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**Circumstances Surrounding Switch between MC003 and
MR123/08 Fuel Elements (Experimental Verification of
MARIA Core Numerical Models)**

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ABSTRACT

Throughout working on MARIA reactor core model used for Monte Carlo neutronic calculations we've been encountering a specific problem. Despite the use of measured data from SAREMA system and operational data taken from "follow-up" calculations done in REBUS code, there were continuously discrepancies between the data and Monte Carlo calculated values for one of the fuel elements. After excluding possible errors in the model itself and in the calculations only remained possible reason for said discrepancies was an accidental exchange of fuel elements during fuel shuffling in core. Upon attentive examination of changes in the reactor core we narrowed possible error period to 2013 reactor repair season. Indeed, during this period due to the large number of modifications in MARIA core done at once, two fuel elements, MC003 and MR123/08, were accidentally switched. This paper describes the circumstances of this exchange, how this case contributed to validation of Monte Carlo MARIA core model used for neutronic calculations and lessons learned from the incident.