

Safety of Nuclear Power Plants
Tutorial - Dependent Failures
Date: May 15th, 2012

Assume a 2oo4 (2out of 4) system (system fails when two components fail/system functions when at least three components function) with identical components.

Q1) Calculate the failure likelihood Q_S of the system, while the failure likelihood of the components is given $q_i = 0.01$, $i = 1, 2, 3, 4$.

Q2) Determine system failure likelihood $Q_{S;DF}$. Please take into account dependent failures with the help of the β -factor-model ($\beta = 10\%$). The observed failures of the components lead to the failure likelihood $q_j = 0.01$, $j = 1, 2, 3, 4$.