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## Incorporating Safeguards by Design Concepts in 700 MW Indian PHWR KAPS-3&4

IAEA had been implementing safeguards in India since 1971. In 1988 another safeguards agreement for implementation of safeguards in NPPs built in cooperation with USSR came into force. Consequent to international civil nuclear cooperation, India signed another safeguards agreement INFCIRC/754 with IAEA in 2009. All the safeguards agreements of India are INFCIRC/66 based. While the implementation of safeguards in Kudankulam commenced during the construction stage, subsequent safeguards since 2009 on the NPPs offered to IAEA under INFCIRC/754 have been on operating plants. The task has been quite challenging for both the India and IAEA and the task has been accomplished quite satisfactorily.

When India decided to offer two of its new 700 MW NPPs namely KAPS 3 and 4 for safeguards, India decided to take full advantage of safeguards by design (SBD) concept which offers inherent cost and technical benefits. Many first of its kind features including Safeguards-by-Design (SBD) are incorporated in these new design reactors. In SBD approach adopted for these new design reactors, all the major safeguards requirements were documented early at design phase. These safeguards requirements were considered during design development of the facility. The developed design was evaluated using Safeguardability Assessment (SA) process. Based on the outcome of SA process further refinement in the design was done to ensure that the IAEA safeguards requirements and goals are met. Incorporating safeguards measures early at design phase has many benefits. It enhances the safeguardability of nuclear facility. It makes safeguards implementation more efficient and cost effective for IAEA as well as for state. This paper presents details of SBD concepts and SA process applied in KAPS 3&4 design and various benefits of integrating SBD concept in KAPS 3&4 at design and construction phase.

### Which "Key Question" does your Abstract address?

NEW2.3

### Which alternative "Key Question" does your Abstract address? (if any)

NEW2.4

### Topics

NEW2

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