



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 32 TO FACILITY OPERATING LICENSE NO. DPR-51

ARKANSAS POWER AND LIGHT COMPANY

ARKANSAS NUCLEAR ONE, UNIT NO. 1

DOCKET NO. 50-313

Introduction

By letter dated December 8, 1977, Arkansas Power and Light Company (AP&L) requested approval for a modification which would change the control room ventilation suction dampers closure time limit for Arkansas Nuclear One, Unit No. 1 (ANO-1). As a result of discussions with our staff, AP&L requested, by letter dated February 27, 1978, an amendment to Facility Operating License No. DPR-51. The amendment would modify the Technical Specifications to require: (1) a ten (10) second time limit for the isolation of the control room after detection of radioactivity in the ventilation system, (2) periodic verification of the time limit by testing, and (3) that either the dampers be closed or the supply fan be disabled if the isolation time limit could not be met.

Discussion

In the ANO-1 Final Safety Analysis Report (FSAR), AP&L indicated that the control room ventilation system isolation dampers would close within three (3) seconds after detection of high radiation. According to AP&L, this time limit was based on performance information provided by an equipment supplier. However, during testing after installation, it was found that the dampers require several minutes to close. There are no closure time limits specified in the current Technical Specifications.

Evaluation

The proposed facility modifications would increase the time for the isolation of the control room from radioactivity intrusion from three (3) seconds as indicated in the FSAR to ten (10) seconds. This could increase the consequences of accidents involving radioactivity releases from that which was originally assumed. However, an additional seven (7) seconds of radioactivity intake to the control room from outside air would not significantly increase the radiation exposure estimates for the control room personnel after a design basis accident (DBA).

Of all the DBA, the design basis loss of coolant accident (LOCA) is usually estimated to result in the largest releases of radioactivity to the environment. The releases are assumed to continue for greater than 30 days after the accident. During those 30 days, the control room operators would receive most of their radiation exposure from their transit to and from the site and from normal infiltration of outside air to the control building. While the increase in operator radiation exposure during a theoretical seven second increase in the control room isolation time would not significantly increase the estimated operator doses in a DBA, the decrease in control room isolation time from that actually achievable with the current system to that achievable with the proposed system could result in a decrease in dose that is significant.

We have determined that AP&L may implement the control room ventilation system modifications necessary to reduce the ANO-1 damper closure time to ten seconds. This will significantly improve the operators' protection from airborne contaminants from that afforded by the current damper design. For this reason, we find acceptable AP&L's proposed changes to the ANO-1 Technical Specifications on the control room emergency ventilation system.

Our review of this action found that there is chlorine on the site and the current Technical Specifications do not require control room isolation from chlorine intrusion. We are currently reviewing this aspect as a separate issue. For the interim period of time required to conclude this action, we find it acceptable to continue to operate because:

- (1) the probability of a chlorine release large enough to threaten significant contamination in the ANO-1 control room air intake is small;
- (2) The vertical and horizontal distances between the ANO-1 control room air intake and the chlorine storage area further reduce the likelihood of hazardous levels of chlorine reaching the control room operations, should a chlorine release occur, because of the greater density of chlorine gas and diffusion, respectively; and
- (3) chlorine detectors for ANO-2 in the control room air intakes common to ANO-1 and ANO-2 are already, or very soon will be, installed and operable and will be required when the ANO-2 operating license is issued (currently estimated to be issued in June 1978).