Using of Main Loop Isolating Valves Investigation in Case of SGTR

PAVLIN P. GROUDEV & ROSITSA V. GENCHEVA
Institute for Nuclear Research and Nuclear Energy,
Tzarigradsko Shaussee 72, Sofia 1784, Bulgaria

During the development of Symptom Based Emergency Operating Procedures for VVER 440 units at Kozloduy NPP a number of analyses have been performed using the RELAP5/MOD3.2 computer code. Some of them discuss advantages and disadvantages of Main Loop Isolation Valves (GZZs) usage in case of Steam Generator Tube Rupture (SGTR) accident. Use of the GZZs as a part of EOP mitigation strategies for Steam Generator Tube Rupture (SGTR) accidents is analyzed in this paper to identify the behavior of important VVER parameters behavior. A double-ended single pipe break in SG #6 was chosen as representative. The results of these analyses presented in this report demonstrate that sometimes GZZs - installed on the hot and cold legs of the primary loops - could provide safety function but sometimes their closing and failure to re-open could make the situation worse. RELAP5/MOD3.2 computer code has been used to simulate the SGTR accident in VVER 440 NPP model. This model was developed at Institute for Nuclear Research and Nuclear Energy – Bulgarian Academy of Sciences (INRNE-BAS), Sofia, for analyses of operational occurrences, abnormal events, and design bases scenarios. The model provides a significant analytical capability for the specialists working in the field of NPP safety.

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