

# TAGS and FP Decay Heat Calculations ( ) - Impact on the LOCA Condition Decay Heat -

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In doing summation calculation of the FP decay heat, we have to pay attention on the so-called Pandemonium problem, which is the missing of the  $\beta$ -strengths in the high-energy region of the daughter nucleus in the published decay schemes of high Q-valued short-lived isotopes. In the case of JENDL and ENDF/B-VI the gross theory of beta decay is applied to circumvent this problem, leading to a good agreement between calculation and measurement. In 1990's, TAGS (Total Absorption Gamma-ray Spectrometer) method, which is, at least ideally, free from the missing of high-level  $\beta$ -feeding, was applied to measure the beta-strength of dozens of important FP nuclides by Idaho group. These data, however, have never been introduced into the decay heat summation calculation. Introducing the TAGS data, we calculated the FP decay heat for Pu-239, Pu-241, U-235, U-238, U-233 and Th-232 after one year irradiation. Those results were compared with the original calculations for Pu-239 as shown below to see the impact of TAGS data on LOCA condition. As for JENDL, effect is less than 0.6 % in the cooling time range from 10s to 10000s. Other 5 fissiles show the similar results. The decay heat calculation introducing TAGS data does not exert any serious impact from a practical point of view. Anyway, the applicability of the TAGS data to summation calculation must be clarified.

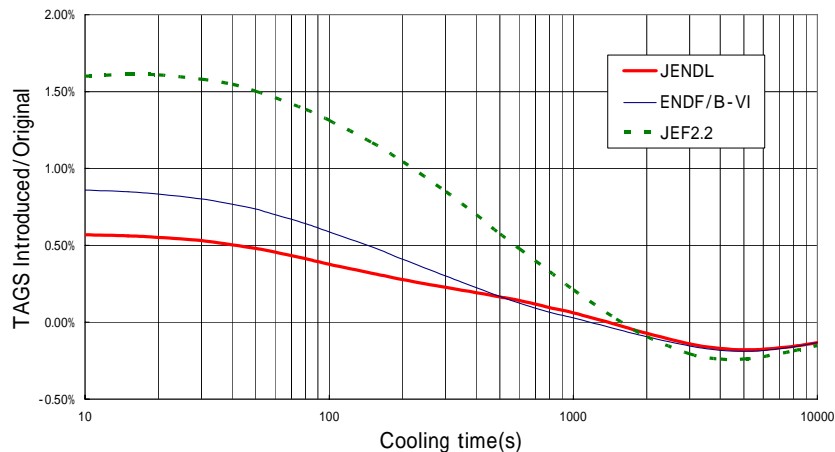


Fig. Effect of introduction of TAGS energies into summation calculations  
(Pu-239,  $\beta$ -ray+  $\beta$ -ray )