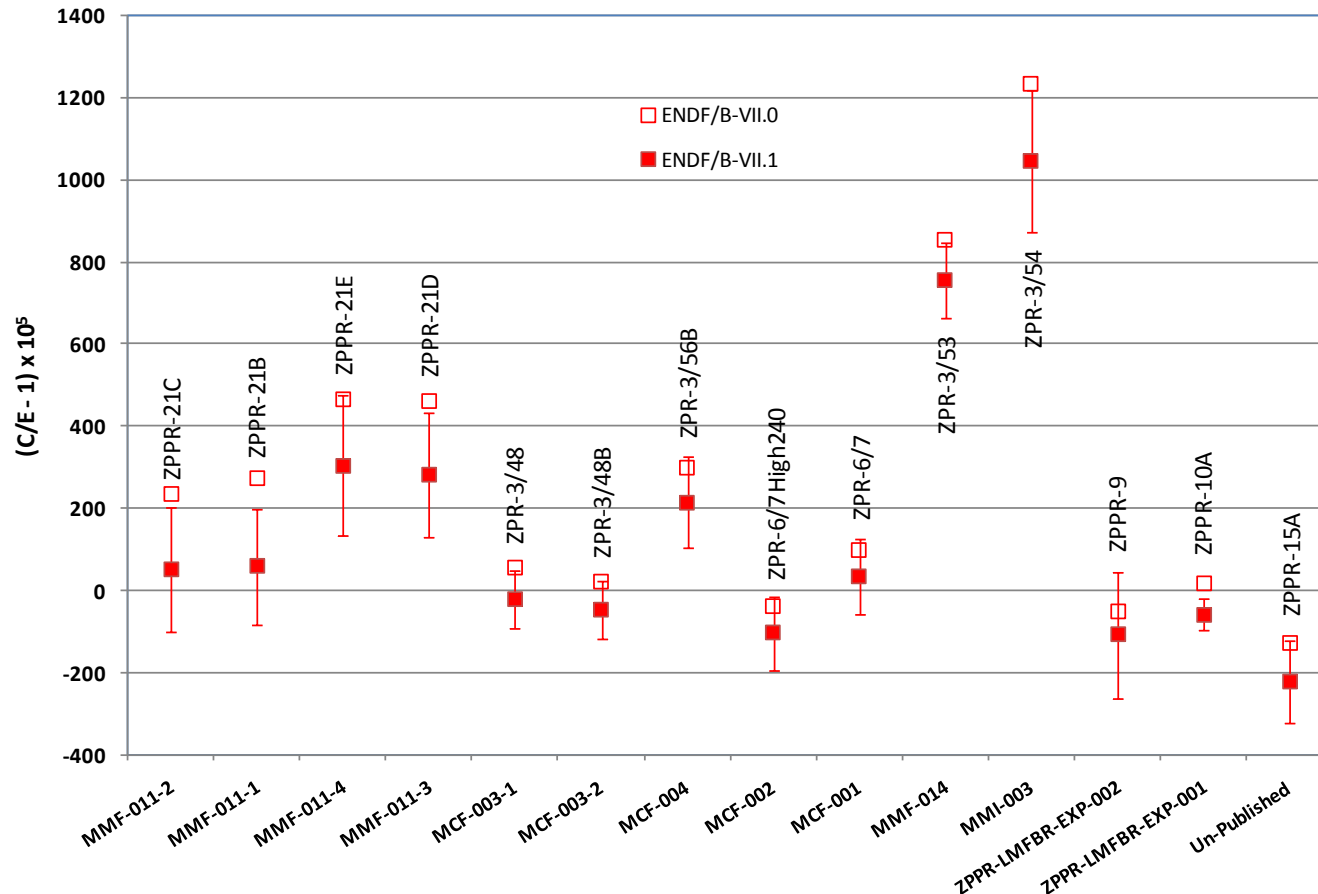


# ANL ZPR-3 Assemblies 53 and 54

**6<sup>th</sup> Meeting of WPEC Subgroup 33  
NEA, Issy-les-Moulineaux, France  
1-2 December 2011**

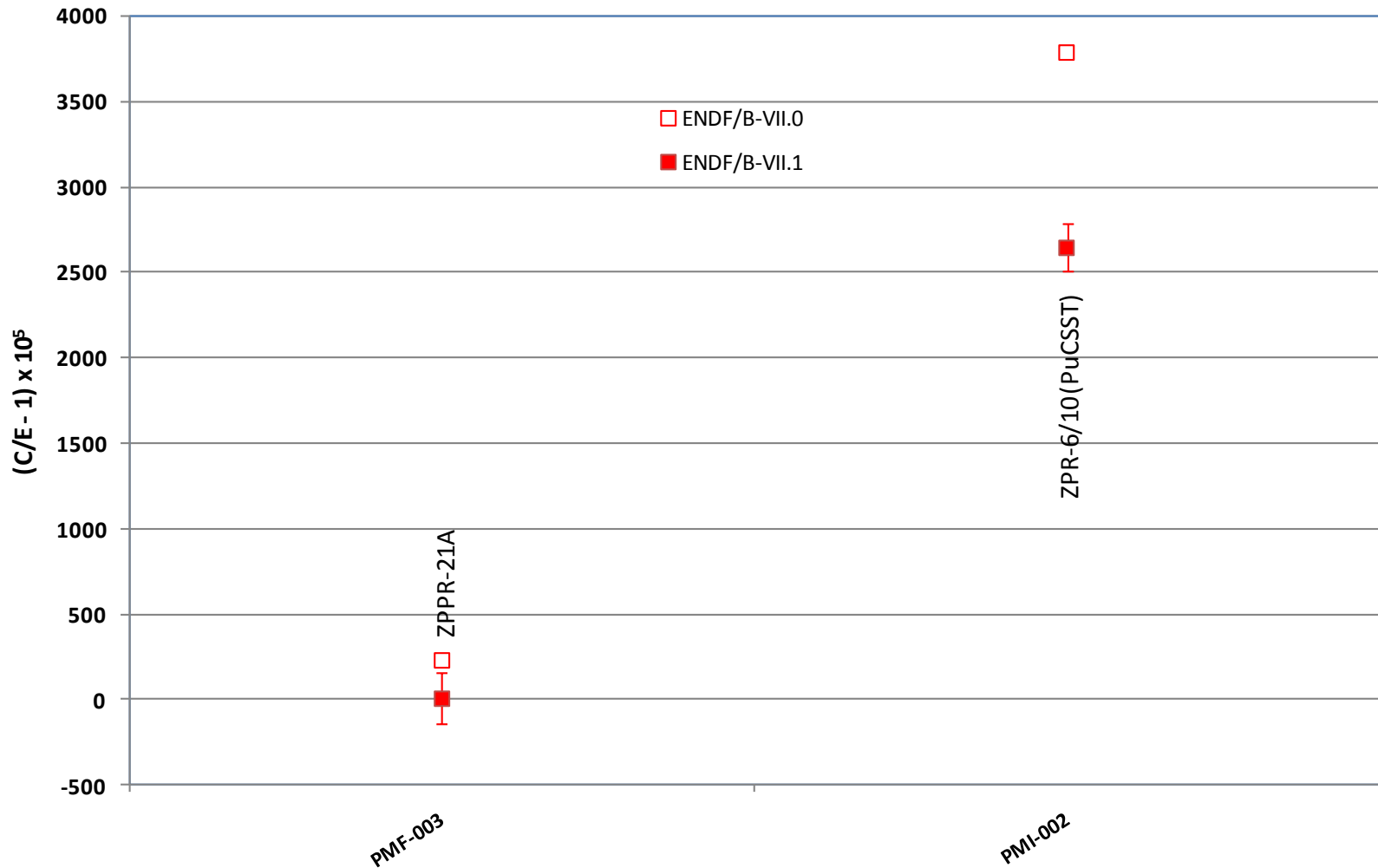
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# MCNP5 Calculations with “As-built” Models for MIXED (Pu,U) FAST and INTER ZPR/ZPPR Assemblies



For the mixed-(Pu,U) assemblies, 14 calculated  $k_{\text{eff}}$ 's were reduced with the ENDF/B-VII.1 data by approximately 60-215 pcm. The average bias for the 14 assemblies with ENDF/B-VII.0 data is 271 pcm; the average bias with ENDF/B-VII.1 data is 156 pcm. The biases for ZPR-3/53 and ZPR-3/54 with ENDF/B-VII.0 data are 855 and 1233 pcm, respectively; and with ENDF/B-VII.1 data are 755 and 1047 pcm, respectively. The average bias for the other 12 assemblies with ENDF/B-VII.0 data is 142 pcm; the average bias with ENDF/B-VII.1 data is 31 pcm.

# MCNP5 Calculations with “As-built” Models for Pu Metal FAST and INTER ZPR/ZPPR Assemblies



# ZPR-3 Assemblies 53 and 54

- In September and October of 1968, Assemblies 53 and 54 were built on ZPR-3.
- Assembly 53 was a continuation of the benchmark series which began with Assemblies 48, 49 and 50.
- Assembly 54 was basically the same as Assembly 53 except that the depleted uranium blanket was replaced by an iron reflector.
- The cores contained graphite as the primary diluent material and had a comparatively low U-238/Pu-239 ratio of 1.59.
- Both have been evaluated in the ICSBEP Handbook MMF-014 and MMI-003, respectively.
- Detailed “as-built” Monte Carlo models are available for both.

