



Commonwealth Edison
Quad-Cities Nuclear Power Station
Post Office Box 216
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April 18, 1973
BBS-73-72



Mr. Angelo Giambusso
Deputy Director for Reactor Projects
Directorate of Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20545

REFERENCE: Quad-Cities Nuclear Power Station
Docket Number 50-254
DPR 29, Appendix A, Sections 1.0.A.2.,
3.6.C.4.

Dear Mr. Giambusso:

The purpose of this letter is to provide you with the details of exceeding the limiting condition of operation for Unit I reactor coolant conductivity.

This abnormal occurrence took place on April 6, 1973 as reported to you by telegram on the same day. This occurrence was caused by air being injected into the reactor while valving in 1-A clean-up demineralizer. As a result of this injection the reactor water conductivity and the off-gas activity increased. According to Section 3.6.C.5 of the Technical Specifications an orderly shutdown was immediately commenced and the clean-up system was used to bring the conductivity below the Technical Specifications limit.

DESCRIPTION OF INCIDENT

At about 2:30 p.m. on April 6, 1973 while returning 1-A clean-up demineralizer to service, subsequent to maintenance, the off-gas high-high alarm actuated and the off-gas fifteen minute isolation timer initiated. The unit operator decreased load from 780 MWe to 500 MWe. The off-gas monitors remained above their isolation signal set point for less than six minutes and were near normal when the operator reset the off-gas isolation timer seven minutes after timer actuation. The analysis of a reactor water sample indicated a conductivity of 23 umhos/cm. There was no detectable increase in the chimney monitors.

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The clean-up system was used to decrease the reactor water conductivity below the Technical Specifications limit. Additionally, an orderly shutdown of unit one at a rate of 10 MWe/hr was initiated. At 12:50 a.m. on April 7, 1973 the reactor coolant conductivity had decreased to 9.35 umhos/cm and, therefore, the shutdown was terminated at 400 MWe. The reactor power was held constant until the coolant conductivity had dropped to 5 umhos/cm.

ANALYSIS OF THE INCIDENT

While maintenance was being performed on the clean-up system the demineralizers were in a holding cycle for over twenty-four hours prior to being put back into the system. Due to lack of make-up water and slow leakage of water from valve packings, because of low pressure in a high pressure system, an air pocket was formed in the demineralizers. When the 1-A demineralizer was valved back into the system, the air was injected to the reactor causing high conductivity and high off-gas activity. Reactor water samples showed high concentration of Mn-56 indicating release of corrosion products from the vessel walls and internals due to the lowering Ph of the reactor water. Activation products were mostly composed of N-13, N-16, O-19 and Ar-41 while the equivalent I-131 concentration remained unchanged. However, chlorine concentration did not change from its initial value of <.03 PPM.

CONCLUSION AND CORRECTIVE ACTION

The result of the reactor water sample indicated no fuel failure and the formation of the short lived activation gases resulted in no notable release through the chimney. This incident is not attributable to operator error or equipment failure and is due to incorrect procedures. Our procedures will be modified to prohibit a future recurrence.

Sincerely yours,

B. B. Stephenson
For B. B. Stephenson
Station Superintendent

BBS:KS/dp