

## LER 313/83-014

Event Description: Transient with Loss of Feedwater and One AFW Pump Inoperable

Date of Event: June 9, 1983

Plant: ANO 1

### Summary

On June 9, 1983 following a reactor trip caused by the trip of both main feedwater (MFW) pumps on a spurious low-suction pressure signal, auxiliary feedwater (AFW) pump P-75 became inoperable due to a break in the seal supply piping, which resulted in a seal failure. Both emergency feedwater (EFW) pumps were operable and available to feed the steam generators. The cause of the piping failure was attributed to misalignment of the seal supply piping. Secondary pressure was lowered until the steam generators could be fed with the condensate pumps. The broken portion of the seal supply piping was replaced, and the piping was realigned to reduce stresses. The pump was tested satisfactorily and returned to service.

ANO 1 has one AFW motor-driven pump that is used to provide cooling to two steam generators during startup and shutdown. ANO 1 also has an emergency feedwater system that can be used to provide cooling to the steam generators during normal operation in the event that the MFW is unavailable. The EFW system consists of two trains that can feed either or both of the steam generators. One train has a motor-driven pump, and the other has a turbine-driven pump. One pump train supplying flow to one steam generator is sufficient for secondary-side cooling.

This event was modeled as a transient with main feedwater (MFW) failed due to the spurious low-suction pressure signal trip, and the motor-driven auxiliary feedwater (AFW) train failed. The accident sequence precursor (ASP) models incorporate the single AFW pump and the two EFW pumps in the AFW branch of the model. The second train of AFW in the model was set to failed to reflect the failure of the AFW pump and the assumption that the observed failure was most likely not common cause. The MFW train was set to failed to reflect the loss of main feedwater that initiated the plant trip. The estimated conditional core damage probability for this event is  $4.7 \times 10^{-6}$ . The dominant sequence involved a successful reactor shutdown, failure of AFW, failure of MFW, and failure of feed and bleed.