AGEING ASSESSMENT OF THE BRAZILIAN RESEARCH REACTOR IEA-R1 CORESUPPORT STRUCTURES

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S. Marcelino[a], C.A. Oliveira and M. Mattar

[a] smimarcelino@hotmail.com

Nuclear and Energy Research Institute, São Paulo, Brazil

IEA-R1 is a research reactor developed by Babcock & Wilcox and operating in IPEN – CNEN/SP since 1957. The core of the reactor is located 7 meters below the swimming pool water level and mounted over eighty holes supporting plate. Over theses holes fuel and control elements, guides, and other structures are located, displaced in a way to optimize experimental arrangements. The main plate is supported by a frame that is connected to an overhead crane through aluminum profiles. This work evaluates the support structure of the core and estimates its service life, taking into account the deformation of the aluminum alloy 6061 T6 due to a critical integrated neutron flux of 0.5×10^{22} neutrons per cm^2. Considering the reactor neutron flux as the main life criteria to the aluminum profiles that support the core structure, we evaluate the remaining working hours of the frame. It also estimates the consequence of a change in the reactor power from 2 MW to 5 MW. Future works should include a visual inspection and an evaluation of the frame materials

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