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Thermal-Hydraulic Safety Analysis of Mixed Core Loads for Ukrainian NPPs with VVER-1000

The paper presents thermal-hydraulic analysis of mixed core loads to confirm compliance with safety criteria. The objective is to verify reliability of nuclear fuel cooling in representative events of the design-basis accident analysis. RELAP5/MOD3.2 computer code was applied to show that maximum fuel cladding temperature does not exceed 1200 °C in mixed TVSA-12, TVS-WR and TVSA cores.

The analysis led to the conclusion on possible safe implementation of new fuel at Ukrainian NPPs.

Keywords: mixed fuel load, fuel assembly, TVSA-12, TVS-WR, design-basis accident analysis, maximum fuel cladding temperature.