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NEUTRON DATA TESTING FOR PLUTONIUM ISOTOPES ON FAST CRITICAL ASSEMBLIES

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The paper presents experimental results obtained on BFS fast critical facilities, Russia. Along with other experiments including abroad facilities they are sufficient data set to provide nuclear data testing for plutonium for a new Russian library of group nuclear data ABBN-93. The paper contains a comparison of measured fission cross-sections ratios and central reactivity worth ratios for plutonium-239, -240, -241 (to uranium-235) with calculations obtained on the base of the tested data. Spectrum-averaged fission cross-sections ratios were measured by fission chambers. Chambers calibration in a thermal column was applied. Besides, for obtaining fission cross-sections ratios for plutonium-240 and -239 a method of absolute counts in chambers with known deposit mass and efficiency of fission products was used. Central reactivity worth ratios were measured by periodical perturbation of core criticality with small samples. Reactivity of a core during these experiments was detected by a digital reactimeter. A comparison with calculations was made. The paper proclaim a recommendation for each tested plutonium isotope.

EVALUATION OF THE FAST NEUTRON INDUCED FISSION CROSS-SECTIONS OF Cm242-Cm248

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Evaluation of the Cm242-Cm248 fast neutron fission cross-sections - important for waste management and advanced nuclear fuel cycle studies - was carried out on the basis of the experimental data and results of the theoretical model calculations. Among others the data base includes the results of recent comprehensive measurements of the fission cross-sections in the energy range 150 KeV - 6.7 MeV. Critical review of the experimental information contained in EXFOR and recent publications was made. The resulting cross-sections were calculated within the framework of generalized least squares method and presented in the analytical form. The files of the evaluated cross-sections and covariance were prepared in the ENDF/B-VI format. A comparison of the evaluations from this work and other libraries (ENDF/B-VI, JENDL-3) was performed.