LER 327/83-100

Event Description: Reactor Trip with Unavailability of Auxiliary Feedwater Motor-Driven Pump Train

Date of Event: July 11, 1983

Plant: Sequoyah 1

Summary

On July 11, 1983, a reactor trip occurred during Unit 1 operation. The auxiliary feedwater (AFW) turbine-driven pump (TDP) was removed from service to check a leaking valve. Subsequently, and less than an hour after the trip, automatic control valve 1-PCV-3-122 in train A of the AFW system was declared inoperable due to failure to open. It was found that the manual control switch for the valve had been placed in the closed position. The valve was opened and returned to service. The cause of the mis-positioned switch could not be determined.

These events were modeled as an unavailability of one train of AFW due to the control valve failure. Train 1 was therefore failed in the AFW corresponding to motor-driven pump (MDP) A. Assuming the leaking valve would not have made the TDP inoperable during the trip, no change was made to this pump in the AFW model. With two of the three AFW pumps operable, the AFW system would have been effective if an ATWS occurred so the AFW/ATWS model was not changed. A transient was selected as the event initiator for the analysis. The conditional core damage probability for this event is 5.7×10^{-6}. The dominant core damage sequence involves a transient, successful trip, failure of AFW, failure of main feedwater, and failure of feed and bleed.