

## Dynamical Safety Assessment of the Nuclear Power Plant Component using the Information Feedback oriented System Dynamics Method

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### Abstract

A feedback oriented dynamical safety assessment in nuclear power plant is constructed. A commercial software for System Dynamics, Ventana Simulation Environment (Vensim), is used to develop a dynamics model for the Auxiliary Feed Water System (AFWS) of Pressurized Water Reactor (PWR). The 18-month refuel cycle is described for the real situation. The failure rate is higher when the plant is in zero power state like maintenance, test, and refueling, which is not well described in conventional Event/Fault Tree based safety assessment. This also means a human failure rate is high in the standby and shutdown states. Time Step is introduced for the different time weighted frequency of failure cases. The Common Cause Failure is affected by Time Step process. The simulation shows dynamically for the standby-running and shutdown-running of nuclear power plant. The modeling is easily made by a unique graphic designed method and understood by operator or reviewer well. The logical and systems thinking is simulated