

## **LER 255/82-002**

Event Description: Reactor Shutdown with AFW Auto-Initiation Inoperable

Date of Event: January 6, 1982

Plant: Palisades

### **Summary**

On January 6, 1982 during monthly testing of the auxiliary feedwater (AFW) system, the flow control valves failed to function properly. One valve did not open until 15 minutes after auto-initiation. The second valve had flow oscillations varying from 120 gpm to 170 gpm. Normal flow should be 150 gpm. The malfunction of these valves rendered the AFW auto-initiation inoperable. The valve controls were placed in manual, and the valves were positioned to deliver the required flow. Investigation revealed that the flow controllers were out of adjustment. Adjustments were made and operability was restored.

The unit was shut down on January 3 to repair several secondary-side leaks. It was assumed that AFW was manually initiated during the shutdown and that, had the unit tripped, operator action to initiate AFW would have been required. This event was modeled as a potential trip during plant shutdown with AFW inoperable. The malfunction of the AFW auto-initiation initially fails the AFW system when it is called for. By placing the valves in manual control, AFW can be recovered. This analysis assumes that both trains of AFW were inoperable without some operator action due to the failure of the auto-initiation feature. To reflect the initial failure of AFW, both trains of AFW were set to failed, and AFW given anticipated transient without scram (ATWS) (AFW/ATWS) was set to fail. The non-recovery probability for AFW was modified to reflect the manual control capabilities that would recover AFW. The non-recovery probability for AFW was set to 0.01 to reflect possible routine recovery capability from the control room (see Appendix A). The non-recovery probability for AFW/ATWS was left at 1.0 due to the lack of time available for recovery given an ATWS. The

probability of a reactor trip during the shutdown was assumed to be 0.1. The estimated conditional core damage probability for this event is  $5.0 \times 10^{-6}$ . The dominant sequence involved a postulated ATWS sequence with AFW failed.