

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-254/85029(DRP); 50-265/85032(DRP)

Docket Nos. 50-254; 50-265


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 Conducted: December 8, 1985 through February 8, 1986

Inspectors: A. L. Madison
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Approved By: 
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2-27-86
Date

Inspection Summary

Inspection on December 8, 1985 through February 8, 1986 (Reports No. 50-254/85029(DRP); 50-265/85032(DRP))

Areas Inspected: Routine, unannounced inspection by the resident and region based inspectors of actions on previous inspections findings; operations; radiological controls; maintenance/modifications; surveillance; housekeeping; procedures; fire protection; emergency preparedness; security; refueling/outages; quality assurance; quality control; administration; routine reports, LER review; bulletin followup; regional requests; training; and independent inspection. The inspection involved a total of 310 inspector-hours onsite by five NRC inspectors, including 60 inspector-hours onsite during off-shifts.

Results: One violation was identified. (Failure to perform technical specification required surveillance.)

DETAILS

1. Persons Contacted

- *N. Kaliviankis, Station Manager
- *D. Bax, Production Superintendent
- *T. Tamlyn, Technical Services Superintendent
- T. Lihou, Technical Staff Supervisor
- R. Roby, Assistant Superintendent Operations

*Denotes those present at the exit interview on February 11, 1986.

The inspectors, through direct observation, discussions with licensee personnel, and review of applicable records and logs, examined the areas stated in the inspection summary and accomplished the following inspection modules.

37700	Design Changes and Modifications
42700	Plant Procedures
61701	Complex Surveillance
61726	Monthly Surveillance Observations
62703	Monthly Maintenance Observations
71707	Operational Safety Verification
71710	ESF System Walkdown
84724	Gaseous Waste System
90703	Review of Periodic and Special Reports
92700	Onsite Review of LERs
92702	Violation Followup
92703	IE Bulletin Followup
92705	Followup - Regional Requests
92706	Independent Inspection
93702	Onsite followup of Events

The inspectors verified that activities were accomplished in a timely manner using approved procedures and drawings and were inspected/reviewed as applicable; procedures, procedure revisions and routine reports were in accordance with Technical Specifications, regulatory guides, and industry codes or standards; approvals were obtained prior to initiating any work; activities were accomplished by qualified personnel; the limiting conditions for operation were met during normal operation and while components or systems were removed from service; functional testing and/or calibrations were performed prior to returning components or systems to service; independent verification of equipment lineup and review of test results were accomplished; quality control records and logs were properly maintained and reviewed; parts, materials and equipment were properly certified, calibrated, stored, and or maintained as applicable; and adverse plant conditions including equipment malfunctions, potential fire hazards, radiological hazards, fluid leaks, excessive vibrations, and personnel errors were addressed in a timely manner with sufficient and proper corrective actions and reviewed by appropriate management personnel.

Further, additional observations were made in the following areas:

a. Action on Previous Inspection Findings

- (1) (Closed) Unresolved Item (254/81004-04; 265/81004-04(DRS)): Establish Fire Strategies or Pre-Plans. During a review of licensee compliance to 10 CFR 50 Appendix R requirements, the inspector recommended that the licensee develop and implement fire fighting strategies in order to comply with 10 CFR 50 Appendix R, Paragraph III.K.12. The Licensee questioned the requirement to establish fire pre-plans, however, such pre-plans were developed and implemented through training and drills. The inspectors reviewed Revision 1 dated September 6, 1986 and found the Fire Preplans to be adequate. No further action is required.
- (2) (Closed) Unresolved Item (254/81004-08; 265/81004-08 (DRS)): Fire Drill Frequency. During a review of licensee compliance to 10 CFR 50 Appendix R requirements, the inspector recommended that the licensee implement a fire brigade training program that included the following in order to comply with 10 CFR 50 Appendix R, Paragraph III.I.3.b:
 - (a) Fire drills at regular intervals not to exceed three months for each shift fire brigade.
 - (b) Each fire brigade member should participate in each drill, but must participate in at least two drills per year.
 - (c) At least one fire drill per year for each shift fire brigade must be unannounced to assess the plant fire fighting readiness.

The licensee established procedures to comply with the above recommendations effective January, 1986 and has complied with these requirements to date. No further actions are required.

- (3) (Closed) Violation (254/84015-07; 265/84013-07): Failure to Accomplish Procurement Activities in Accordance With Documented Procedures. This violation consisted of nine examples of failing to implement the requirements of the Quality Assurance Program relating to procurement. The inspector reviewed the status of the specific equipment involved and determined that the deficiencies had been corrected or the equipment placed in a hold status pending a decision on disposition (correct deficiency or de-rate to non safety-related use only). Revisions had been made to procurement procedures to better define the content of procurement documents. Also, a memorandum had been issued to responsible site personnel detailing their responsibilities in assuring that procurement documents contain all applicable requirements. The inspector was satisfied that specific hardware involved was acceptable or under adequate control and that the procedure revisions should prevent recurrence of the problem.

- (4) (Closed) Violation (254/84015-09; 265/84013-09): Failure to Perform an Adequate Technical Evaluation for Suitability of Application (Two Examples). The first example involved the failure to verify that an installed breaker was environmentally qualified as required. The licensee had replaced the breaker with a qualified breaker. Since the originally qualified breaker is no longer manufactured, a new model was qualified and will be produced to a dedicated drawing. The second example involved the acceptance of a surface examination rather than a volumetric examination of a three inch valve body without an adequate engineering evaluation. The licensee performed the evaluation and found the surface examination to be acceptable; however, the volumetric examination will continue to be specified. The problem was precipitated by a one-time exception to NDE requirements for this valve made to the implementation of the licensee's current controls on specification changes. The inspector was satisfied that this item was adequately resolved.
- (5) (Closed) Violation (254/85002-01; 265/85002-01): Failure to Adequately Control Design Changes and Modifications (Four Examples). The first example involved the failure to perform a design review, 10 CFR 50.59 review or a part-modification test for a temporary modification leading to the failure of the Standby Gas Treatment System. The specific error had been corrected and station procedures revised to require the installation of jumpers to be treated as temporary modification requiring onsite review and a 10 CFR 50.59 review. The second example involved the failure to document a design analysis or to perform a post-modification test on a piping modification resulting in a vibration problem. The inspector determined that the design problem had been corrected and procedure changes implemented to require a documented design analysis prior to modifications being declared operational. In addition, the station has implemented a new procedure on the preparation and use of post-modification tests. The third and fourth examples involved inadequate installation packages for and post-modification testing of valves or their control circuits. The inspector determined that the hardware problems had been corrected and a new station procedure issued on valve installation. In addition, a procedure revision now requires an independent design review of station generated design prints. The inspector was satisfied that the hardware problems had been corrected and that the procedure revisions should prevent recurrence of these problems.

b. Operations

(1) Unit 1

At the beginning of the inspection period, Unit 1 was at full power. On December 26, 1986, the High Pressure Coolant Injection (HPCI) isolation valves were closed to facilitate

repacking a downstream main steam supply valve. The HPCI system was considered operable because these normally open isolation valves also receive an opening signal upon actuation of the HPCI system. When work was completed, the inboard isolation valve would not reopen.

The postulated failure scenario is as follows: There is a long length of steam line between the inboard steam isolation valve (No. 4) and the normally closed HPCI main steam supply valve (No. 3), thus when valve No. 4 was closed and that length of line cooled down, a high differential pressure developed and the position override switch was not correctly set to fully unseat the valve and the torque switch exceeded its setting resulting in the valve remaining closed (all limitorque switch settings were correct).

Further investigation into this event reveals that these valves are periodically functionally tested and have never failed in this manner. However, they have never been tested with a differential pressure across the valves. The "percent open" setting of the valve unseating override switches were set when no differential pressure existed and were thus set at too small a "percent open" figure. Thus, when a high differential pressure exists, the "override switch" when set at a very low number, either does not fully unseat the valve or only slightly unseats the valve before transferring the power to open the valve to the limitorque switch. In either event the differential pressure is still too high and the torque required to open the valve exceeds the limitorque switch setting, resulting in the valve failing to open. This scenario is also applicable to Reactor Core Isolation Cooling (RCIC).

The licensee has committed to further evaluation and testing of these override switches during their next refueling outage.

Pending satisfactory testing and resolution of this issue, they will declare the involved systems (HPCI and RCIC) at any time they shut the isolation valves for any reason. This will be tracked as an Open Item (254/850290-1(DRP); 265/85032-01(DRP)).

On January 6, 1986 at 1201 the Unit was shutdown for an extended refueling and maintenance outage and remained shutdown for the balance of the inspection period.

On January 19, 1986, at 0203 Unit 1 received a ATWS scram while draining the reactor vessel in preparation for chemical decontamination. The cause of the scram was a procedural inadequacy which did not call for the removal of the fuses for the ATWS vessel level scram. The procedure was subsequently changed.

(2) Unit 2

Unit 2 was operating at full power at the beginning of the rating period. On January 2, 1986, at 1425, the Unit experienced a reactor scram from Main Steam Isolation Valve Closure. An air hose being used by contractors in the south Residual Heat Removal room parted and then struck an instrument rack causing a spurious Group I isolation. All systems responded normally and investigation found no damage to instruments on the affected rack. The Unit was returned to power the same day and remained at power for the balance of the report period.

No violations or deviations were identified.

c. Radiological Controls

Technical Specification 3.8/4.8.A.1, Table 4.8-1 requires the licensee to collect and analyze gaseous tritium samples monthly. The licensee attempted to collect this sample three times during December 1985 but failed to collect a sufficient sample to perform the required analysis using liquid scintillation, thereby resulting in a violation of this T/S requirement (Violation 50-265/85032-02(DRSS)). The cause for this failure was an inefficient method of condensing the tritiated moisture in the gas sample when the relative humidity is low. The licensee uses an inverted Marinelli beaker as a cold trap with dry ice and glycol placed in the center opening of the beaker. On January 23, 1986, the inspector discussed alternative techniques of condensing the tritiated moisture with a licensee representative. The licensee is considering these alternatives.

The Resident Inspectors reviewed the licensee's controls for chemicals within the plant after finding aerosol cans containing chloride contaminants in uncontrolled containers inside a contractor's tool box. The inspector found that no controls exist for bulk chemicals such as paint and that for contracts issued by the corporate office, no provisions are made to ensure the contractor's compliance to site requirements. After discussions with the inspectors, the licensee agreed to correct the above discrepancies. Resolution of these items will be tracked as an Open Item (254/85029-02; 265/85032-03(DRP)).

d. Maintenance

The following activities were observed/reviewed:

- (1) Observed removal, modification, calibration and installation of HFA relays on Unit 1.
- (2) Observed cleaning and inspection of 480V electrical breakers on Unit 1.

- (3) Observed alignment of Unit 1 Hydrogen Seal Oil pump.
- (4) Observed testing of portable chain hoists.
- (5) Observed removal of No. 13 jet pump beam bolt on Unit 1.
- (6) Observed portions of chemical decontamination for Unit 1.

At the request of the Office of NRR, the inspectors completed a questionnaire on the licensee's maintenance program. The questionnaire covered a broad spectrum of maintenance issues including management, housekeeping, manpower, and procurement. The results of the survey will be presented in a report to the EDO in the Spring of 1986.

No violations or deviations were identified.

e. Surveillance

The following surveillance activities were observed/reviewed:

- (1) Observed control room portions of OIS-60, Power Operational Functional Tests, Units 1 and 2.
- (2) Observed Control room portions of ST-5, High Reactor Pressure Scram Surveillance, Units 1 and 2.
- (3) Observed control room portions of ST-6, High Drywell Pressure Scram Surveillance, Units 1 and 2.
- (4) Observed monthly surveillance on the 1/2 Emergency Diesel Generator.
- (5) Observed local leak rate testing for condensate check valves.

No violations or deviations were identified.

f. Procedures Reviewed

The following procedures were reviewed:

- (1) QMS-200-4 Emergency Diesel Generator Preventative Maintenance Schedule.
- (2) QAP-300-10 Operating Records Revision 5
- (3) QOP-4700-6 Drywell Pneumatic Supply System Supply Change-over Revision 3
- (4) QOS-005-2 Normal Control Room Inspection and Shift Turnover Panel Check Revision 9

No violations or deviations were identified.

g. Review of Routine and Special Reports

The inspectors reviewed the monthly performance reports for the months of November and December and the Unit 2 Summary Startup Test Report for Cycle Eight. The Resident Inspectors also reviewed a special Deviation Report submitted pursuant to the requirements of Technical Specification 3.12.B.2 which requires the reporting of an inoperable fire pump for greater than seven days. On November 25, 1985, the 1/2 B Diesel Fire Pump (DFP) was out of service for repair greater than seven days. The pump was being overhauled as preventive maintenance due to the pump's measure capacity of 2016 gpm as compared to the Technical Specification limit of 2000 gpm. While the 1/2 B DFP was out of service the 1/2 A DFP and the Service Water System were available to provide an adequate supply of water to the fire suppression system. The pump's wear rings were found to be out of tolerance due to normal wear and were replaced. The pump was successfully demonstrated operable on December 20, 1985.

No violations or deviations were identified.

2. Review of Secondary Containment Capability Test Report

By letter dated January 6, 1986, the licensee submitted to Region III a summary report for their December 18, 1985 Secondary Containment Leak Rate Test. The report was submitted in a timely manner, contained the appropriate information, and showed that the secondary containment satisfied applicable leakage rate criteria; however, two questions were generated during the review of the report:

- a. The report indicated that local flow indication for the Standby Gas Treatment System (SBGT) was used during the test. The inspector questioned why local indication was used instead of control room indication.
- b. The report indicated that only Train A SBGT was used during the test. The inspector questioned whether Train B was used on an alternative basis to demonstrate its capability to maintain the required secondary containment pressure.

These questions were discussed with the licensee's technical staff supervisor on January 9, 1986. With regard to item (a), it was identified that the local flow indicated is the one used when aligning the SBGT flow control system. As such, it provides a more representative indication of SBGT flow. This is acceptable. With regard to item (b), it was identified that the licensee does not alternate between the SBGT trains when performing their pre-refueling periodic secondary containment leak test, rather the choice of which train to use is made arbitrarily prior to the test.

The inspector suggested to the licensee that they consider alternating the SBTG train used to perform the test to provide additional assurance that either SBTG train could, by itself, establish the required pressure in the secondary containment. The licensee agreed to consider this suggestion.

No violations or deviations were identified.

c. LER Review

- (1) (Closed) LER85-018, Revision 00: Unit 1 Failure to Maintain Separation Between Division I and II and No Water Damage Protection on Buses 13, 14, 23, and 24. As a result of an unannounced safety inspection in the fire protection area conducted by DRSS certain discrepancies were discovered at Dresden Units 2 and 3. These discrepancies were confirmed to exist at this station by Sargent and Lundy. Corrective action was taken to correct these discrepancies.
- (2) (Open) LER85-019, Revision 00: Unit 1 Completion of Technical Specification Required Shutdown. With the shared Diesel Generator inoperable concurrent with the 1D RHR Service Water Pump inoperable, the unit was shut down from 84% power. The root cause for the diesel being inoperable was dirty contacts in Bus 13-1 cubicle breaker position switch. The contacts were cleaned and the breaker operated satisfactorily. The service water pump was inoperable due to two pieces of wood being in the impeller of the pump lowering the pumps normal output. The pump was cleaned, reassembled and successfully met its flow requirements. The Electrical Maintenance procedures will be revised to place the cubicle switch on a more frequent maintenance schedule. This change will be tracked as Open Item (254/85029-03; 265/85032-04(DRP)).
- (3) (Closed) LER85-020, Revision 00: Unit 1 Auto Start of Standby Gas Treatment System Due to Bypass of Train "A" and Downscale Spike of Train "B" Fuel Pool Radiation Monitors. This LER is closed but is an item of concern being tracked by Unresolved Item (254/85017-03; 265/85019-02(DRP)).
- (4) (Closed) LER85-021, Revision 00: Unit 1 RCIC Inoperable Due to Failed Fuse in Controller. During performance of a pump operability test, it was discovered that the control room flow indicator was not responding, thus making RCIC inoperable. The cause was a blown fuse. The fuse was replaced and the operability test for RCIC was completed successfully.
- (5) (Closed) LER85-022, Revision 00: Unit 1. Standby Gas Train "A" Loses Flow Due to Obstructed Intake and Train "B" Fails to Start Due to Blown Fuse. During a test of the Standby Gas Treatment System, train "A" (which was initially started) air flow decreased to zero. Train "B" (which was in standby) failed to start. The cause of "A" failure was a plastic bag being sucked

over the intake. Both standby gas trains are fenced in and an error in communications regarding housekeeping policies lead to the bag getting into this fenced-in area. Signs have been posted which caution against the leaving of loose materials in the fenced-in areas. The cause of train "B" failure was a blown fuse in the timer for train "B". The fuse was replaced and both trains were successfully tested.

This LER was not originally considered to be reportable. During a supervisory review the licensee determined that the event was reportable and made the necessary notifications. Since this misclassification was promptly corrected by the licensee, a notice of violation will not be issued.

- (6) (Open) LER86-002, Revision 00: Unit 1 Leak Rate for MSIVs in Excess of Technical Specification Limit. This LER will remain open until a Supplemental LER is issued describing the cause(s) for the excessive leakages.
- (7) (Open) LER86-003, Revision 00: Unit 1 Shared Diesel Generator Cooling Water Pump Inoperable Due to Loss at Control Power. The shared diesel generator cooling water pump's circuit breaker control power fuse was inadvertently removed during an out-of-service operation. Contributing to the error was inconsistent labeling on the buses. Corrective action was to replace the fuse and clarify the labeling on these buses. Further the out-of-service program will be expanded to include verification of all out-of-services on safety related buses and any other buses where safety related equipment could be affected. This LER will remain open pending completion of further licensee corrective actions.
- (8) (Closed) LER85-023, Revision 00: Unit 2 HPCI Inoperable Due to Motor Operated Valve Being Unable to Open Against Differential Pressure. In order to add packing to the Turbine Steam Supply Valve, the steam supply isolation valves were closed. When work was completed, the outboard isolation was opened; however, the inboard isolation valve would not open from the control room. The large differential pressure across this valve created a high torque condition. This condition lasted longer than the bypass limit switch (bypasses the torque switch) was set for and the valve failed on overtorque. For normal operation, this valve is left open and the turbine steam supply is the one that opens when required. This supply valve has never failed. Corrective action will include the resetting of the limit switches to allow these valves to open under similar conditions.
- (9) (Closed) LER86-001, Revision 00: Unit 2. Reactor Scram Due to Spurious Group I Isolation. While operating at 97% of thermal power, Unit 2 received a spurious Group I isolation signal and subsequent reactor scram. The cause of the isolation was a

contractors air hose that broke and struck an instrument rack causing a spurious signal. Corrective action included checking of all hose fittings, a study to investigate replacing these switches with analog devices, and as a possible interim measure placing barriers around the racks.

d. Refueling/Outages

On January 2, 1986, Unit 1 began an extended refueling and maintenance outage. Extensive planning preceded the outage and has continued throughout. Communication meetings are scheduled twice daily and extra meetings for complicated or sensitive work are utilized as necessary. Management has continuously demonstrated an aggressive attitude towards eliminating potential problems.

The following activities have been observed/reviewed by the Resident Inspectors:

- (1) Observed modification testing of Unit 1's new refueling bridge.
- (2) Observed for three hours fuel move from refueling bridge. There was good communication with the control room and operations were smooth.
- (3) Observed removal of No. 13 jet pump beam bolt. Reviewed preparations for replacement.
- (4) Observed and reviewed the chemical decontamination process.
- (5) Observed and reviewed the HFA relay modification work.
- (6) Reviewed the 125VDC Battery replacement.
- (7) Reviewed preparations for and results of the separator bolt ultrasonic testing. No crack indications were found and all but one bolt was checked. The remaining bolt was inaccessible.

No violations or deviations were identified.

e. TMI Action Item Followup

(Closed) Item I.A.2.1: By letter dated January 27, 1986, NRR approved the licensee's requalification program for licensed operators, senior operators and senior operators (limited). The Resident Inspectors reviewed the licensee's program to ensure that it was implemented as described in their submittal. No further actions are required.

No violations or deviations were identified.

3. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspectors, and which involve some action on the part of the NRC or licensee or both. The open items disclosed during inspection are discussed in Paragraphs 2b, 2c and 2h.

4. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) throughout the inspection period and at the conclusion of the inspection on February 11, 1986, and summarized the scope and findings of the inspection activities.

The inspectors also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents/processes as proprietary.