Name of Experimental Campaign:

Belgium exercise to investigate performance of measurement methods

Technology Name: identiFINDER Ultra THG Gamma Detector

Physical Principle/Methodology of Technology:

Sodium Iodide

What Does the Method Determine/Measure (e.g., presence of nuclear material, isotopics, mass):

Identification of radioactive isotopes present and possible mass determination for some isotopes

What Is the Applicability to IPNDV:

The collection of gamma data on fissile material with varying amounts of shielding.

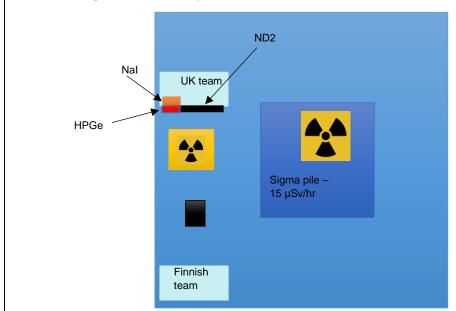**Type of Data Collected by the Technology:**

Gamma energy spectrum, .spc files

Constraints (e.g., time to install the equipment, measurement times including distance from object, dose rate required, required Cd shielding to limit the count rate):

No shielding was used on the front of this detector. NaI was situated on the worktable at a fixed distance from the fuel, 128 cm from the center of the fuel bundle. The measurement time was between 20 –30 minutes.

Physical Description/Diagram/Photos of the Experimental Setup/Layout:

Below is a diagram of the set-up:

Specific Objects Measured (which of the experimental objects were measured; if not described elsewhere, describe experimental objects here):

MOX fuel of two different isotopics were measured, with two different types of shielding in addition to bare. This makes six measurements made in total, using all our equipment. Nineteen pins were used for both isotopic compositions.

76%	96%
Bare	Bare
Cadmium	Cadmium
Lead and Poly	Lead and Poly

Process Required to Analyze the Data (include any software used):

Files are .spc and require processing using any gamma spectroscopy software such as Gamma Vision or Maestro. Mass determination can be done manually using differential attenuation.

Preliminary Results (qualitative, not quantitative; e.g., did the method perform as expected, if not how was it different):

The method performed as expected.

Final Results (if available; if not, estimate of when final results will be available):

Not yet available.

Lesson Learned (e.g., what went well, what went wrong or not as expected, do the results confirm what we said in the technology tables?):