



Contribution ID: 95

Type: **Poster**

## **Preliminary Evaluation for Independent Confirmation of Source Term and Criticality of the Dual Purpose Cask in Korea**

*Tuesday, 25 June 2019 10:45 (15 minutes)*

Spent fuel information are essential to make a national policy for spent fuel management, to evaluate the safety of transportation, storage facility and disposal facility. For that reason, The AMORES program (Automatic Multi-batch ORIGEN Runner for Evaluation of Spent fuel) was developed and used to evaluate inventory, radioactivity, and thermal power of transport cask or storage cask. This code is very useful to evaluate the present and future spent fuel characteristic to provide fundamental data for informed decision-making at various stages of SNF management (storage, transportation, and disposal) by using the whole spent fuel data from 1978 to 2015 in Korea. The aim of the study is to expand the function of AMORES code for evaluating the safety of transport cask or storage cask. For this purpose, AMORES code can contain the cask specification and material information as a database in advance. This data can be modified as an input file of MCNP code or KENO VI for calculating radiation shielding and criticality automatically by AMORES code, respectively. Therefore, it can call the MCNP code or KENO VI, execute these code, and extract the results from output file form.

In the study, in order to AMORES code validation ,criticality evaluation of KORAD 21 dual purpose cask was performed using the cask specification and material information of this cask that was developed to KORAD (KORea RADioactive waste agency).

According to the nuclear safety act of Korea, the effective neutron multiplication factor,  $k_{eff}$  including all biases and uncertainties at a 95 percent confidence level, should not exceed 0.95 under all credible normal, off-normal, and accident-level conditions.  $k_{eff}$  of KORAD 21 was evaluated as 0.3280 and 0.94132 under the normal condition and accident condition, respectively.

### **Do you wish to enter the YGE SFM19 Challenge?**

#### **Country or International Organization**

Korea, Republic of

**Primary authors:** YOON, Dae-Sik (Korea Institute of Nuclear Safety); KANG, GYEONG UK (Korea Institute of Nuclear Safety); Dr JUNG, Haiyong Jung (Korea Institute of Nuclear Safety)

**Presenter:** YOON, Dae-Sik (Korea Institute of Nuclear Safety)

**Session Classification:** Track 2 Poster Session (1)

**Track Classification:** Track 2: Spent Fuel and High Level Waste storage and subsequent transportability