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Cooperation between Germany, the European Commission and the IAEA in safeguarding spent fuel intermediate storage facilities

In phasing out nuclear energy production, the German reactors will be successively disconnected from the power grid, the latest ones by 2022. It is foreseen that all spent fuel assemblies will be loaded into casks by the end of 2027. After their transfer to intermediate spent fuel storage facilities (SFSFs), the SFSFs altogether will have a static inventory of more than 1,000 casks. A geological repository for high active waste is planned to be commissioned around the year 2050.

The paper addresses the safeguards challenges resulting from this situation: First, organizational consequences on inspection activities due to the transition of the ownership of the SFSFs from the German utilities to the state-owned Gesellschaft für Zwischenlagerung mbH (BGZ) in 2019 (according to the Act Reorganizing Responsibility for Nuclear Waste Management) need to be considered.

Second, the verification of sealing systems currently used at German SFSFs is a very arduous task due to the densely arranged casks in a spatially limited storage configuration. The specific conditions of an intermediate SFSF in static operation entail the need for technical solutions to ease the verification of the casks and to minimize the exposure of the inspectors and storage staff to irradiation.

Third, the methods for re-verification of the content of spent fuel casks in SFSFs are not precise enough. This will become a pressing issue once the reactors have been decommissioned, because opening spent fuel casks is currently only possible in the cask loading position in the reactor. Therefore, the investigation of suitable technologies, e.g. muon tomography, is required.

Fourth, the distribution of inspection resources on reactors, SFSFs and research labs will have to be reconsidered, because acquisition paths get re-evaluated due to the decommissioning of reactors.

Which "Key Question" does your Abstract address?

SGI1.1

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

SGI1.2

Topics

SGI1

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