



Practical Skills for Reactor Incident Simulation: PARCS and TRACE Codes

Mr. Bruno Miglierini works at the Nuclear Regulation Support Section (TSO), Research Centre Rez (CVR), in Husinec-Rez, Czech Republic. He is a junior researcher responsible for developing calculation models and neutronic analyses of PWR/VVER types of reactors. He was awarded with a ten-month training IAEA Fellowship at the University of Illinois at Urbana-Champaign. He worked in a research group of Department of Nuclear, Plasma, and Radiological Engineering under Professor Tomasz Kozlowski.



The main purpose of the fellowship was to extend and improve the applicant's current knowledge in the field of PARCS and TRACE codes. This should lead to their coupling and feasibility study of a 3D analysis. Coupling of TRACE/PARCS codes allows simulations of various scenarios and investigation of these phenomena for VVER1000-type reactors. Such skills will contribute to the safety assessment of Czech NPPs. Simulations of accident scenarios and evaluations of their impacts are key objectives in this process.

After returning to his home country, Bruno will be able to perform analyses aimed at accident scenarios. His newly acquired knowledge will contribute to the work of other colleagues who are working with the PARCS/TRACE codes at the Research Centre Rez. Using the newly acquired skills, the applicant will design a similar model for VVER440/V213 (NPP Dukovany). The calculation procedure is similar for both types of reactors. He will perform advanced simulations of transient states of the Czech NPPs. Evaluation of these scenarios will help in better understanding of neutronic and thermo-hydraulic behaviour of a reactor core. In this way, a contribution to nuclear safety and peaceful use of atomic energy will be ensured in the Czech Republic.

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