



Commonwealth Edison
Quad-Cities Nuclear Power Station
Post Office Box 216
Cordova, Illinois 61242
Telephone 309/654-2241



BBS-73-129

June 20, 1973

Mr. John F. O'Leary, Director
Directorate of Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20545

Subject: Quad-Cities Nuclear Power Station, Units 1 & 2
Docket Numbers 50-254 and 50-265
DPR-29 and 30, Appendix A
Sections 1.0.A.2, 3.8.B.3.a., and 6.6.B

Dear Mr. O'Leary:

On June 10, 1973, the 48 hour count of the reactor building ventilation stack sample filters and cartridges indicated that the release rate for iodine-131 and particulates with half lives longer than 8 days had been exceeded. This abnormal occurrence was previously reported by telegram on June 11, 1973.

PROBLEM AND INVESTIGATION

At 0530 on June 7, 1973, the Unit 2 reactor scrambled on low level when a fitting in the air supply to the feed-water regulating valve broke. The reactor subsequently isolated on low steam line pressure. The reactor water cleanup system isolated at the time of the scram and when it was returned to service, area high temperature alarms were received in the control room. After reactor water level and pressure had stabilized an operator in protective clothing and respiratory equipment entered the area and found the source of the leak to be a seal failure on the 2B cleanup system recirculation pump. The pump was isolated to stop the leakage into the reactor building.

In accordance with Surveillance Requirement 4.8.B.3 reactor vent stack filters and cartridges have been removed daily. On June 8, 1973, the average release concentration of I-131 for the 7th was determined to be 4.58×10^{-11} uc/cc for Unit 2 and 2.6×10^{-11} uc/cc for Unit 1. After decay of short lived particulates, the

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samples were counted on June 10, 1973, to obtain a preliminary estimate of the release rate on the 7th. The results were 2.04×10^{-11} uc/cc for Unit 1 compared to 2.00×10^{-10} uc/cc for Unit 2. Based on an average ventilation exhaust flow of 96,000 cfm per unit and an MPCa value of 1.033×10^{-10} uc/cc from the last composite it was estimated that the release rate of Specification 3.8.B.3.a had been exceeded on the 7th by approximately 60%.

The samples were counted again on the 15th to determine the long lived particulate activity with greater accuracy. The results of this count confirmed that the LCO for iodine -131 and particulates with half lives greater than 8 days had been exceeded on June 7. The Unit 1 particulate sample was 1.65×10^{-11} uc/cc compared to 1.65×10^{-10} uc/cc for Unit 2 when corrected back to the 7th. A new monthly composite sample was also analyzed on June 15, 1973 and the new MPCa was determined to be 1.004×10^{-10} uc/cc. Using this new value: Qrs/ 8×10^4 (MPCa) was calculated to be 1.49.

On June 11, 1973, the sample from the 8th was counted and the Unit 2 particulate activity had decreased to 6.5×10^{-12} uc/cc. The total was approximately 30% of the Technical Specification limit which confirmed that the release on the 7th was an isolated case and could be attributed to the cleanup pump seal failure.

EVALUATIONS AND CORRECTIVE ACTION

The noble gas release rate from the Unit 2 reactor building did not approach the 1 mr/hr SGTS initiation set point of the vent duct monitor at any time on June 7, 1973. The monitor, which is very sensitive to direct radiation from the turbine, dropped sharply from .2 mr/hr to .07 mr/hr after the scram. The highest recorded reading was .23 mr/hr at about 0720.

A review of station logs indicated that the Standby Gas Treatment System initiated automatically due to the low level scram at 0530 and was not shutdown until about 0905. The vent system isolation valves were reset at 0740, but the exhaust fans were not started until 0900. Thus during the time when the release rate to the Unit 2 reactor building from the cleanup pump was the highest, the release to the environs was to the 310' chimney via the Standby Gas Treatment System. The exhaust duct sampling

Mr. John O'Leary

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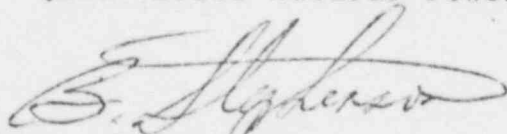
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system, however, continued to operate during the 3-1/2 hour period while the fans were off and picked up a significant amount of activity on the sample filters and cartridges. This has the effect of invalidating the release rate calculations for that day. While it cannot be stated with any confidence that the vent stack release rate was not exceeded, it can be concluded that the actual average release rate was less than the 149% of the limit estimated above due to the operation of the Standby Gas Treatment System. Due to the conservatism in the vent stack LCO and the magnitude of the actual release it can also be concluded that there was no hazard to the health and safety of the public as a result of this occurrence.

In the review of this occurrence we have noted two areas where improvements are needed to prevent a repetition. First of all our operating procedures are currently being revised to require the manual initiation of the Standby Gas Treatment System as soon as a significant leak is detected in the reactor building. Secondly, in order to improve our method of calculating the release rate, we are investigating the feasibility of modifying the sample system pumps such that they will be tripped automatically when all of the exhaust fans are off or the isolation valves are closed.

Very truly yours,

COMMONWEALTH EDISON COMPANY
Quad-Cities Nuclear Power Station



B. B. Stephenson
Plant Superintendent

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cc: Regional Director
Directorate of Regulatory Operations - Region III