Generation of JENDL-5 Covariance Libraries and their Application on the Nuclear Data Uncertainties for the Indonesian RSG GAS Multipurpose Research Reactor/JENDL-5 共分散ライブラリの作成及びインドネシア **RSG GAS** 多目的研究炉の核データによる臨界性の不確かさ評価への応用

Thursday, 14 November 2024 16:00 (2 hours)

The JENDL-5 [1] covariance library, covering 105 nuclides, was generated using the AMPX-6 code system [2]. Additionally, a covariance library was also generated from ENDF/B-VIII [3] for JENDL-5 nuclides lacking covariance data. These covariance libraries facilitated the estimation of keff uncertainty attributable to the nuclear data of the Indonesian RSG GAS Multipurpose Research Reactor (clean first core criticality experiments). The RSG GAS is a material testing reactor, characterized by its beryllium reflector, light-water moderator, and low-enriched uranium (19.75 wt.%) fuel. Sensitivity coefficients for the ten dominant reaction types required for uncertainty evaluation were derived using the MCNP6 code [4]. The estimated keff uncertainties due to nuclear data are 620 pcm, 644 pcm, and 637 pcm for JENDL-5 only, JENDL-5 & ENDF/B-VIII.0, and ENDF/B-VIII.0 covariance libraries, respectively, which are comparable with the keff ([C/E-1]) values.

References
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[4] Werner C. J. et al. (Ed.) (2017), "MCNP User's Manual; Code Version 6.2,"LA-UR-1729981.

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