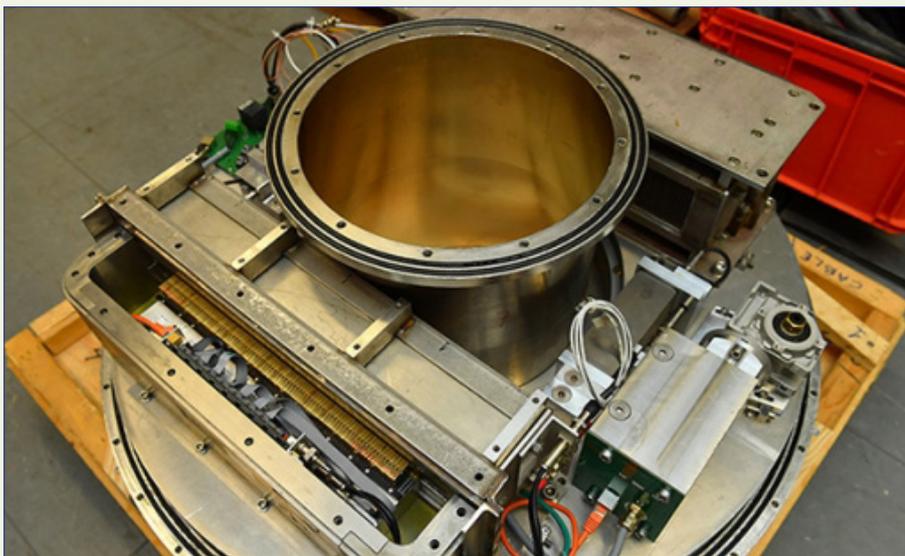


New safeguards tool bolsters IAEA's verification of spent nuclear fuel



The components inside the PGET tool, which is used to verify spent nuclear fuel. (Photo: D. Calma/IAEA)

For all States with a comprehensive safeguards agreement in force, the IAEA seeks to verify that all nuclear material remains in peaceful activities. It achieves this through the application of technical measures known as safeguards. The new passive gamma emission tomography (PGET) tool will enable the IAEA to verify the number of fuel rods — or pins — in spent nuclear fuel assemblies.

Unlike other tools used for verifying the content of spent nuclear fuel, such as the digital Cerenkov viewing device and the spent fuel attribute tester,

the PGET tool can also confirm the absence of missing pins from a spent fuel assembly in a closed container. This is very useful for applying safeguards at nuclear power plants, underwater storage facilities and encapsulation plants at geological repositories. According to Tim White, an IAEA technology expert, the use of passive gamma emission tomography to verify nuclear material will be a “very valuable addition to the IAEA safeguards toolkit”.

At the end of their useful lives in a reactor, fuel rods are stored and

eventually disposed of or, in some cases, reprocessed. Verifying that the nuclear material in the rods is not diverted from peaceful use is a crucial part of assuring the international community that States are honouring their non-proliferation obligations.

To detect the presence of uranium or plutonium, the PGET tool takes three simultaneous measurements — of gross neutron and gamma ray counts, gamma ray spectrometry and tomographic imaging of spent fuel pin positions. It takes the tool only five minutes to take these measurements and an additional minute to process and analyse the data. In this way PGET “offers inspectors an additional data point,” said White. “It allows for a more complete picture of activities and increases the robustness of the verification process.”

The IAEA is still in the early stages of integrating PGET into its safeguards activities. It has been tested in spent fuel ponds at three nuclear power plants and is now ready for deployment in safeguards verification practices and for use in the field by safeguards inspectors. The European Atomic Energy Community (Euratom) has also expressed an interest in utilizing this technology for verification activities and a number of countries may follow suit.

— *By Matt Fisher*

Siting and site evaluation for nuclear power plants in focus at IAEA workshop in Uzbekistan

Uzbekistan, the latest country to launch a nuclear power programme, has initiated the process to select a site for a nuclear power plant and aims to grant a site licence in September 2020, local officials have confirmed. Uzbekistan is among about 30 countries that are considering, planning or actively working to include nuclear power into their energy mix.

At the request of Uzbekistan's Government, the IAEA and the

newly established nuclear energy development agency Uzatom held a workshop in February 2019 in Tashkent on safety and non-safety aspects to be considered in siting and site evaluation for nuclear power plants.

The workshop with participation of Uzatom, the nuclear regulatory body, and other relevant national organizations, focused on IAEA safety review services, safety standards and other resources supporting the

siting and site evaluation for nuclear power plants.

“Embarking on a nuclear power programme requires a long-term commitment to nuclear safety that starts as soon as the decision to proceed is taken,” said Greg Rzentkowski, Director of the Division of Nuclear Installation Safety of the IAEA. “Two important steps early in the process are the establishment of an effective legal and regulatory framework and ensuring that