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## **New Technologies for Safeguards Implementation: A Case Study for Improving Measurement of Bulk Uranium**

While safeguards by design is now a standard practice for new facilities, Canada's nuclear industry includes large facilities at the front-end of the fuel cycle –parts of which were built before safeguards were a consideration. A complicating factor is that many of these facilities have very large throughputs of nuclear material. This paper describes processes and considerations that need to be taken into account in performing a Physical Inventory Taking in such plants. The Canadian Nuclear Safety Commission (CNSC) leveraged the Canadian Safeguards Support Program (CSSP) to launch a project to develop techniques to more accurately determine the volume of in-process powders to determine more precisely the mass of the nuclear material. This paper considers the use of 3D laser scanning technology for volume determination within a vessel, as well as best practices for collaboration between the State Regulatory Authority (SRA), International Atomic Energy Agency (IAEA), and operator.

### **Which "Key Question" does your Abstract address?**

TEC2.4

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

TEC3.3

### **Topics**

TEC2

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