

7.6 Hypothetical Accident Analyses

Safety concerns with nuclear plants, particularly the fear of the release of radioactive materials, have led to very careful analyses of all the conceived deviations from normal operation of the reactor and of all the conceived accidents that might have serious consequences. Of course, about 15,000 reactor-years of accumulated experience with nuclear power generation around the world have contributed substantial validity to these conceivable accidents and their likelihood of occurrence. One of the lessons from this experience is that the combination of minor events can sometimes lead to major problems. This makes accident prediction even more complex since it requires investigation of many more accidental permutations.

Conceivable events in a nuclear generating plant are classified as (A) normal operating transients that require no special action (B) faults that may require reactor shutdown but which allow fairly rapid return to normal operation (C) faults that result in unplanned shutdown that will result in extended shutdown and (D) limiting faults that may result in the release of radioactive material.