ID: Type: **Poster**

of the Thorium-based Nuclear Fuels to the CTBTO Monitoring System

As the development of thorium-based nuclear fuels for long-term sustainability of electricity generation have reached a step to closer commercial approval in some countries, the future impacts to the CTBTO's radionuclide monitoring regime need to be paid into attention. Its potential sources of radioxenon and other fission products are a real challenge and need to be considered. We have made initial estimation of the products through fission yields of 233U and 235U data. To support and validate this analysis we have made measurement and analysis of 233U from irradiated 0.1 g ThO2 samples by using fission-induced delayed neutron counting method. The amounts of 233U produced was (17.2 ± 1.9) μg after 50 hours irradiation by Kartini reactor at average neutron flux of 1011 n cm-2 s-1, cooled down for 55 days, and re-irradiated for 100 hours. This value is in a good agreement with the measurement results through the strongest gamma line of 233Pa by using gamma spectrometry system i.e (16.8 ± 1.2) μg and with the calculated amounts of 233U using ORIGEN2 computer code i.e. 14.3 μg. For better estimation, the ThO2 samples will be re-irradiated again by Siwabessy reactor at neutron flux of 1014 n cm-2 s-1.

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Track Classification: Theme 2. Events and Nuclear Test Sites