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## Study for Safeguards Challenges to the Most Probably First Indonesian Future Power Plant of the Pebble Bed Modular Reactor

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In the near future Indonesia, the fourth most populous country, plans to build a small size power plant most probably a Pebble Bed Modular Reactor PBMR. This first nuclear power plant (NPP) is aimed to provide clear picture to the society in regard to performance and safety of nuclear power plant operation. Selection to the PBMR based on several factor including the combination of small size of the reactor and type of fuel allowing the use of passive safety systems, resulting in essential advantages in nuclear plant design and less dependence on plant operators for safety. In the light of safeguards perspective this typical reactor is also quite difference with previous light water reactor (LWR) design. From the fact that there are a small size large number of elements present in the reactor produced without individual serial numbers combine to on-line refueling same as the CANDU reactor, enforcing a new challenge to safeguards approach for this typical reactor. This paper discusses a bunch of safeguards measures have to be prepared by facility operator to support successfully international nuclear material and facility verification including elements of design relevant to safeguards need to be accomplished in consultation to the regulatory body, supplier or designer and the Agency/ IAEA such as nuclear material balance area and key measurement point; possible diversion scenarios and safeguards strategy; and design features relevant to the IAEA equipment have to be installed at the reactor facility. It is deemed that result of discussion will alleviate and support the Agency approaching safeguards measure that may be applied to the purpose Indonesian first power plant of PBMR construction and operation.

### Country or International Organization

Indonesia

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