5670-1	QOS-1600-13	QIS-38
QIS-2	QIS-17	QIS-41
QIS-5	QIS-20	QIS-46
QIS-8	QIS-23	QIS-49
QIS-11	QIS-26	QIS-52
QIS-14	QIS-29	QIS-55

No items of noncompliance were identified.

9. Meeting with Local Officials

On June 17, 1981, the resident inspector attended meetings with local officials of the cities of Camanche, Iowa, and Cordova, Illinois, State Representatives from the Iowa Office of Disaster Services, Illinois Emergency Service and Federal Officials of Regions V and VII FEMA.

Topics discussed were the emergency drill conducted at the Quad-Cities Nuclear Power Station and the evacuation plans for the respective states.

No items of noncompliance were identified.

10. Transportation of Irradiated Fuel

On June 17, 1981, the inspector observed a shipment of segmented fuel rods being loaded and transported from the site.

The inspector verified that in addition to the driver, one escort was available, the required communication equipment was available and that the transport vehicle was equipped with an immobilization device.

The inspector also witnessed restricted mode operation of the crane and radiation surveys of the cask.

No items of noncompliance were identified.

11. Review of Licensee's Monthly Performance Report

The inspector reviewed the licensee's monthly performance report of Units 1 and 2 for the month of May, 1981.

Areas covered by the report were a dments to Technical Specifications, summary of corrective maintenance performed on Safety Related Equipment, Licensee Event Reports, Operating Data Tabulations, and refueling information. The report was reviewed for compliance with Technical Specifications 6.6.A.3.

No items of noncompliance were identified.

12. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) throughout the month and at the conclusion of the inspection on June 30, 1981, and summarized the scope and findings of the inspection activities. The licensee acknowledged the inspectors comments.