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Developing Safeguards for Final Disposal of Spent Nuclear Fuel in Finland

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Final disposal of spent nuclear fuel brings new types of safeguards concerns. The non-verifiability and non-accessibility of the disposed fuel create a challenge in creating and preserving reliable knowledge about the nuclear material and its location. Therefore, a verified information package consisting of spent fuel characterization and site investigation data shall be generated for future generations. Also the assurance that the continuity of knowledge is maintained from the fuel verification to the final emplacement position is to be documented. With these data, future generations are able to formulate their role in maintaining the safeguards and security for the disposal site as long as needed.

As a national authority in Finland, STUK has taken the position that the collection, dissemination and storage of abovementioned data packages are required in such a way that also international inspectorates can use it to create knowledge for their independent safeguards conclusions. This position is shown on practical level in STUK regulations.

In practical terms this means that final verification of spent fuel should be as comprehensive as feasible. Designing an optimized C/S system to maintain continuity of knowledge during the operation of the final disposal facility needs careful planning and development in the spirit of the SbD and 3-S concepts. Design Information Verification and Containment/Surveillance for the underground part of the repository is another area where new practical and reliable approaches and procedures need to be taken into use.

STUK has a central role in negotiations with the operator and international inspectorates. The discussions are taking place in national regulatory meetings, international technical meetings and official trilateral meetings with Finland, EC and IAEA. Various Member State Support Programme tasks conduct R&D for final disposal. The goal is to set up a robust and cost effective safeguards system.

Country or International Organization

Finland

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