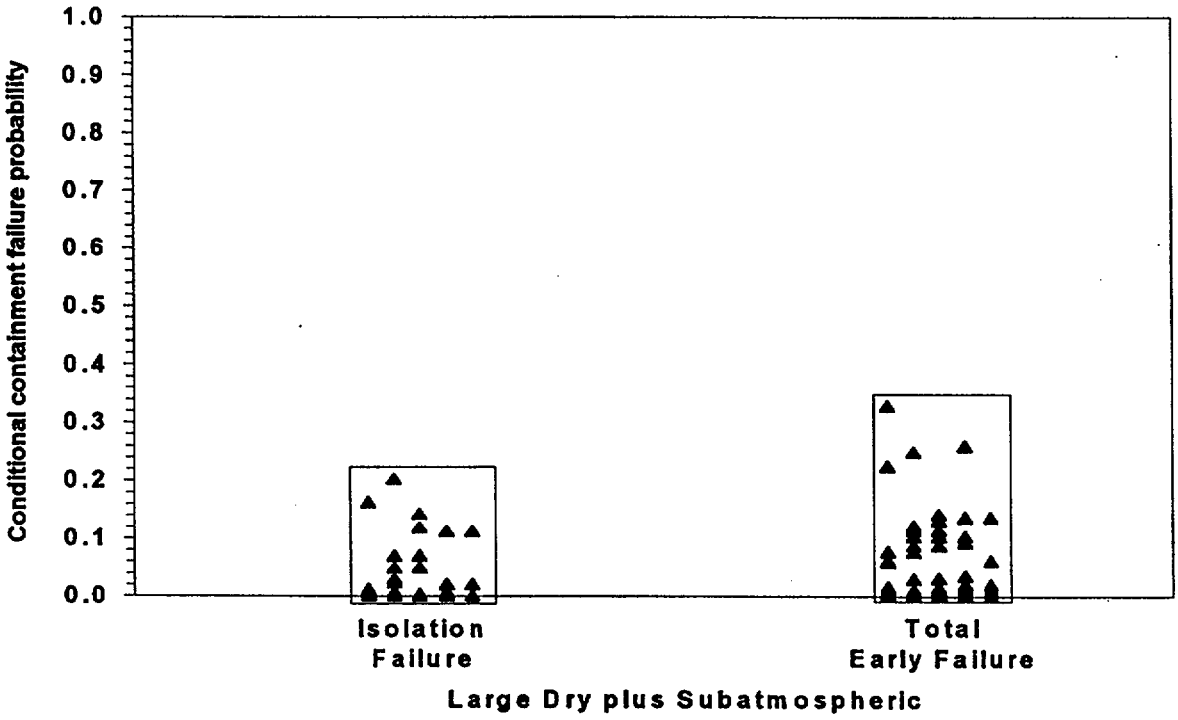

Figure 12.25 Comparison of IPE reported conditional probabilities of isolation failure and total early failure for PWRs with large dry and subatmospheric containments.

12.3.1.3 Containment Bypass Perspectives

The results of both Figures 12.23 and 12.24 indicate that both the probability as well as the frequency of containment bypass is approximately equal to the probability of early failure for many of the PWR plants in large dry containments. Often in the IPE analyses the bypass sequences were found to result in the most severe releases.

Containment bypass, especially SGTR, is an important source of early release in many IPEs for plants with large dry containments. Containment bypass failures include those from ISLOCA, SGTR, or temperature-induced SGTR. The probability of ISLOCA and SGTR is determined in the CDF analyses of the IPE. The probability of temperature-induced SGTR is calculated as part of the accident progression analysis. This failure typically occurs if one or more steam generator tubes experience a creep rupture caused by the flow of high-temperature gases from the core when the RCS is at system pressure.

For those IPEs where containment bypass has a significant contribution, SGTR is normally the dominant contributor. For example, SGTR leads to the most serious releases reported in the North Anna 1&2 and Prairie Island 1&2 IPEs. An exception is the St Lucie 1&2 IPE, where ISLOCA is two and three times more likely than SGTR for Units 1 and 2, respectively.

For temperature-induced SGTR, the conditional probability value (given that the RCS is at system pressure) used in the IPEs is about 0.01; therefore, temperature-induced SGTR is generally not found to be significant in the IPEs.

C|24