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Challenges and Notional Solutions for the Application of Agency Safeguards on Transportable Small Modular Reactors

IAEA safeguards for light water power reactors (LWRs) allow inspectors to provide the international community with a high degree of confidence that nuclear material located at the reactor site has not been diverted to nuclear weapons, other nuclear explosive devices, or purposes unknown. IAEA safeguards for sealed, transportable small modular reactors (SMR), however, are not as well-developed as those for LWRs. Further still, SMRs that are designed to be supplied sealed and fully-loaded to an NPT non-nuclear weapon state (NNWS) party pose even greater safeguards challenges for IAEA inspectors. While the IAEA must verify that all nuclear material contained in such SMRs is accounted for, and any NPT NNWS party that manufactures and/or imports such an SMR must accept safeguards measures necessary to do that, the fact that the reactor is sealed means that neither the IAEA nor the NNWS will have the access to material and facilities in the NNWS normally available for design information reporting and verification and nuclear material measurements. This paper outlines possible elements that could be included in the IAEA's safeguards approach for such factory loaded and sealed SMRs in NPT NNWS parties. The authors hope to show that a high degree of confidence can be achieved by using a comprehensive set of safeguards activities, approaches, and equipment at both the manufacturing facility and at the site of deployment. To accomplish this objective, safeguards approaches much be developed for the reactor at its deployment site and at the manufacturing facility during the initial fueling and any subsequent fueling and refueling of the reactor.

Which "Key Question" does your Abstract address?

NEW1.1

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

NEW2.2

Topics

NEW1

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