

# **CONTINUOUS MONITORING OF THE STATE OF SAFETY BARRIERS IN WATER-WATER NUCLEAR REACTORS USING HIGH-RESOLUTION GAMMA-SPECTROMETRY**

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Gamma-spectra from the first loop coolant of the light water power reactors VVER-1000 at Rivne, Khmelnytskyi and Zaporizhzhia NPPs and of the water-water nuclear research reactor WWR-10M at the Institute for Nuclear Research, Kyiv, were acquired and analyzed. Publications on the reactor radiation control using high-resolution gamma-spectrometry as well as respective regulations and requirements in the area were studied and analyzed. Based on the carried out research, sets of reference radionuclides were proposed for the continuous control and monitoring of different nuclear processes in a reactor core and technological regimes of the first loop in water-water reactors.

*Keywords:* gamma-spectrometry, continuous monitoring, first loop coolant, safety barriers, water-water nuclear reactors.