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NUCLEAR REGULATORY COMMISSION
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November 28, 1977

Docket No. 50-313

Arkansas Power and Light Company
ATTN: Mr. William Cavanaugh III
Executive Director of Generation
and Construction
Post Office Box 551
Little Rock, Arkansas 72203

Gentlemen:

The enclosed IE Circular 77-14 is forwarded to you for information. No written response is required. Should you have any questions related to your understanding of this matter, please contact this office.

E. Morris Howard
E. Morris Howard
Director

Enclosures:

1. IE Circular 77-14
2. List of IE Circulars
Issued in 1977

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NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D. C. 20555

IE Circular No. 77-14
Date: November 22, 1977
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SEPARATION OF CONTAMINATED WATER SYSTEMS FROM NON-CONTAMINATED PLANT SYSTEM

This circular describes an event which occurred at a nuclear power facility; however, the generic implications may be applicable to test reactors, fuel cycle facilities, and major by-product material processors.

In June 1977, the licensee for Beaver Valley 1 reported that make up water from a primary water storage tank (PWST) contaminated the plant water treatment system, which in turn supplies the in-plant domestic (potable) water system. The plant domestic water became contaminated with a tritium concentration of 7×10^{-3} uCi/ml. The domestic water was contaminated for approximately six hours before the condition was detected by the licensee and controls were established over the use of in-house water. No significant exposure of plant personnel resulted from the event; however, five individuals showed positive levels of tritium by urinalysis. No release to the offsite environment above maximum permissible occurred.

The PWST receives processed reactor coolant water from the Boron Recovery System which has been purified through evaporation, degasification and demineralization to remove radioisotopes other than tritium. The PWST is used to supply primary grade water to the reactor coolant system and is normally kept separated from the water treatment system. The cross connection between the primary grade water system and the water treatment system occurred when an isolation valve was inadvertently left open during valve line-up operations to recirculate the PWST. The procedure which specified the required line-up was being used for the first time since preoperational testing and did not list the subject valve.

In addition to the valving error, however, a design error resulted in connecting a line from the PWST to a water treatment system line at a position upstream of two series stop-check valves. In the proper configuration, the line would have been connected downstream of the stop-check valves, which would have prevented back flow of water from the primary grade water system to the water treatment system even with the isolation valve left open. Corrected

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