Contribution ID: **9** Type: **Poster**

Safeguards Implement Equipment for Spent Nuclear Fuel of CANDU

Wednesday 29 June 2022 17:13 (1 minute)

This paper describes the development of safeguards implement equipment for spent nuclear fuel of heavy water reactor stored in a wet interim storage facility. OFPS (Fig. 1 (Left)) is one of the safeguards equipment for the nuclear nonproliferation. It has been using in PIV, Physical Inventory Verification, of the PHWR spent nuclear fuel in wet interim storage.

It compensated for imperfections in the OFPS improved performance and user convenience. Specifically, the lithium glass scintillator currently used in OFPS was changed to a plastic scintillator with the high economic efficiency and light yield, and the probe design for radiation measurement was also changed to facilitate replacement of the scintillator. In addition, the manual cable loading method, which was an obstacle to the safeguards implementation, was redesigned to be automatically loaded on a drum-shaped structure using a motor. All analog systems such as radiation signal processing and cable loading systems that used to run the entire equipment were replaced digitally so that every operations could be made with display panels.

Newly developed safeguards equipment was able to achieve two purposes, performance improvement and user convenience enhancement. The replacement of scintillators and probes improved performance by about 10 times, and the new equipment design reduced the number and weight of parts to less than about half.

The developed equipment is verifying its performance so that it can be used as IAEA's advanced safeguards equipment, and it is expected to play a major role in the safeguards implement for spent nuclear fuel through the registration of IAEA inspection equipment.

KEYWORDS: Safeguards, Spent nuclear fuel, PHWR, Plastic scintillator, Physical Inventory Verification

Primary authors: KIM, Yewon (KINAC(Korea Institute of Nuclear Nonproliferation and Control)); Dr KWAK, Sungwoo (KINAC(Korea Institute of Nuclear Nonproliferation and Control)); Dr CHUNG, Heejun (KINAC(Korea Institute of Nuclear Nonproliferation and Control))

Presenter: KIM, Yewon (KINAC(Korea Institute of Nuclear Nonproliferation and Control))

Session Classification: Poster