Chernobyl
Events of the Night of 25 April 1986

- 1) Power had been brought down during the previous day to around 700 MWt, the edge of the legal low-power operating limit, ready to run the test.
- 2) A switchover was made to different flux detectors, better suited for power sensing at this low level, which was apparently a standard procedure. During the switchover, however, the operator neglected to engage the power-hold mode. This oversight set up the conditions for the accident.
- 3)Without automatic power hold, reactor power dropped rapidly to 30 MWt. The operator halted this drop and recovered to 200 MWt by withdrawing control rods.
- 4) With automatic control of power and manual control of feedwater, the plant successfully maintained 200 MWt. Because feedwater flow settings were high, however, the steam void in the reactor dropped to zero. Lower reactivity was compensated for by pulling evenmore control rods.Only six to eight rods remained in the reactor, far fewer than the minimum number (30) required by operating regulations.
- 5) To avoid automatic shutdown triggered by out-ofrange steam drum and feedwater signals, the operator disabled the associated automatic scram control circuits.
- 6) Recognizing excessive feedwater, the operator finally reduced pumping rates. The steam void recovered, producing increased reactivity. Automatic power controls responded to keep power regulated. This responsewas rate limited and barely stable.
- 7) Next, in preparation for the actual intended test, the operator disabled the automatic scram circuits associated with turbine trip signals.
- 8) Finally, the test was actually started. Steam was cut to the test turbine. The steam void began to rise, and the power controller responded by inserting all three available banks of control rods at maximum rates. This was too little control authority, applied too slowly. A huge power rise followed, up to an estimated 300,000MWt(100 times rated capacity). The reactor was destroyed. Steam at primary working pressure was released into the reactor containment chamber. The 1,000-ton cover plate of the chamber blew off, and the entire radioactive debris was exposed to the environment.