THE UTILIZATION OF MCNP CODE TO SIMULATE THE YALINA BOOSTER FACILITY USING THE ADS LIBRARY

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In the framework of the International Atomic Energy Agency(IAEA) Coordinated Research Project (CRP) on "Analytical and Experimental Benchmark Analyses of Accelerator Driven Systems (ADS)" [1], recently initiated one of the Benchmarks defined was the simulation of the experiments to be realized in the YALINA BOOSTER facility (see figure), which is a thermal and fast zero power sub critical facility driven by a D-D and D-T neutron generator, operated by the Joint Institute of Power Engineering and Nuclear Research "SOSNY", in Minsk, Belarus. IPEN participate in this CRP through a Research Contract with the IAEA, and this paper will describe the preliminary calculation of the keff of the YALINA BOOSTER facility using the code MCNP-5 , and compare with the experimental results obtained by SOSNY. Also as a first trial to qualify the recently released first version of the ADS library [2], the calculation will be made using the data from this library. For the missing elements in the ADS library, the cross sections in ACE format will be generated using NJOY, with basic data from ENDF VI.8.

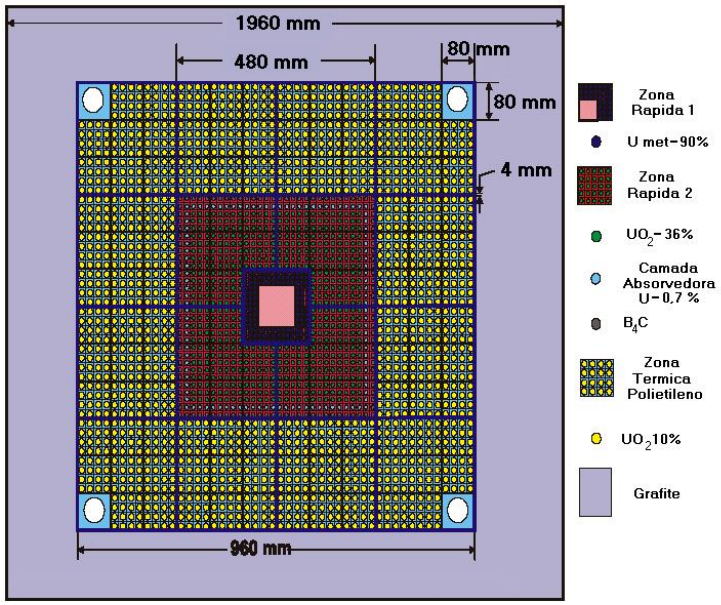

Figure 1: Yalina Core

References

[1] D.L. Lopez and A. Trokov, *ADS-Lib/V1.0: a Test Library for Accelerator Driven Systems*,IAEA-INDC(NDS)-0474, 2005.

[2] IAEA, *Research Coordination Meeting of the Coordinated Research Project on "Analytical and Experimental Benchmark Analyses of Accelerator Driven Systems"*,127-IAEA-RC-1003.1/TWGFR, Viena, Austria, 2006.