



Commonwealth Edison  
Quad-Cities Generating Station  
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BBS-73-204

October 3, 1973

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

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

Dear Mr. O'Leary:

The purpose of this letter is to provide you with additional information concerning recent abnormal occurrences involving iodine and particulate release rates from the reactor building vent stack at Quad-Cities Nuclear Power Station. This supplements my letter of September 21, 1973 and in addition reports the releases of September 22, 30, and October 1, 1973 in accordance with paragraph 6.6.B.1 of the Technical Specifications. The abnormal occurrence of the 22nd was determined from the particulate sample counted on the 25th and the latter two occurrences were detected by the iodine samples counted immediately upon removal.

#### PROBLEM AND INVESTIGATION

The following table summarizes the release rates from the vent stack as a percentage of the limit of Technical Specification 3.8.B.3.a:

Date of Release	% of LCO I-131 only	48 Hour % of LCO I-131 & Part.	Final (7 day) % of LCO I-131 & Part.
9/11 - typical	15	24	23
9/12 - U-1 scram	35	111	104
9/13	290	1425	1277
9/14	62	136	140
9/15	76	106	103
9/16 - U-2 scram	56	80	77

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(table cont.)

Date of Release	% of LCO I-131 only	48 hour % of LCO I-131&Part.	Final (7 day) % of LCO I-131&Part.
9/17	70	122	119
9/18	54	76	75
9/19	36	64	50
9/20	33	44	42
9/21 - U-1 shutdown	48	155	122
9/22	57	121	110
9/23	68	71	70
9/24	54	58	58
9/29	59	61	—
9/30 - U-1 startup	102	—	—
10/1	204	—	—
10/2	88	—	—

The only steam leaks of any significance which may have contributed to the above releases occurred during the Unit 1 startup on September 30, 1973 following a planned one week maintenance outage. A seal ring leak on a main steam line drain valve was detected and stopped on the evening of the 30th. The vent system was isolated on that day at about 2100 when an increase in the exhaust Continuous Air Monitor (CAM) was observed. The vent system was restarted on the 1st and operated all day. On the 2nd another leak was detected on the RCIC testable check valve and a shutdown is currently in progress to isolate and repair this leak. The vent system was isolated again at about 1400 on the 2nd. The remainder of the occurrences noted in the above table can only be attributed to the plant activities noted in the first column.

Due to its magnitude an isotopic analysis of the 9/13 particulate sample was conducted. As expected the results indicated that it was predominantly iodine-131. The composition was: 1.50 uc/cc, I-131;  $4.07 \times 10^{-12}$  uc/cc, Co-60; and  $2.01 \times 10^{-17}$  uc/cc, Cs-137.

#### DETERMINATION OF CAUSE AND CORRECTIVE ACTION

Several factors can be identified as contributing to the cause of the abnormal occurrences cited above. These factors and our lack of control over them have continued to frustrate our efforts to operate within the Technical Specifications.

1. The conservatism inherent in the Technical Specification limit and the manner in which release rates must be computed on a daily basis is the principle reason that this LCO has been repeatedly exceeded at Quad-Cities. Commonwealth Edison is in the process of reviewing this limit and we intend to propose Technical Specification changes in the near future. We believe these changes will result in a more realistic limit without compromising any margin of safety.
2. Our ability to take prompt corrective action on the day of a release in excess of the rate specified in Section 3.8.B.3.a is very limited. If an increase in the release rate is suspected based on an increasing CAM reading or discovery of a leak, the vent system can be isolated and the Standby Gas Treatment System initiated. Frequently, however, the release is not known to exist until the iodine sample cartridge is counted the next day or until the particulate sample is analyzed three days after the high release rate occurred. Even if the release could always be detected immediately the effectiveness of the corrective action is questionable. The relatively low flow rate of the Standby Gas System cannot "clean out" the reactor building. If the release is detected quickly enough and the vent system isolated for the remainder of the day, we might avoid exceeding the LCO on that day. Due to the long lived nature of the isotopes involved, however, it can be seen that we are only using the building as a large hold-up volume prior to eventual release. From the above table it is apparent that it takes 3 to 4 days after an occurrence before the release rate approaches what might be considered an equilibrium. During this period any event such as a minor leak or unit scram unavoidably puts the release rate over the limit again for that day.
3. Recent abnormal occurrences of this nature have clearly demonstrated the sensitivity of the vent stack release rate to the concentration of iodine in the reactor coolant. This is true even though the iodine levels during transients continue to be a small fraction (less than 10%) of the steady state limit of Technical Specification 3.6.C.1. This had the effect of increasing the contribution to the release rate of very minor leaks. This problem is also compounded by the relatively low capacity of the Quad-Cities reactor water cleanup systems. We expect that this problem will be magnified in the near future by a recent increase in the off gas activity on Unit 2 from about 5,000 uc/sec to 17,000 uc/sec at full load.

Mr. J. F. O'Leary

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October 1, 1973

SAFETY IMPLICATIONS

As stated in previous reports on this subject we do not consider the safety implications of these occurrences to be significant. This conclusion is substantiated by the continued negative finding of our environmental monitoring program.

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