

Abstract

The rate of activation of the isotope ^{16}O to ^{16}N in a typical HPLWR one pass concept was calculated using MCNP code. A mathematical model was used to track the inventory of the radioisotope ^{16}N in a unit mass of coolant traversing the system. The water leaving the moderator channels has the highest activity in the circuit, but due to interaction with fresh coolant at the lower plenum, the activity is downscaled. The calculated core exit activity is higher than values reported in literature for commercial boiling water reactors.