

4.5 Graphite moderated reactors

One of the older Russian designs, notorious because of the Chernobyl disaster, is the enriched uranium, water-cooled BWR known by the initials RBMK. This is shown schematically in figure 1. There are still more than 10 of these in commercial operation worldwide though substantial modifications have been made since the disaster. For moderator, these reactors utilize graphite as well as the coolant water and have the severe disadvantage that additional boiling within the core does not necessarily lead to a decrease in reactivity. Rather, the reactivity can increase as a result of a loss of coolant and this may have been a factor in the Chernobyl accident (see section 7.5.2).

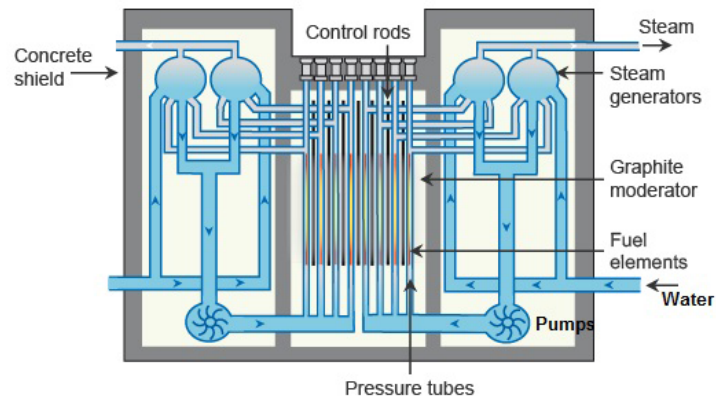


Figure 1: Schematic of the Chernobyl RBMK boiling water reactor. Adapted from WNA (2015a).