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BBS-73-157

August 11, 1973

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 6.6B

Dear Mr. O'Leary:

On August 2, 1973, the gamma scan of the August 1, 1973 reactor building ventilation stack sample cartridges indicated that the limit for Iodine-131 and particulates with half-lives greater than 8 days had been exceeded. This abnormal occurrence was previously reported by telegram on August 2, 1973.

PROBLEM AND INVESTIGATION

At 0001 on August 1, 1973, the Unit 2 reactor was in the cold shutdown mode and a controlled shutdown was in progress on Unit 1 with preparations being made to enter the drywell for an inspection. Based on a drywell air sample which had an iodine -131 activity of 1.33×10^{-9} uc/cc the shift engineer elected to purge the Unit 1 drywell initially using the Standby Gas Treatment System (SGTS). After four hours of venting in this mode the lineup was changed to the vent system since the initial sample permitted this mode, but was close to the procedural limit. At 0108 the reactor scrammed from about 25 per cent power when the turbine tripped on high water level and the operator placed the mode switch in startup. A cooldown was initiated at that time and the reactor head vents were opened at 0745. At about 0600 the de-inerting lineup was altered to purge the suppression chamber instead of the drywell. This continued for the remainder of the day.

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When the vent stack sample cartridges were analyzed on August 2, 1973, the iodine -131 release rate for the first was determined to be 211 per cent of the limit of Technical Specification 3.8.B.2.a. At about 0730 on August 2, all releases from the reactor building were directed to the SGTS thus terminating the release. The seven day count on the particulate sample subsequently established that the limit for I-131 and particulates with half-lives longer than 8 days had been exceeded by 218 per cent. The values from the August 1, 1973, samples were:

	Iodine -131	Particulates
Unit 1	3.57×10^{-10} uc/cc	1.3×10^{-11} uc/cc
Unit 2	1.65×10^{-11} uc/cc	4.1×10^{-13} uc/cc

EVALUATIONS AND CORRECTIVE ACTIONS

a. Safety Implications

As previously stated in our letter of July 20, 1973, we believe that the iodine and particulate release rate limit on the vent stack is extremely conservative and restrictive. The health and safety of the public was not jeopardized by this occurrence. We have discussed this with members of your staff and a review of the bases for this limit is in progress.

b. Determination of Cause and Corrective Action

Irrespective of the magnitude of the limit, the onsite review of this occurrence revealed that there were several underlying causes which require corrective action. The method used to estimate the release rate when venting a drywell of known activity did not adequately consider the release from the reactor building which adds to that from the drywell. Station procedures for deinerting the containment are being reviewed as a result of this occurrence and will be revised accordingly.

From the drywell sample obtained for venting and the previous days reactor building samples; however, deinerting through the vent stack should not have exceeded the limit. Initially venting to Standby Gas should have provided an increased margin.

Experience has shown that drywell activity may change following a reactor scram. A second drywell sample obtained at 0730 showed about a 25 per cent increase in particulate activity although the contribution of particulates with half-lives longer that 8 days could not be determined at that time. Venting the reactor head to the drywell equipment sump at 0745 also affected the concentration as evidenced by an increase of a few hundred counts on the drywell cam. In summary, several events took place after the initial decision was made on the mode to be used for deinerting which could have changed the activity of the drywell atmosphere being released. An after-the-fact review of these events can only conclude that use of the vent system should have been terminated and additional sampling initiated. Station procedures will be revised to provide better guidance in this area and this occurrence will be reviewed in detail with operating and rad-chem personnel.

c. Cumulative Experience

Previous occurrences where the LCO of Specification 3.8.B.3 was exceeded have been reported in our letters dated June 20, 1973 and July 20, 1973. The August 1, 1973 release, however, was the first instance where the primary cause can be attributed to venting the containment. Procedural improvements and training should prevent a repetition of this type of occurrence. In all other cases, however, the LCO was exceeded due to relatively minor leaks in the reactor building and due to the conservatism of the limit a violation was for all practical purposes unavoidable.

As previously stated the vent stack limit is currently being reviewed with respect to Regulatory Guide 1.42. When the review is completed we believe that the minor significance of these releases will be apparent and in fact they will be below a new limit which will adequately ensure the protection of the environment.

Very truly yours,

COMMONWEALTH EDISON COMPANY
Quad-Cities Nuclear Power Station

B. B. Stephenson
Station Superintendent

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cc: Regional Director
Directorate of Regulatory Operations
Region III