



Contribution ID: 289

Type: **Roundtable Member**

Implementation of Safeguards Measures at the High Temperature Gas-Cooled Reactor Pebble-Bed Module (HTR-PM) in China and Proposed Safeguards by Design for Units to be Exported to Other States

The International Atomic Energy Agency (IAEA) and the Institute of Nuclear and New Energy Technology, Tsinghua University (INET) are developing safeguards measures for the High Temperature gas-cooled Reactor Pebble-bed Module (HTR-PM) under construction in the People's Republic of China (China), which is under a voluntary safeguards agreement (VOA) with the IAEA. China has successfully operated an experimental prototype 10 MWth high temperature pebble bed reactor (HTR-10) since 2000. Based on the experience gained with HTR-10, China has designed and is constructing a Demonstration HTR-PM at Shidaowan in China's Shandong province, which comprises twin HTR-PM reactor modules driving a single 200 MWe steam turbine.

The Chinese HTR-PM was added to the list of eligible facilities for IAEA safeguards and the Agency designated the facility for the application of safeguards in September 2017. Since the design of HTR-PM was complete and the field construction work is almost completed, the development and application of international safeguards measures to the facility have presented challenges to both operators and IAEA.

As there have been no IAEA safeguards experience at the HTR-PM, China agreed to work closely with the IAEA to develop and test safeguards measures for the HTR-PM. Currently safeguards measures are under development for the HTR-PM by INET and the IAEA. To date, a number of aspects that are important for an optimized safeguards implementation for this type of reactor have been identified, and could be considered for modification of the design for the export market.

This paper describes the HTR-PM fuel and technology characteristics, a summary of the current status of the application of IAEA safeguards measures under development by INET and IAEA, and the proposed safeguards-related design modification for the HTR-PM for export.

Which "Key Question" does your Abstract address?

NEW2.3

Topics

NEW2

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

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Session Classification: [NEW] Experience in Safeguards by Design for New Facility Types

Track Classification: Preparing for safeguards new facilities, processes and campaigns (NEW)